# Permit

| | | | |
|---|---|---|---|
| Permittee | Great Lakes Chemical Corporation (South Plant) | Permit Number | 3-U |
| Address | Post Office Box 1958<br>El Dorado, Arkansas 71730 | CSN | 70-0037 |

Pursuant to the Arkansas Water and Air Pollution Control Act (Act 472 of 1949, as amended, Ark. Stats. 82-1901, et seq.), and the Arkansas Underground Injection Control (UIC) Code, a permit is issued to Great Lakes Chemical Corporation (hereinafter called the Permittee) to construct and/or operate (a) Class I waste disposal injection well(s) at the following locations:

Great Lakes Chemical plant site, Section 32, Township 18 South, Range 15 West, Route 2, Box 162X, El Dorado, Union County, Arkansas

The Permittee must comply with all the terms and conditions of this permit. This permit consists of the conditions contained herein (including those in any attachments 1 through 4), and the applicable standard and specific facility conditions developed in accordance with the Arkansas Underground Injection Control (UIC) Code, and the provisions of Title 40, Code of Federal Regulations (40 CFR) Parts 144, 146, and 124, as specified in the permit. Applicable State and Federal Regulations are those which are in effect on the date of issuance of the permit, such Federal Regulations adopted by reference in Section 3 of the Arkansas Underground Injection Control (UIC) Code. (See 40 CFR 144.52(b)(2) and Attachment 1).

This permit is based on the condition that all information submitted in the permit application dated December 7, 1983 as modified by subsequent amendments dated March 6, 1984; April 5, 1984; and April 13, 1984 (hereinafter referred to as the application) is accurate and that the facility will be constructed and operated as specified in the application. Any inaccuracies found in this information may be grounds for the termination or modification of this permit (See 40 CFR 144.39, 144.40, and 144.41) and possible enforcement action.

This permit is effective as of May 6, 1985 and shall remain in effect until May 5, 1995 unless revoked and reissued, or terminated (40 CFR 144.39 and 144.40) or continued in accordance with the Arkansas UIC Code.

Issued this 4th day of April , 1985 .

ARKANSAS DEPARTMENT OF POLLUTION CONTROL & ECOLOGY

by: Phyllis Barnett
Director

PART I

STANDARD CONDITIONS

I.A. EFFECT OF PERMIT

The permittee is authorized to construct and/or operate (a) waste disposal injection well(s) in accordance with the conditions of this permit. Any injection of wastes not authorized in this permit is prohibited. Compliance with this permit constitutes, for purposes of enforcement, compliance with Part C of the Safe Drinking Water Act (SDWA) and the Arkansas Water and Air Pollution Control Act (Act 472 of 1949, as amended). Issuance of this permit does not convey any property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property; any invasion of other private rights, or any infringement of State or local law or regulation. Compliance with the terms of this permit does not constitute a defense to any action brought under the provisions of the Water and Air Pollution Control Act (Act 472 of 1949, as amended) or any other law governing protection of public health or the environment for any imminent and substantial endangerment to human health or the environment.

I.B. PERMIT ACTIONS

This permit may be modified, revoked and reissued, or terminated either at the request of any interested person, including the Permittee, or upon the Director's initiative. However, modification, revocation and reissuance, or termination of this permit shall be allowed only under the conditions set forth in I.B.1., I.B.2., and I.B.3. below. All requests for modification (except for minor modifications as specified under 40 CFR 144.41), revocation and reissuance, or termination shall be in writing and shall contain facts or reasons supporting the request.

1. Modification or Revocation and Reissuance of Permit

   The Director may modify, or revoke and reissue, this permit if he or she determines, based upon receipt of any information, that one or more of the causes specified under 144.39(a) or 144.39(b) for modification, revocation and reissuance, or both, exists. Except as provided by 144.41, modification or revocation and reissuance of this permit by the Director shall be in accordance with 40 CFR 144.39.

2. Termination of Permit

   The Director may terminate this permit during its term as specified under Condition I.C. or deny any application for renewal of this permit for causes identified in 40 CFR 144.40.

3. Minor Modifications to the Permit

   Upon the consent of the Permittee, the Director may make minor modifications to the permit as specified in 40 CFR 144.41 without following the procedures of 40 CFR Part 124. Any modification not determined to be a minor modification under 144.41 must comply with the procedures of 40 CFR 124.5 and 144.39.

1.C. DURATION OF PERMIT

This permit is effective for a period not to exceed ten years unless ter for causes specified in 40 CFR 144.40.

1.D. CONTINUATION OF EXPIRING PERMIT

This permit and all conditions therein will remain in effect beyond the permit's expiration date if the Permittee has submitted a timely, complete application and through no fault of the Permittee, the Director has not issued a new permit as set forth in Act 472. Permits continued under the conditions in this section remain fully enforceable and are subject to those actions specified in 40 CFR 144.37(c).

1.E. TRANSFER OF PERMITS

1. Transfers by Modification

This permit may be transferred by the Permittee to a new owner or operator if the permit has been modified or revoked and reissued pursuant to 40 CFR 144.39(b)(2), or a minor modification made under 40 CFR 144.41(d), to identify the new Permittee and incorporate such other requirements as may be necessary under the Safe Drinking Water Act.

2. Automatic Transfers

Any UIC permit for a well not injecting hazardous waste may be automatically transferred to a new Permittee if:

(a) The current Permittee notifies the Director at least thirty (30) days in advance of a proposed transfer date referred to in Condition 1.E.2(b) below;

(b) The notice includes a written agreement between the existing and new Permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them, and the notice demonstrates that the financial responsibility requirements of 40 CFR 144.52(a)(7) will be met by the new Permittee; and

(c) The Director does not notify the existing and the proposed new Permittee of his or her intent to modify or revoke and reissue the permit. A modification under this condition may also be a minor modification under 40 CFR 144.41. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in Condition 1.E.2(b) above.

1.F. DUTIES AND REQUIREMENTS

1. Duty to Comply

The Permittee shall comply with all conditions of this permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit under 144.34. Any permit noncompliance constitutes a violation of Act 472 and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application.

2. 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 submit a new application for a new permit at least one hundred eighty (180) days before this permit expires.

3. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a 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.

4. Duty to Mitigate

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

5. Duty to Provide Information

The Permittee shall furnish to the Director within a reasonable time, any relevant information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Director upon request, copies of records required to be kept by this permit.

6. Proper Operation and Maintenance

The Permittee shall 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 a back-up or auxiliary facility or similar systems only when necessary to achieve compliance with the conditions of the permit.

7. Inspection and Entry

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

(a) Entry

Enter at reasonable times upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

(b) Access to Records

Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

(c) Inspection

Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(d) Sampling for Compliance

Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by Act 472, any substances or parameters at any location.

8. Monitoring and Records

(a) Monitoring

Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(b) Records

The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports and records required by this permit, and records of all data used to complete the application for this permit for a period of at least three (3) years from the date of the sample, measurement, report, or application. This period may be extended by request of the Director at any time and will be automatically extended during the course of any unresolved enforcement action regarding this facility. The Permittee shall also retain records on the nature and composition of all injected fluids until three (3) years after the completion of any plugging and abandonement procedures specified under 144.52(a)(6) and Conditions II.F.1. of this permit. The Director may require the owner or operator to deliver the records to the Director at the conclusion of the retention periods.

(c) Content of Monitoring Records

Records of monitoring information shall include:

(i) The date, exact place, and time of sampling or measurements;

(ii) The individual(s) who performed the sampling or measurements;

(iii) The date(s) analyses were performed;

(iv) The individual(s) who performed the analyses;

(v) The analytical techniques or methods used; and

(vi) The results of such analyses.

9. Reporting Requirements

(a) Notification of Facility Alterations or Additions

The Permittee shall notify the Director as soon as possible of any planned physical alterations or additions to the permitted facility.

(b) Notice of Changes in Facility

The Permittee shall give the Director advance notice of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.

(c) Permit Transfer

This permit is nontransferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate other requirements as may be required under the SDWA, Act 472, or Condition I.E. above.

(d) Monitoring Reports

Monitoring results shall be reported at the intervals specified in Conditions II.E. of this permit.

(e) Compliance Reports

Reports of compliance or noncompliance with any compliance schedule of this permit shall be submitted to the Director no later than 14 days following each schedule date.

(f) Noncompliance Endangerment

The Permittee shall report to the Director any noncompliance that may endanger health or the environment, including any monitoring or other information which indicates that any contaminant may cause an endangerment to a USDW, or that any non-compliance with a permit condition or malfunction of the injection system may cause fluid migration between USDWs. This information shall be provided orally within 24 hours of the time the Permittee becomes aware of the circumstances. The information to be included in the oral report is as follows:

(i) Information concerning release of any contaminant that may cause an endangerment to public drinking water supplies.

(ii) Any information of a release or discharge of a conta or of a fire or explosion from the facility, which c threaten the environment or human health outside the The description of the occurrence and its cause shal

(A) Name, address, and telephone number of the owne operator;

(B) Name, address, and telephone number of the facility;

(C) Date, time, and type of incident;

(D) Name and quantity of material(s) involved;

(E) The extent of injuries, if any;

(F) An assessment of actual or potential hazard to the environment and human health outside the facility, where this is applicable; and

(G) Estimated quantity and disposition of recovered material that resulted from the incident.

(g) Noncompliance Endangerment Report

The Permittee shall also provide the Director with a written submission within 5 days after he or she becomes aware of any noncompliance described under I.F.9(f). The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; and if the noncompliance has not been corrected, the length of time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent recurrence.

(h) Certification of Construction or Modification

The Permittee may not commence injection of waste into a newly permitted facility nor in a modified portion of an existing injection facility until:

(A) The Permittee has submitted to the Director by certified mail or hand delivery, a letter signed by the Permittee and a registered professional engineer stating that the facility has been constructed or modified in compliance with this permit; and

(B) (i) The Director has inspected or otherwise reviewed the new injection well and finds it is in compliance with the conditions of this permit; or

(ii) The Director has either waived the inspection or has not, within 15 days of receiving the notice in Condition I.F.9(h)(A) above, notified the Permittee of his or her intent to inspect the new injection well, in which case prior inspection or review is waived and the Permittee may commence injection. The Director shall include, in any notification of intent to inspect, a reasonable time period in which he or she will inspect the well.

(i) Notification of Interim Compliance

The Permittee shall submit to the Director notification indicating compliance or noncompliance with interim compliance requirements established under Condition III.B.1 of this permit. This notification shall include at a minimum, a discussion of activities completed during the reporting month; reasons for noncompliance with interim compliance requirements established in Condition III.B.1 of this permit; any other problems encountered during the reporting period; mitigative measures taken to correct problems encountered; and possible effects on the compliance schedule resulting from these problems. This notification shall be submitted to the Director no later than 14 days following interim dates and dates of completion established in Condition III.B.1 of this permit.

(j) Other Noncompliance Reports

At the time monitoring reports are submitted, the Permittee shall report all instances of noncompliance not reported under Conditions I.F.9.(a), (d), (e), (f), (g), and (h) of this permit. The reports shall contain the information listed in Condition I.F.9(g) of this section.

(k) Amendment of Permit Application and Reports

Within 7 days after the Permittee becomes aware that relevant facts were not submitted or were incorrect in a permit application or in any report to the Director, Permittee shall submit such new or corrected facts or information.

(l) Conversion or Abandonment of Well

The Permittee shall notify the Director before conversion or abandonment of the well, or in the case of area permits, before closure of the project.

10. Signatory Requirement

All applications, reports, or other information requested by the Director shall be signed and certified as required by 40 CFR 144.32.

11. Confidential Information

The Permittee may claim as confidential any information required to be submitted by this permit in accordance with 40 CFR 144.5, with the exception of the name and address of any applicant or Permittee, and information which deals with the existence, absence, or level of contaminants in drinking water.

I.G. 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.

PART II

SPECIFIC CONDITIONS

II.A CONSTRUCTION REQUIREMENTS

1. Drilling and Completion

Except as specifically required in the terms of this permit, drilling and completion of the well shall be done in accordance with the plans and specifications submitted with the permit application. Any proposed changes to the plans and specifications must be in writing and approved by the Director as providing protection equivalent to or greater than the original design criteria and standards.

2. Commencement of Construction

No construction may commence until a permit has been issued containing construction requirements, except as authorized by an area permit. All wells shall be in compliance with the applicable provisions of 40 CFR Part 146 prior to commencing injection operations.

3. Formation Used For Injection

Injection must be into a formation which is beneath the lowermost formation, containing, within ¼ mile of the well bore, an underground source of drinking water.

4. Casing and Cementing

(a) For new UIC wells, the wells shall be cased and cemented as follows, or as necessary to prevent the movement of fluids into or between underground sources of drinking water:

(1) The permittee shall set and cement casings to minumum sub-surface depths as follows:

| Well # | Surface Casing | Long String Casing | Inj. Formation | Inj. Depth |
|---|---|---|---|---|
| WDW-3X | 103 feet | 2851 feet | Meakin Sand | 2544'-2568'<br>2571'-2578'<br>2650'-2686' |
| | | | Graves Sand | 2722'-2742' |
| WDW-4 | 107 feet | 2854 feet | Graves Sand | 2660'-2693'<br>2730'-2746' |
| WDW-5 | 907 feet | 2915 feet | Meakin Sand | 2558'-2602' |
| | | | Graves Sand | 2668'-2698'<br>2735'-2756'<br>2815'-2826' |

(2) Cementing shall be by the following method with cement used to fill the annular space between the hole and casings to the surface:

| Well # | Cementing Method | Type and Grade of Cement |
|---|---|---|
| WDW-3X | Circulation to surface | as utilized |
| WDW-4 | Circulation to surface | as utilized |
| WDW-5 | Circulation to surface | as utilized |

(3) Cementing of the long string casing shall include a tai slurry resistant to degradation and penetration by the injected waste, and of sufficient quantity to fill the annular space to the surface.

(4) Waste fluids shall be injected through tubing with a p set immediately above the injection zone. The tubing and packer shall be designed for the expected service. Tubing and packer specifications shall be maintained as follows:

| Well # | Tubing Specifications | Packer Specifications |
|---|---|---|
| WDW-3X | 5½" set to 2481' | TIW LH set at 2481' |
| WDW-4 | 5½", 14 lb/ft, at 2489' | 5½" X 7" TIW at 2489' |
| WDW-5 | 5½", 7 lb/ft, at 2677' | 5½" X 7" TIW at 2677' |

(5) Certification

The Permittee shall certify that construction and completion of the well is in compliance with the requirements and conditions of this permit prior to commencement of injection operations.

(b) For existing UIC wells, the Permittee has adequately demonstrated and documented in the application that the well(s) are in compliance with the minimum construction requirements in this Condition II.A.4.(a).

II.B. DRILLING AND COMPLETION REQUIREMENTS (Does not apply to existing wells. Construction information is contained in application)

1. Prior Notification

The Permittee shall notify the Land Disposal Section, Permits Branch of the Department at least forty-eight (48) hours prior to beginning drilling operations, and again at least forty-eight (48) hours prior to cementing operations.

2. Logging Requirements

A minimum of the following logs shall be conducted during the drilling and completion of the well. The Permittee shall ensure that a descriptive report interpreting the results of these logs and tests is prepared by a knowledgeable log analyst and submitted to the Director:

(a) Deviation checks on the hole shall be at sufficient intervals to assure that vertical avenues for fluid migration are not created during drilling.

(b) For surface casing:

(i) Resistivity, spontaneous potential and caliper logs before the casing is installed; and

(ii) cement bond log, variable density log, and a pressure test after the casing is set and cemented.

(c) For intermediate or long string casings:

(i) Resistivity, spontaneous potential, porosity, and gamma ray before the casing is installed; and

(ii) cement bond logs and radioactive tracer logs after the casing is set and cemented.

(d) For either II.B.2.(b)(ii) or (c)(ii) above, if mechan integrity tests indicate that the cement job is poor i particular zone and that fluid movement may occur behi casing, then a squeeze job or other method shall be em to properly seal off this zone. Following a squeeze j the Permittee must run a cement bond log and a variabl density log through the interval from 100 feet above t feet below the squeezed zone. A pressure test must also be conducted to ensure the integrity of the squeeze job. A report discussing the results of the squeeze job and subsequent mechanical integrity tests must be submitted to the Department within 30 days.

3. Cores and Core Analysis

Full-hole cores shall be taken from selected intervals of the injection zone and lowermost overlying confining zone; or, if full-hole coring is not feasible or adequate recovery is not achieved, sidewall cores shall be taken at sufficient intervals to yield representative data for selected parts of the injection zone and lowermost overlying confining zone. Core analysis shall include a determination of permeability, porosity, bulk density and compatability with waste fluids

4. Testing of Casing

Casings shall be pressure tested according to Department guidelines (i.e. at least 100 psi over maximum injection pressure for no less than 30 minutes, (See Attachment 5).

5. Additional Requirements

(a) After completion of the well, mechanical integrity shall be demonstrated and injectivity tests shall be performed to determine well capacity and reservoir characteristics.

(b) Prior to performing injectivity tests above, bottom-hole pressure, bottom-hole temperature, fracture pressure, static fluid level, flow direction, and flow velocity shall be determined and a representative sample of formation water from each of the proposed injection formations obtained and analyzed. This analysis shall, in part, consist of TOC (total organic carbon), TOX (total organic halogen, pH, specific conductivity, total chlorides, and the mixing of a sample of the formation water of each proposed injection formation with a sample of the waste stream proposed to be injected into the new well(s). These tests involving mixing of formation water and waste stream fluid should be conducted under conditions as similar to those existing in the actual formations as possible.

II.C. CORRECTIVE ACTION PLAN

The Permittee shall ensure that the Corrective Action Plan, prepared in accordance with 40 CFR 144.55 and 146.07, is carried out as specified in the Compliance Schedule if applicable.

II.D. OPERATIONAL REQUIREMENTS

1. Waste to be Injected

The Permittee is authorized to inject the following waste streams. Wastes not authorized to be stored, processed, or otherwise handled in associated surface waste handling facilities are not authorized for injection.

Wastes from the following manufacturing processes are to be injected:

1. Semi - works plant waste consisting of:

   - pollution scrubbers
   - floor washings
   - cooling water blow down
   - direct contact condenser blow down

2. Firemaster PHT-4 plant waste consisting of:

   - pollution scrubbers
   - floor washings
   - vacuum pump cooling
   - cooling tower blow down
   - product washings

3. Firemaster 680 plant waste consisting of:

   - pollution scrubbers
   - cooling tower blow down
   - floor washings
   - product washings

4. Bromine plant waste consisting of:

   - cooling tower blow down
   - contaminated rainwater
   - scrubber water
   - bromine process water
   - boiler blow down

5. Halon plant waste consisting of:

   - scrubber water
   - floor washings

6. Wastewater from GLCC (El Dorado) plant consisting of:

   - MPB≠ wastewater
   - DSP wastewater

2. Operation Requirements

The Permittee shall ensure that the following requirements are met:

## OPERATING REQUIREMENTS

| Well # | pH* (max/min) | max. rate of injection (gals/min.) | max.volume of injection (gals/month) | max. surface inj. pressure (psig) | annular fluid | minimum annulus pressure |
|---|---|---|---|---|---|---|
| DW-3X | 9.1-5.4 | 300 | 12,000,000 | 1000 | water with corrosion inhibitor | 50 |
| DW-4 | 9.1-5.4 | 300 | 12,000,000 | 1000 | water with corrosion inhibitor | 50 |
| DW-5 | 9.1-5.4 | 410 | 18,000,000 | 1000 | water with corrosion inhibitor | 50 |

* Short Term excursions (max. 30 min.) can range from pH 3 - 13.

3. Instrumentation

The Permittee shall ensure that the following instrumentation is installed and maintained to monitor the annular space:

| Well # | Type of Instrumentation |
|---|---|
| WDW-3X, 4 and 5 | Bourdon tube pressure sensing to a circular chart |

4. Parameters to be Measured

The following parameters shall be measured with appropriate continuous recording device housed in a weatherproof enclosure:

| Well # | Inj. Tubing Pressure | Inj. Tubing Flow Rate | Injection Volume | Annulus Pressure |
|---|---|---|---|---|
| WDW-3X, 4 & 5 | X | X | X | X |

5. Mechanical Integrity

Mechanical integrity shall be demonstrated upon well completion and thereafter once every five (5) years for the life of the well. The demonstration of mechanical integrity consists of the running of a cement bond log, a variable density log, a radioactive tracer survey, and a pressure test. These results will be submitted to the Department along with an interpretive analysis by the log analyst from the company who ran the tests. Also, the well must pass a pressure test at least once a year, after each workover, and after each shut-down of the well in excess of 30 days. Results from the continuous monitoring of each well must also be submitted to the Department once a month. Mechanical integrity must be demonstrated to the satisfaction of the Director in accordance with 40 CFR 146.08 and within the guidelines established by the Department.

II.E. MONITORING AND REPORTING

1. Initial Reports

(a) Within ninety (90) days after well completion, the Permittee shall submit to the Director the drilling and completion history, casing and cementing records, well logs, and injectivity tests performed on the well, along with a surveyor's plat showing the exact location of the well. The drilling history shall include a complete and accurate record of the depth, thickness, and character of strata penetrated. The Permittee shall integrate data obtained into adjusted formation pressure increase calculations, fluid front calculations and cross-sections of the disposal zone and include these items in the completion report.

(b) Wells within the area of review to be used to monitor any migration of fluids into, and pressure in, underground sources of drinking water shall be tested as follows:

| Well # | Monitoring Well Locations | Parameters | Frequency |
|---|---|---|---|
| WDW-3X, 4 & 5 | GLCC Process water wells 1-3 | pH<br>total chlorides<br>total organics | quarterly |

(c) The Permittee shall notify the Director in writing of the following events:

(i) Anticipated well construction dates, i.e., cementing and development; and

(ii) Anticipated well start-up date.

2. Other Operational Reports

(a) The Permittee shall analyze injected fluids at least every quarter and submit written documentation to the Director quarterly.

(b) The Permittee shall submit quarterly reports (within 20 days after the end of the month constituting a quarter) to the Director on the following:

(i) Physical, chemical and other relevant characteristics of the injection fluids;

(ii) Monthly average, minimum, and maximum values for injection pressure, flow rate and volume, and annular pressure;

(iii) The results of monitoring prescribed under condition II.E.1(b) above.

(c) The Permittee shall file annually, as of January 1, to be submitted by March 1, an acceptable report of the pressure effects of the well upon its injection zone, including a direct measurement of bottom-hole pressure, or a calculation of bottom-hole pressure using the specific gravity of fluid in the well bore and the static fluid level. To the extent such information is reasonably available, the report shall also include:

(i) Locations of newly constructed and discovered wells within the area of review, if such wells were not included in the technical report accompanying the permit application or in later reports.

(ii) a tabulation of data for all newly constructed and discovered wells within ½ mile of the injection well, that penetrate to within 300 feet of the top of the injection zone.

(iii) Annual injection fluid analysis.

(d) The Permittee shall notify the Director within twenty-four (24) hours of any change in monitoring parameters which could reasonably be attributed to a leak or other failure in well equipment.

(e) The Permittee shall submit within forty-five (45) days after completion of the following tests a report including both data and interpretation of the results of:

(i) Periodic tests of mechanical integrity; and

(ii) Any other test of the injection well or injection zone, if required by the Director.

II.F PLUGGING AND ABANDONMENT

1. Plugging and Abandonment Plan

Upon final abandonment of the well, the Permittee shall ensure that the well is plugged in accordance with the approved plugging and abandonment plan submitted with the application, and hereinafter made a condition of this permit. Prior to plugging, the Permittee must give the Department notification of intent to plug, and the mechanical integrity of the well shall be verified by a program approved by the Director. Any proposed changes to plugging and abandonment plans must be approved by the Director after the Permittee demonstrates that the changes will provide protection equivalent to or greater than the original design criteria and standards. A change to a plugging and abandonment plan shall be treated as a minor modification of the permit under 40 CFR 144.41(g).

2. Financial Assurance

The Permittee shall secure and maintain in full force and effect at all times a performance bond in a form acceptable to the Director, to provide for proper closing, plugging and abandonment of the permitted waste disposal well(s) in the amount set forth below. The amount of financial assurance may, upon approval of the Director, be altered at a future date to provide for plugging subject to prevailing general economic conditions. This permit does not authorize underground injection of fluids unless the Permittee has in effect a performance bond acceptable to the Director.

| Well # | Amount of Financial Assurance |
|---|---|
| WDW-3X, 4 & 5 | $25,000 (each well) |

## PART III

## VARIANCES, COMPLIANCE SCHEDULES, AND OTHER CONDITIONS

### III.A. VARIANCES

1. No variances were requested by the applicant and none were granted by the Director.

### III.B. COMPLIANCE SCHEDULES

1. None

### III.C. OTHER CONDITIONS

1. The Permittee shall within 30 days of the effective date of this permit, submit a plan to identify, locate, and properly plug all abandoned wells within the area of review for WDW 3X, 4 & 5. Such plan shall be implemented on a schedule approved by the Director.

ATTACHMENT 1

REGULATIONS

# ENVIRONMENTAL PROTECTION AGENCY PERMIT REGULATIONS FOR THE UNDERGROUND INJECTION CONTROL PROGRAM

(40 CFR 144; 48 FR 14153, April 1, 1983; Amended by 48 FR 39619, September 1, 1983; 49 FR 20181, May 11, 1984; 49 FR 45305, November 15, 1984)

*[Editor's note: EPA published the permit application form and instructions as Appendix A of the final rulemaking notice (49 FR 20138, May 11, 1984). The agency noted that Appendix A would not appear in the Code of Federal Regulations. Therefore, Appendix A is published at the end of these regulations.]*

## PART 144—UNDERGROUND INJECTION CONTROL PROGRAM

### Subpart A—General Provisions



### Subpart B—General Program Requirements



### Subpart C—Authorization of Underground Injection by Rule



### Subpart D—Authorization by Permit



### Subpart E—Permit Conditions



### Subpart F—Financial responsibility: Class I hazardous waste injection wells



Authority: Pub. L. 93-523, as amended by Pub. L. 95-190, Pub. L. 96-63 and Pub. L. 96-502, 42 U.S.C. 300f *et seq.*

### § 144.1 Purpose and scope of Part 144.

(a) *Contents of Part 144.* The regula tions in this Part set forth requirement for the Underground Injection Contr (UIC) Program promulgated under Pa C of the Safe Drinking Water A (SDWA) (Pub. L. 95-523, as amended b Pub. L. 96502, 42 U.S.C. 300f et seq and, to the extent that they deal wi hazardous waste, the Resource Conserv tion and Recovery Act (RCRA) (Pub. L 94-580 as amended by Pub. L. 95-60 Pub L. 96-510, 42 U.S.C. 6901 et seq.).

[144.1(a) revised, new (b) and (c) adde by 49 FR 20181, May 11, 1984]

(b) *Applicability.* (1) The regulations i this part establish minimum requiremen for UIC programs. To the extent set fort in Part 145, each State must meet thes requirements in order to obtain primar enforcement authority for the UIC pr gram in that State.

(2) In addition to serving as minimu requirements for UIC programs, the reg lations in this Part constitute a part of th UIC program for States listed in Part 14 to be administered directly by EPA.

(c) The information requirements loca ed in the following sections have be cleared by the Office of Manageme and Budget: §§141.11, 144.28(c)(d)(i 144.31, 14.33, [144.33], 144 51(j)(m)(n 144.52(a), 144.54, 144.55, 144.15, 144.2 144.26, 144.27, 144.28(i)(k), 144.51(c 146.52. The OMB clearance number No. 2040-0042.
[Former 144.1(b)–(c) redesignated (d)–(g) by 49 FR 20181, May 11, 1984

(d) *Authority.* (1) Section 1421 SDWA requires the Administrator promulgate regulations establish minimum requirements for effec UIC programs.



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(2) Section 1422 of SDWA requires the Administrator to list in the FEDERAL REGISTER "each State for which in his judgment a State underground injection control program may be necessary to assure that underground injection will not endanger drinking water sources" and to establish by regulation a program for EPA administration of UIC programs in the absence of an approved State program in a listed State.

(3) Section 1423 of SDWA provides procedures for EPA enforcement of UIC requirements.

(4) Section 1431 authorizes the Administrator to take action to protect the health of persons when a contaminant which is present in or may enter a public water system may present an imminent and substantial endangerment to the health of persons.

(5) Section 1445 of SDWA authorizes the promulgation of regulations for such recordkeeping, reporting, and monitoring requirements "as the Administrator may reasonably require * * * to assist him in establishing regulations under this title," and a "right of entry and inspection to determine compliance with this title, including for this purpose, inspection, at reasonable time, or records, files, papers, processes, controls, and facilities * * *."

(6) Section 1450 of SDWA authorizes the Administrator "to prescribe such regulations as are necessary or appropriate to carry out his functions" under SDWA.

(c) *Overview of the UIC program.* An UIC program is necessary in any State listed by EPA under section 1422 of the SDWA. Because all States have been listed, the SDWA requires all States to submit an UIC program within 270 days after July 24, 1980, the effective date of 40 CFR Part 146, which was the final element of the UIC minimum requirements to be originally promulgated, unless the Administrator grants an extension, which can be for a period not to exceed an additional 270 days. If a State fails to submit an approvable program, EPA will establish a program for that State. Once a program is established, SDWA provides that all underground injections in listed States are unlawful and subject to penalties unless authorized by a permit or a rule. This part sets forth the requirements governing all UIC programs, authorizations by permit or rule and prohibits certain types of injection. The technical regulations governing these authorizations appear in 40 CFR Part 146.

(f) *Structure of the UIC Program*—(1) *Part 144.* This part sets forth the permitting and other program requirements that must be met by UIC Programs, whether run by a State or by EPA. It is divided into the following subparts:

(i) Subpart A describes general elements of the program, including definitions and classifications.

(ii) Subpart B sets forth the general program requirements, including the performance standards applicable to all injection activities, basic elements that all UIC programs must contain, and provisions for waiving permit of rule requirements under certain circumstances.

(iii) Subpart C sets forth requirements for wells authorized by rule.

(iv) Subpart D sets forth permitting procedures.

(v) Subpart E sets forth specific conditions, or types of conditions, that must at a minimum be included in all permits.

(2) *Part 145.* While Part 144 sets forth minimum requirements for all UIC Programs, these requirements are specifically indentified as elements of a State application for primacy to administer an UIC Program in Part 145. Part 145 also sets forth the necessary elements of a State submission and the procedural requirements for approval of State programs.

(3) *Part 124.* The public participation requirements that must be met by UIC Programs, whether administered by the State or by EPA, are set forth in Part 124. EPA must comply with all Part 124 requirements; State administered programs must comply with Part 124 as required by Part 145. These requirements carry out the purposes of the public participation requirement of 40 CFR Part 25 (Public Participation), and supersede the requirements of that Part as they apply to the UIC Program.

(4) *Part 146.* This part set forth the technical criteria and standards that must be met in permits and authorizations by rule as required by Part 144.

(g) *Scope of the Permit or Rule Requirement.* The UIC Permit Program regulates underground injections by five classes of wells (see definition of "well injection," § 144.3). The five classes of wells are set forth in § 144.6. All owners or operators of these injection wells must be authorized either by permit or rule by the Director. In carrying out the mandate of the SDWA, this subpart provides that no injection shall be authorized by permit or rule if it results in the movement of fluid containing any contaminant into Underground Sources of Drinking Water (USDWs—see § 144.3 for definition), if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR Part 142 or may adversely affect the health of persons (§ 144.12). Existing Class IV wells which inject hazardous waste directly into an underground source of drinking water are to be eliminated over a period of six months and new such Class IV wells are to be prohibited (§ 144.13). Class V wells will be inventoried and assessed and regulatory action will be established at a later date.

In the meantime, if remedial action appears necessary, an individual permit may be required (§ 144.25) or the Director must require remedial action or closure by order (§ 144.12(c)). During UIC program development, the Director may identify aquifers and portions of aquifers which are actual or potential sources of drinking water. This will provide an aid to the Director in carrying out his or her duty to protect all USDWs. An aquifer is a USDW if it fits the definition, even if it has not been "identified." The Director may also designate "exempted aquifers" using criteria in § 146.04. Such aquifers are those which would otherwise qualify as "underground sources of drinking water" to be protected, but which have no real potential to be used as drinking water sources. Therefore, they are not USDWs. No aquifer is an "exempted aquifer" until it has been affirmatively designated under the procedures in § 144.7. Aquifers which do not fit the definition of "underground sources of drinking water" are not "exempted aquifers." They are simply not subject to the special protection afforded USDWs.

(1) *Specific inclusions.* The following wells are included among those types by injection activities which are covered by the UIC regulations. (This list is not intended to be exclusive but is for clarification only.)

(i) Any injection well located on a drilling platform inside the State's territorial waters.

(ii) Any dug hole or well that is deeper than its largest surface dimension, where the principal function of the hole is emplacement of fluids.

(iii) Any septic tank or cesspool used by generators of hazardous waste, or by owners or operators of hazardous waste management facilities, to dispose of fluids containing hazardous waste.

(iv) Any septic tank, cesspool, or other well used by a multiple dwelling, community, or Regional system for the injection of wastes.

(2) Specific exclusions. The following are not covered by these regulations:

(i) Injection wells located on a drilling platform or other site that is beyond the State's territorial waters.

(ii) Individual or single family residential waste disposal systems such as domestic cesspools or septic systems.

(iii) Non-residential cesspools, septic systems or similar waste disposal systems if such systems (A) are used solely for the disposal of sanitary waste, and (B) have the capacity to serve fewer than 20 persons a day.

(iv) Injection wells used for injection of hydrocarbons which are of pipeline quality and are gases at standard temperature and pressure for the purpose of storage.

(v) Any dug hole which is not used for emplacement of fluids underground.

(3) The prohibition applicable to Class IV wells under § 144.13 does not apply to injections of hazardous wastes into aquifers or portions thereof which have been exempted pursuant to § 146.04.

### § 144.2 Promulgation of Class II programs for Indian lands.

Notwithstanding the requirements of this part or Parts 124 and 146 of this chapter, the Administrator may promulgate an alternate UIC Program for Class II wells on any Indian reservation or Indian lands. In promulgating such a program the Administrator shall consider the following factors:

(a) The interest and preferences of the tribal government having responsibility for the given reservation or Indian lands;

(b) The consistency between the alternate program and any program in effect in an adjoining jurisdiction; and

(c) Such other factors as are necessary and appropriate to carry out the Safe Drinking Water Act.

### § 144.3 Definitions.

Terms not defined in this section have the meaning given by the appropriate Act. When a defined term appears in a definition, the defined term is sometimes placed within quotation marks as an aid to readers.

*Administrator* means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

*Application* means the EPA standard national forms for applying for a permit, including any additions, revisions or modifications to the forms; or forms approved by EPA for use in approved States, including any approved modifications or revisions.

*Appropriate Act and regulations* means the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA); or Safe Drinking Water Act (SDWA), whichever is applicable; and applicable regulations promulgated under those statutes.

*Approved State program* means a State UIC program administered by the State that has been approved by EPA according to SDWA § 1422.

*Aquifer* means a geological "formation," group of formations, or part of a formation that is capable of yielding a significant amount of water to a well or spring.

*Area of review* means the area surrounding an injection well described according to the criteria set forth in § 146.06 or in the case of an area permit, the project area plus a circumscribing area the width of which is either ¼ of a mile or a number calculated according to the criteria set forth in § 146.06.

*Contaminant* means any physical, chemical, biological, or radiological substance or matter in water.

*Director* means the Regional Administrator, the Administrator of EPA, or the State Director, as the context requires, or an authorized representative. When there is no approved State program, and there is an EPA administered program, "Director" means the Regional Administrator. When the is an approved State program, "Dir tor" normally means the State Dir tor.

In some circumstances, however, E retains the authority to take certa actions even when there is an proved State program. In such cas the term "Director" means the gional Administrator and not State Director.

*Draft permit* means a document p pared under § 124.6 indicating the rector's tentative decision to issue deny, modify, revoke and reissue, minate, or reissue a "permit." A not of intent to terminate a permit, an notice of intent to deny a permit, discussed in § 124.5 are types of "dr permits." A denial of a request modification, revocation and re suance, or termination, as discussed § 124.5 is not a "draft permit."

*Drilling mud* means a heavy susp sion used in drilling an "injecti well," introduced down the drill p and through the drill bit.

*Emergency permit* means a U "permit" issued in accordance w § 144.34.

*Environmental Protection Age* ("EPA") means the United States vironmental Protection Agency.

*EPA* means the United States "En ronmental Protection Agency."

*Exempted aquifer* means "aquifer" or its portion that meets criteria in the definition of "und ground source of drinking water" which has been exempted according the procedures in § 144.7.

*Existing injection well* means an jection well" other than a "new inj tion well."

*Facility or activity* means any U "injection well," or an other facility activity that is subject to regulat under the UIC program.

*Fluid* means any material or s stance which flows or moves whet in a semisolid, liquid, sludge, gas, any other form or state.

*Formation* means a body of cons dated or unconsolidated rock char terized by a degree of lithologic hor geneity which is prevailingly, but necessarily, tabular and is mappa on the earth's surface or traceable the subsurface.

*Formation fluid* means "flu present in a "formation" under na ral conditions as opposed to int duced fluids, such as "drilling mud."

*Generator* means any person, by location, whose act or process p

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(iv) Any septic tank, cesspool, or other well used by a multiple dwelling, community, or Regional system for the injection of wastes.

(2) Specific exclusions. The following are not covered by these regulations:

(i) Injection wells located on a drilling platform or other site that is beyond the State's territorial waters.

(ii) Individual or single family residential waste disposal systems such as domestic cesspools or septic systems.

(iii) Non-residential cesspools, septic systems or similar waste disposal systems if such systems (A) are used solely for the disposal of sanitary waste, and (B) have the capacity to serve fewer than 20 persons a day.

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(b) The consistency between the alternate program and any program in effect in an adjoining jurisdiction; and

(c) Such other factors as are necessary and appropriate to carry out the Safe Drinking Water Act.

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*Appropriate Act and regulations* means the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA); or Safe Drinking Water Act (SDWA), whichever is applicable; and applicable regulations promulgated under those statutes.

*Approved State program* means a State UIC program administered by the State that has been approved by EPA according to SDWA § 1422.

*Aquifer* means a geological "formation," group of formations, or part of a formation that is capable of yielding a significant amount of water to a well or spring.

*Area of review* means the area surrounding an injection well described according to the criteria set forth in § 146.06 or in the case of an area permit, the project area plus a circumscribing area the width of which is either ¼ of a mile or a number calculated according to the criteria set forth in § 146.06.

*Contaminant* means any physical, chemical, biological, or radiological substance or matter in water.

*Director* means the Regional Administrator, the Administrator of EPA, or the State Director, as the context requires, or an authorized representative. When there is no approved State program, and there is an EPA administered program, "Director" means the Regional Administrator. When there is an approved State program, "Director" normally means the State Director.

In some circumstances, however, EPA retains the authority to take certain actions even when there is an approved State program. In such cases, the term "Director" means the Regional Administrator and not the State Director.

*Draft permit* means a document prepared under § 124.6 indicating the Director's tentative decision to issue or deny, modify, revoke and reissue, terminate, or reissue a "permit." A notice of intent to terminate a permit, and a notice of intent to deny a permit, as discussed in § 124.5 are types of "draft permits." A denial of a request for modification, revocation and reissuance, or termination, as discussed in § 124.5 is not a "draft permit."

*Drilling mud* means a heavy suspension used in drilling an "injection well," introduced down the drill pipe and through the drill bit.

*Emergency permit* means a UIC "permit" issued in accordance with § 144.34.

*Environmental Protection Agency* ("EPA") means the United States Environmental Protection Agency.

*EPA* means the United States "Environmental Protection Agency."

*Exempted aquifer* means an "aquifer" or its portion that meets the criteria in the definition of "underground source of drinking water" but which has been exempted according to the procedures in § 144.7.

*Existing injection well* means an "injection well" other than a "new injection well."

*Facility or activity* means any UIC "injection well," or an other facility or activity that is subject to regulation under the UIC program.

*Fluid* means any material or substance which flows or moves whether in a semisolid, liquid, sludge, gas, or any other form or state.

*Formation* means a body of consolidated or unconsolidated rock characterized by a degree of lithologic homogeneity which is prevailingly, but not necessarily, tabular and is mappable on the earth's surface or traceable in the subsurface.

*Formation fluid* means "fluid" present in a "formation" under natural conditions as opposed to introduced fluids, such as "drilling mud."

*Generator* means any person, by site location, whose act or process pro-

duces hazardous waste identified or listed in 40 CFR Part 261.

*Ground water* means water below the land surface in a zone of saturation.

*Hazardous waste* means a hazardous waste as defined in 40 CFR 261.3.

*Hazardous waste management facility* ("HWM facility") means all contiguous land, and structures, other appurtenances, and improvements on the land used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (for example, one or more landfills, surface impoundments, or combination of them).

*HWM facility* means "Hazardous Waste Management facility"

*Injection well* means a "well" into which "fluids" are being injected.

*Injection zone* means a geological "formation" group of formations, or part of a formation receiving fluids through a "well."

*Interstate agency* means an agency of two or more States established by or under an agreement or compact approved by the Congress, or any other agency of two or more States having substantial powers or duties pertaining to the control of pollution as determined and approved by the administrator under the "appropriate Act and regulations."

*Major facility* means any UIC "facility or activity" classified as such by the Regional Administrator, or, in the case of approved State programs, the Regional Administrator in conjunction with the State Director.

*Manifest* means the shipping document originated and signed by the "generator" which contains the information required by Subpart B of 40 CFR Part 262.

*New injection wells* means an "injection well" which began injection after a UIC program for the State applicable to the well is approved or prescribed.

*Owner or operator* means the owner or operator of any "facility or activity" subject to regulation under the UIC program.

*Permit* means an authorization, license, or equivalent control document issued by EPA or an approved State to implement the requirements of this part. Parts 145, 146 and 124. "Permit" includes an area permit (§ 144.33) and an emergency permit (§ 144.34). Permit does not include UIC authorization by rule (§ 144.21), or any permit which has not yet been the subject of final agency action, such as a "draft permit."

*Person* means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

*Plugging* means the act or process of stopping the flow of water, oil or gas into or out of a formation through a borehole or well penetrating that formation.

*Project* means a group of wells in a single operation.

*Radioactive Waste* means any waste which contains radioactive material in concentrations which exceed those listed in 10 CFR Part 20, Appendix B, Table II, Column 2.

RCRA means the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976 (Pub. L. 94-580, as amended by Pub. L. 95-609, Pub. L. 96-510, 42 U.S.C. 6901 et seq.).

*Regional Administrator* means the Regional Administrator of the appropriate Regional Office of the Environmental Protection Agency or the authorized representative of the Regional Administrator.

*Schedule of compliance* means a schedule of remedial measures included in a "permit," including an enforceable sequence of interim requirements (for example, actions, operations, or milestone events) leading to compliance with the "appropriate Act and regulations."

*SDWA* means the Safe Drinking Water Act (Pub. L. 93-523, as amended by Pub. L. 96-502; 42 U.S.C. 300f et seq.).

*Site* means the land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity.

*State* means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Trust Territory of the Pacific Islands and the Commonwealth Northern Mariana Islands.

*State Director* means the chief administrative officer of any State or interstate agency operating an approved program, or delegated representative of the State Director. If responsibility is divided among two or more State or interstate agencies, "State Director" means the chief administrative officer of the State or interstate agency authorized to perform the particular procedure or function to which reference is made.

*State/EPA agreement* means an agreement between the Regional Administrator and the State which coordinates EPA and State activities, responsibilities and programs.

*Stratum* (plural strata) means a single sedimentary bed or layer, regardless of thickness, that consists of generally the same kind of rock material.

*Total dissolved solids* means the total dissolved (filterable) solids as determined by use of the method specified in 40 CFR Part 136.

*UIC* means the Underground Injection Control program under Part C of the Safe Drinking Water Act, including an "approved State program."

*Underground injection* means a "well injection."

*Underground source of drinking water (USDW)* means an aquifer or its portion:

(a)(1) Which supplies any public water system; or

(2) Which contains a sufficient quantity of ground water to supply a public water system; and

(i) Currently supplies drinking water for human consumption; or

(ii) Contains fewer than 10,000 mg/l total dissolved solids; and

(b) Which is not an exempted aquifer.

*USDW* means "underground source of drinking water."

*Well* means a bored, drilled or driven shaft, or a dug hole, whose depth is greater than the largest surface dimension.

*Well injection* means the subsurface emplacement of "fluids" through a bored, drilled, or driven "well;" or through a dug well, where the depth of the dug well is greater than the largest surface dimension.

**§ 144.4 Considerations under Federal law.**

[144.4 introductory paragraph revised by 48 FR 39619, September 1, 1983]

The following is a list of Federal laws that may apply to the issuance of

permits under these rules. When any of these laws is applicable, its procedures must be followed. When the applicable law requires consideration or adoption of particular permit conditions or requires the denial of a permit, those requirements also must be followed.

(a) The *Wild and Scenic Rivers Act*, 16 U.S.C. 1273 et seq. Section 7 of the Act prohibits the Regional Administrator from assisting by license or otherwise the construction of any water resources project that would have a direct, adverse effect on the values for which a national wild and scenic river was established.

(b) *The National Historic Preservation Act of 1966*, 16 U.S.C. 470 et seq. Section 106 of the Act and implementing regulations (36 CFR Part 800) require the Regional Administrator, before issuing a license, to adopt measures when feasible to mitigate potential adverse effects of the licensed activity and properties listed or eligible for listing in the National Register of Historic Places. The Act's requirements are to be implemented in cooperation with State Historic Preservation Officers and upon notice to, and when appropriate, in consultation with the Advisory Council on Historic Preservation.

(c) The *Endangered Species Act*, 16 U.S.C. 1531 *et seq.* Section 7 of the Act and implementing regulations (50 CFR Part 402) require the Regional Administrator to ensure, in consultation with the Secretary of the Interior or Commerce, that any action authorized by EPA is not likely to jeopardize the continued existence of any endangered or threatened species or adversely affect its critical habitat.

(d) *The Coastal Zone Management Act*, 16 U.S.C. 1451 *et seq.* Section 307(c) of the Act and implementing regulations (15 CFR Part 930) prohibit EPA from issuing a permit for an activity affecting land or water use in the coastal zone until the applicant certifies that the proposed activity complies with the State Coastal Zone Management program, and the State or its designated agency concurs with the certification (or the Secretary of Commerce overrides the States nonconcurrence).

(e) The *Fish and Wildlife Coordination Act*, 16 U.S.C. 661 *et seq.*, requires the Regional Administrator, before issuing a permit proposing or authorizing the impoundment (with certain exemptions), diversion, or other control or modification of any body of water, consult with the appropriate State agency exercising jurisdiction over wildlife resources to conserve these resources.

(f) *Executive orders* [Reserved]

**§ 144.5 Confidentiality of information.**

(a) In accordance with 40 CFR Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 CFR Part 2 (Public Information).

(b) Claims of confidentiality for the following information will be denied:

(1) The name and address of any permit applicant or permittee;

(2) Information which deals with the existence, absence, or level of contaminants in drinking water.

**§ 144.6 Classification of wells.**

Injection wells are classified as follows:

(a) *Class I.* (1) Wells used by generators of hazardous waste or owners or operators of hazardous waste management facilities to inject hazardous waste beneath the lowermost formation containing, within one-quarter mile of the well bore, an underground source of drinking water.

(2) Other industrial and municipal disposal wells which inject fluids beneath the lowermost formation containing, within one quarter mile of the well bore, an underground source of drinking water.

(b) *Class II.* Wells which inject fluids:

(1) Which are brought to the surface in connection with conventional oil or natural gas production and may be commingled with waste waters from gas plants which are an integal part of production operations, unless those waters are classified as a hazardous waste at the time of injection.

(2) For enhanced recovery of oil or natural gas; and

(3) For storage of hydrocarbons which are liquid at standard temperature and pressure.

(c) *Class III.* Wells which inject for extraction of minerals including:

(1) Mining of sulfur by the Frasch process;

(2) In situ production of uranium or other metals; this category includes only in-situ production from ore bodies which have not been conventionally mined. Solution mining of conventional mines such as stopes leaching is included n Class V.

(3) Solution mining of salts or potash.

(d) *Class IV.* (1) Wells used by generators of hazardous waste or of radioactive waste, by owners or operators of hazardous waste management facilities, or by owners or operators of radioactive waste disposal sites to dispose of hazardous waste or radioactive waste into a formation which within one-quarter (¼) mile of the well contains an underground source of drinking water.

(2) Wells used by generators of hazardous waste or of radioactive waste, by owners or operators of hazardous waste management facilities, or by owners or operators of radioactive waste disposal sites to dispose of hazardous waste or radioactive waste above a formation which within one-quarter (¼) mile of the well contains an underground source of drinking water.

(3) Wells used by generators of hazardous waste or owners or operators of hazardous waste management facilities to dispose of hazardous waste, which cannot be classified under paragraphs (a)(1) or (d) (1) and (2) of this section (e.g., wells used to dispose of hazardous waste into or above a formation which contains an aquifer which has been exempted pursuant to § 146.04).

(e) *Class V.* Injection wells not included in Classes I, II, III, or IV.

**§ 144.7 Identification of underground sources of drinking water and exempted aquifers.**

(a) The Director may identify (by narrative description, illustrations, maps, or other means) and shall protect, except where exempted under paragraph (b) of this section, as an underground source of drinking water all aquifers or parts of aquifers which meet the definition of an "underground source of drinking water" in § 144.3. Even if an aquifer has not been specifically identified by the Director, it is an underground source of drinking water if it meets the definition in § 144.3.

(b)(1) The Director may identify (by narrative description, illustrations, maps, or other means) and describe in geographic and/or geometric terms (such as vertical and lateral limits and gradient) which are clear and definite, all aquifers or parts thereof which the Director proposes to designate as exempted aquifers using the criteria in 40 CFR 146.04.

(2) No designation of an exempted aquifer submitted as part of a UIC Program shall be final until approved by the Administrator as part of a UIC program

(3) Subsequent to program approval or promulgation, the Director may, after notice and opportunity for a public hearing, identify additional exempted aquifers. For approved State programs exemption of aquifers identified (i) under § 146.04(b) shall be treated as a program revision under § 145.32; (ii) under § 146.04(c) shall become final if the State Director submits the exemption in writing to the Administrator and the Administrator has not disapproved the designation within 45 days. Any disapproval by the Administrator shall state the reasons and shall constitute final Agency action for purposes of judicial review.

(c)(1) For Class III wells, the Director shall require an applicant for a permit which necessitates an aquifer exemption under § 146.04(b)(1) to furnish the data necessary to demonstrate that the aquifer is expected to be mineral or hydrocarbon producing. Information contained in the mining plan for the proposed project, such as a map and general description of the mining zone, general information on the mineralogy and geochemistry of the mining zone, analysis of the amenability of the mining zone to the proposed mining method, and a time-table of planned development of the mining zone shall be considered by the Director in addition to the information required by § 144.31(g).

(2) For Class II wells, a demonstration of commercial producibility shall be made as follows:

(i) For a Class II well to be used for enhanced oil recovery processes in a field or project containing aquifers from which hydrocarbons were previously produced, commercial producibility shall be presumed by the Director upon a demonstration by the applicant of historical production having occurred in the project area or field.

(ii) For Class II wells not located in a field or project containing aquifers from which hydrocarbons were previously produced, information such as logs, core data, formation description, formation depth, formation thickness and formation parameters such as permeability and porosity shall be considered by the Director, to the extent such information is available.

**§ 144.8 Noncompliance and program reporting by the Director.**

The Director shall prepare quarterly and annual reports as detailed below. When the State is the permit-issuing authority, the State Director shall submit any reports required under this section to the Regional Administrator. When EPA is the permit-issuing authority, the Regional Administrator shall submit any report required under this section to EPA Headquarters.

(a) *Quarterly reports.* The Director shall submit quarterly narrative reports for major facilities as follows:

(1) *Format.* The report shall use the following format:

(i) Provide an alphabetized list of permittees. When two or more permittees have the same name, the lowest permit number shall be entered first.

(ii) For each entry on the list, include the following information in the following order:

(A) Name, location, and permit number of the noncomplying permittees.

(B) A brief description and date of each instance of noncompliance for that permittee. Instances of noncompliance may include one or more the kinds set forth in paragraph (a)(2) of this section. When a permittee has noncompliance of more than one kind, combine the information into a single entry for each such permittee.

(C) The date(s) and a brief description of the action(s) taken by the Director to ensure compliance.

(D) Status of the instance(s) of noncompliance with the date of the review of the status or the date of resolution.

(E) Any details which tend to explain or mitigate the instance(s) of noncompliance.

(2) *Instances of noncompliance to be reported.* Any instances of noncompliance within the following categories shall be reported in successive reports until the noncompliance is reported as resolved. Once noncompliance is reported as resolved it need not appear in subsequent reports.

(i) *Failure to complete construction elements.* When the permittee has failed to complete, by the date specified in the permit, an element of a compliance schedule involving either planning for construction or a construction step (for example, begin construction, attain operation level); and the permittee has not returned to compliance by accomplishing the required elements of the schedule within 30 days from the date a compliance schedule report is due under the permit.

(ii) *Modifications to schedules of compliance.* When a schedule of compliance in the permit has been modified under §§ 144.39 or 144.41 because of the permittee's noncompliance.

(iii) *Failure to complete or provide compliance schedule or monitoring reports.* When the permittee has failed to complete or provide a report required in a permit compliance schedule (for example, progress report or notice of noncompliance or compliance) or a monitoring report; and the permittee has not submitted the complete report within 30 days from the date it is due under the permit for compliance schedules, or from the date specified in the permit for monitoring reports.

(iv) *Deficient reports.* When the required reports provided by the permittee are so deficient as to cause misunderstanding by the Director and thus impede the review of the status of compliance.

(v) *Noncompliance with other permit requirements.* Noncompliance shall be reported in the following circumstances:

(A) Whenever the permittee has violated a permit requirement (other than reported under paragraph (a)(2)(i) or (ii) of this section), and has not returned to compliance within 45 days from the date reporting of noncompliance was due under the permit; or

(B) When the Director determines that a pattern of noncompliance exists for a major facility permittee over the most recent four consecutive reporting periods. This pattern includes any violation of the same requirement in two consecutive reporing periods, and any violation of one or more requirements in each of four consecutive reporting periods; or

(C) When the Director determines significant permit noncompliance or other significant event has occurred, such as a migration of fluids into a USDW.

(vi) *All other.* Statistical information shall be reported quarterly on all

other instances of noncompliance by major facilities with permit requirements not otherwise reported under paragraph (a) of this section.

(b) Annual reports—(1) *Annual noncompliance report.* Statistical reports shall be submitted by the Director on nonmajor UIC permittees indicating the total number reviewed, the number of noncomplying nonmajor permittees, the number of enforcement actions, and number of permit modifications extending compliance deadlines. The statistical information shall be organized to follow the types of noncompliance listed in paragraph (a) of this section.

(2) *For State-administered UIC Programs only.* In addition to the annual noncompliance report, the State Director shall:

(i) Submit each year a program report to the Administrator (in a manner and form prescribed by the Administrator) consisting of:

(A) A detailed description of the State's implementation of its program;

(B) Suggested changes, if any to the program description (see § 145.23(f)) which are necessary to reflect more accurately the State's progress in issuing permits;

(C) An updated inventory of active underground injection operations in the State.

(ii) In addition to complying with the requirements of paragraph (b)(2)(i) of this section, the Director shall provide the Administrator, on February 28th and August 31st of each of the first two years of program operation, the information required in 40 CFR 146.15, 146.25, and 146.35.

(c) *Schedule.* (1) For all quarterly reports. On the last working day of May, August, November, and February, the State Director shall submit to the Regional Administrator information concerning noncompliance with permit requirements by major facilities in the State in accordance with the following schedule. The Regional Administrator shall prepare and submit information for EPA-issued permits to EPA Headquarters in accordance with the same schedule.

QUARTERS COVERED BY REPORTS ON NONCOMPLIANCE BY MAJOR FACILITIES

(Date for completion of reports)

| | |
|---|---|
| January, February, and March | [1] May 31 |
| April, May, and June | [1] Aug. 31 |
| July, August, and September | [1] Nov. 30 |
| October, November, and December | [1] Feb. 28 |

[1] Reports must be made available to the public for inspection and copying on this date

(2) *For all annual reports.* The period for annual reports shall be for the calendar year ending December 31, with reports completed and available to the public no more than 60 days later.

## Subpart B—General Program Requirements

### § 144.11 Prohibition of unauthorized injection.

Any underground injection, except as authorized by permit or rule issued under the UIC program, is prohibited. The construction of any well required to have a permit is prohibited until the permit has been issued.

### § 144.12 Prohibition of movement of fluid into underground sources of drinking water.

(a) No owner or operator shall construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR Part 142 or may otherwise adversely affect the health of persons. The applicant for a permit shall have the burden of showing that the requirements of this paragraph are met.

(b) For Class I, II, and III wells, if any water quality monitoring of an underground source of drinking water indicates the movement of any contaminant into the underground source of drinking water, except as authorized under Part 146, the Director shall prescribe such additional requirements for construction, corrective action, operation, monitoring, or reporting (including closure of the injection well) as are necessary to prevent such movement. In the case of wells authorized by permit, these additional requirements shall be imposed by modifying the permit in accordance with § 144.39, or the permit may be terminated under § 144.40 if cause exists, or appropriate enforcement action may be taken if the permit has been violated. In the case of wells authorized by rule, see §§ 144.21-.24.

(c) For Class V wells, if at any time the Director learns that a Class V well may cause a violation of primary drinking water regulations under 40 CFR Part 142, he or she shall:

(1) Require the injector to obtain an individual permit;

(2) Order the injector to take such actions (including where required closure of the injection well) as may be necessary to prevent the violation; or

(3) Take enforcement action.

(d) Whenever the Director learns that a Class V well may be otherwise adversely affecting the health of persons, he or she may prescribe such actions as may be necessary to prevent the adverse effect, including any action authorized under paragraph (c) of this section.

(e) Notwithstanding any other provision of this section, the Director may take emergency action upon receipt of information that a contaminant which is present in or is likely to enter a public water system may present an imminent and substantial endangerment to the health of persons.

### § 144.13 Prohibition of class IV wells

[144.13 revised by 49 FR 20181, May 11, 1984]

(a) The following are prohibited, except as provided in paragraph (c) of this section:

(1) The construction of any Class IV well.

(2) The operation or maintenance of any Class IV well not in operation prior to July 18, 1980.

(3) The operation or maintenance of any Class IV well that was in operation prior to July 18, 1980, after six months following the effective date of a UIC program approved or promulgated for the state.

(4) Any increase in the amount of hazardous waste or change in the type of hazardous waste injected into a Class IV well.

(b) The owner or operator of a Class IV well shall comply with the requirements of § 144.14, and with the requirements of § 144.23 regarding closure of Class IV wells.

(c) Wells used to inject contaminated ground water that has been treated and is being reinjected into the same formation from which it was drawn are not prohibited by this section if such injection is approved by EPA pursuant to provisions for cleanup of releases under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. 9601–9657, or pursuant to requirements and provisions under the Resource Conservation and

Recovery Act (RCRA). 42 U.S.C. 6901–6987.

(d) Clarification. The following wells are not prohibited by this action:

(1) Wells used to inject hazardous waste into aquifers or portions thereof that have been exempted pursuant to § 146.4, if the exempted aquifer into which waste is injected underlies the lowermost formation containing a USDW. Such wells are Class I wells as specified in § 144.6(a)(1), and the owner or operator must comply with the requirements applicable to Class I wells.

(2) Wells used to inject hazardous waste where no USDW exists within one quarter mile of the well bore in any underground formation, provided that the Director determines that such injection is into a formation sufficiently isolated to ensure that injected fluids do not migrate from the injection zone. Such wells are Class I wells as specified in § 144.6(a)(1), and the owner or operator must comply with the requirements applicable to Class I wells.

**§ 144.14 Requirements for wells injecting hazardous waste.**

(a) *Applicability.* The regulations in this section apply to all generators of hazardous waste, and to the owners or operators of all hazardous waste management facilities, using any class of well to inject hazardous wastes accompanied by a manifest. (See also § 144.13.)

(b) *Authorization.* The owner or operator of any well that is used to inject hazardous waste required to be accompanied by a manifest or delivery document shall apply for authorization to inject as specified in § 144.31 within 6 months after the approval or promulgation of the State UIC program.

(c) *Requirements.* In addition to complying with the applicable requirements of this part and 40 CFR Part 146, the owner or operator of each facility meeting the requirements of paragraph (b) of this section, shall comply with the following:

(1) *Notification.* The owner or operator shall comply with the notification requirements of Section 3010 of Pub. L. 94-580.

(2) *Identification number.* The owner or operator shall comply with the requirements of 40 CFR 264.11.

(3) *Manifest system.* The owner or operator shall comply with the applicable recordkeeping and reporting requirements for manifested wastes in 40 CFR 264.71.

(4) *Manifest discrepancies.* The owner or operator shall comply with 40 CFR § 264.72.

(5) *Operating record.* The owner or operator shall comply with 40 CFR 264.73(a), (b)(1), and (b)(2).

(6) *Annual report.* The owner or operator shall comply with 40 CFR § 264.75.

(7) *Unmanifested waste report.* The owner or operator shall comply with 40 CFR § 264.75.

(8) *Personnel training.* The owner or operator shall comply with the applicable personnel training requirements of 40 CFR 264.16.

(9) *Certification of closure.* When abandonment is completed, the owner or operator must submit to the Director certification by the owner or operator and certification by an independent registered professional engineer that the facility has been closed in accordance with the specifications in § 144.52(a)(6).

(d) *Additional requirements for Class IV wells.* [Reserved]

**§ 144.15 Assessment of Class V wells.**

Assessment of Class V Wells. The Director shall, within three years of the approval of the program in a State submit a report and recommendations to EPA in compliance with § 146.52(b).

**§ 144.16 Waiver of requirement by Director.**

(a) *When injection does not occur into, through or above an underground source of drinking water,* the Director may authorize a well or project with less stringent requirements for area of review, construction, mechanical integrity, operation, monitoring, and reporting than requird in 40 CFR Part 146 or § 144.52 to the extent that the reduction in requirements will not result in an increased risk of movement of fluids into an underground source of drinking water.

(b) When injection occurs through or above an underground source of drinking water, but the radius of endangering influence when computed under § 146.06(a) is smaller or equal to the radius of the well, the Director may authorize a well or project with less stringent requirements for operation, monitoring, and reporting than required in 40 CFR Part 146 or § 144.52 to the extent that the reduction in requirements will not result in an increased risk of movement of fluids into an underground source of drinking water.

(c) When reducing requirements under paragraph (a) or (b) of this section, the Director shall prepare a fact sheet under § 124.8 explaining the reasons for the action.

## Subpart C—Authorization of Underground Injection by Rule

**§ 144.21 Existing Class I, II (except enhanced recovery and hydrocarbon storage) and III wells.**

Injection into existing Class I, II (except existing enhanced recovery and hydrocarbon storage), and III wells is authorized.

(a) *Duration.* The authorization under this section expires:

(1) Upon the effective date of the permit or permit denial, if a permit application has been filed in a timely manner as specified in § 144.31(c)(1);

(2) If a permit application has not been filed in a timely manner as specified in § 144.31(c)(1); or

(3)(i) For Class I and III wells.

(A) In approved State programs, five years after approval or promulgation of the UIC program unless a complete permit application is pending; or

(B) In EPA administered programs, one year after promulgation of the UIC program unless a complete permit application is pending.

(ii) For Class II wells except enhanced recovery and hydrocarbon storage, five years after approval or promulgation of the UIC program unless a complete permit application is pending.

[144.21(a)(3) revised by 49 FR 20181, May 11, 1984]

(b) *Class II and III wells in existing fields or projects.* Notwithstanding the prohibition in § 144.11, this section authorizes Class II and Class III wells or projects in existing fields or projects to continue normal operations until permitted, including construction, operation, and plugging and abandonment of wells as part of the operation, provided the owner or operator maintains compliance with all applicable requirements.

(c) *Requirements.* The owner or operator of a well authorized under this section shall comply with the applicable

requirements of § 144.28 and Part 147 of this chapter no later than one year after authorization.

[144.21(c) revised by 49 FR 20181, May 11, 1984]

**§ 144.22 Existing Class II enhanced recovery and hydrocarbon storage wells**

[144.22 revised by 49 FR 20181, May 11, 1984]

(a) Injection into existing Class II enhanced recovery and hydrocarbon storage wells is authorized for the life of the well or project.

(b) *Requirements.* The owner or operator of a well authorized under this section shall comply with the applicable requirements of § 144.28 and Part 147 of this chapter. Such owner or operator shall comply with the casing and cementing requirements no later than 3 years and other requirements no later than 1 year after authorization.

**§ 144.23 Class IV Wells.**

[144.23 revised by 49 FR 20181, May 11, 1984]

(a) Injection into existing Class IV wells is authorized for up to six months after approval or promulgation of the UIC Program. Such wells are subject to the requirements of § 144.13 and § 144.14(c).

(b) *Closure.* For EPA administered programs only.

(1) Prior to abandoning any Class IV well, the owner or operator shall plug or otherwise close the well in a manner acceptable to the Regional Administrator.

(2) Within 60 days after promulgation of the UIC program in the State, the owner or operator of a Class IV well shall submit to the Regional Administrator for approval a plan for plugging or otherwise closing and abandoning the well.

(3) The owner or operator of a Class IV well must notify the Regional Administrator of intent to abandon the well at least thirty days prior to abandonment.

**§ 144.24 Class V wells.**

Injection into Class V wells is authorized until further requirements under future regulations become applicable.

**§ 144.25 Requiring a permit.**

(a) The Director may require any Class I, II, III, or V injection well authorized by a rule to apply for and obtain an individual or area UIC permit. Cases where individual or area UIC permits may be required include:

(1) The injection well is not in compliance with any requirement of the rule;

NOTE: Any underground injection which violates any authorization by rule is subject to appropriate enforcement action.

(2) The injection well is not or no longer is within the category of wells and types of well operations authorized in the rule;

(3) The protection of USDWs requires that the injection operation be regulated by requirements, such as for corrective action, monitoring and reporting, or operation, which are not contained in the rule.

(4) When the injection well is a Class I, II (except existing enhanced recovery and hydrocarbon storage) or III well, in accordance with a schedule established by the Director pursuant to § 144.31(c).

[144.25(a)(4) added by 49 FR 20181, May 11, 1984]

(b) For EPA administered programs, the Regional Administrator may require an owner or operator authorized by a rule to apply for an individual or area UIC permit under this paragraph only if the owner or operator has been notified in writing that a permit application is required. The injection activities are no longer authorized by rule upon the effective date of a permit or a permit denial, or upon failure by the owner or operator to submit an application in a timely manner as specified in the notice. The notice shall include: a brief statement of the reasons for requiring a permit, an application form; a statement setting a time for the owner or operator to file the application; and a statement of the consequences of denial or issuance of the permit, or failure to submit an application, as described in this paragraph.

[144.25(b) revised by 49 FR 20181, May 11, 1984]

(c) Any owner or operator authorized by a rule may request to be excluded from the coverage of the rules by applying for an individual or area UIC permit. The owner or operator shall submit an application under § 144.31 with reasons supporting the request, to the Director. The Director may grant any such requests.

**§ 144.26 Inventory requirements.**

Owners or operators of all injection wells authorized by rule shall submit inventory information to the Director. Any authorization under this subpart automatically terminates for any owner or operator who fails to comply within the time specified in paragraph (c) of this section.

(a) *Contents.* As part of the inventory, the Director shall require and the owner/operator shall provide at least the following information:

(1) Facility name and location;

(2) Name and address of legal contact;

(3) Ownership of facility;

(4) Nature and type of injection wells; and

(5) Operating status of injection wells.

NOTE: This information is requested on national form "Inventory of Injection Wells." OMB No. 158-R0170.

[144.26(b) added by 49 FR 20181, May 11, 1984]

(b) *Additional contents.* For EPA administered programs only, the owner or operator of a well listed in paragraph (b)(1) of this section shall provide the information listed in paragraph (b)(2) of this section.

(1) This section applies to the following wells:

(i) Class II enhanced recovery wells;

(ii) Class IV wells;

(iii) The following Class V wells:

(A) Sand or other backfill wells [§ 146.5(e)(8)];

(B) Radioactive waste disposal wells [§ 146.5(e)(11)];

(C) Geothermal energy recovery wells [§ 146.5(e)(12)];

(D) Brine return flow wells [§ 146.5(e)(14)];

(E) Wells used in experimental technologies [§ 146.5(e)(15)];

(F) Municipal and industrial disposal wells other than Class I; and

(G) Any other Class V wells at the discretion of the Regional Administrator.

(2) The owner or operator of a well listed in paragraph (b)(1) shall provide a listing of all wells owned or operated setting forth the following information for each well. (A single description of wells at a single facility with substantially the same characteristics is acceptable).

(i) For Class II only, the field name(s).

(ii) Location of each well or project given by Township, Range, Section, and Quarter-Section, or by latitude and

longitude to the nearest second, according to the conventional practice in the State;

(iii) Date of completion of each well;

(iv) Identification and depth of the formation(s) into which each well is injecting;

(v) Total depth of each well;

(vi) Casing and cementing record, tubing size, and depth of packer;

(vii) Nature of the injected fluids;

(viii) Average and maximum injection pressure at the wellhead;

(ix) Average and maximum injection rate; and

(x) Date of the last mechanical integrity test, if any.

[Former 144.26(b) and (c) redesignated as (c) and (d) respectively, and new (d) revised by 49 FR 20181, May 11, 1984]

(c) *Notice.* Upon approval of the UIC Program in a State, the Director shall notify owners or operators of injection wells of their duty to submit inventory information. The method of notification selected by the Director must assure that the owners or operators will be made aware of the inventory requirement.

(d) *Deadlines.* (1) The owner or operator of an injection well shall submit inventory information no later than one year after the date of approval or effective date of the UIC program for the State. The Director need not require inventory information from any facility with interim status under RCRA.

(2) For EPA administered programs the information need not be submitted if a complete permit application is submitted within one year of the effective data of the UIC program. The owner or operator of Class IV well shall submit inventory information no later than 60 days after the effective date of the program.

**§ 144.27 Requiring other information.**

[144.27 added by 49 FR 20181, May 11, 1984]

(a) For EPA administered programs only, in addition to the inventory requirements of § 144.26, the Regional Administrator may require the owner or operator of any well authorized by rule under this subpart to submit information as deemed necessary by the Regional Administrator to determine whether a well may be endangering an underground source of drinking water in violation of § 144.12 of this Part.

(b) Such information requirements may include, but are not limited to:

(1) Performance of ground-water monitoring and the periodic submission of reports of such monitoring;

(2) An analysis of injected fluids, including periodic submission of such analyses; and

(3) A description of the geologic strata through and into which injection is taking place.

(c) Any request for information under this section shall be made in writing, and include a brief statement of the reasons for requiring the information. An owner or operator shall submit the information within the time period(s) provided in the notice.

Any authorization by rule under this subpart automatically terminates for any owner or operator who fails to comply with a request for information under this section.

**§ 144.28 Requirements for Class I, II, and III wells authorized by rule.**

[144.28 added by 49 FR 20181, May 11, 1984]

The following requirements apply to the owner or operator of a Class I, II, and III wells authorized by rule, as provided by §§ 144.21(c) and 144.22(b).

(a) The owner or operator shall comply with all applicable requirements of this Subpart and Subpart B of this part. Any noncompliance with these requirements constitutes a violation of the Safe Drinking Water Act and is grounds for enforcement action, except that the owner or operator need not comply with these requirements to the extent and for the duration such noncompliance is authorized by an emergency permit under § 144.34.

(b) *Twenty-four hour reporting.* The owner or operator shall report any noncompliance which may endanger health or the environment, including:

(1) Any monitoring or other information which indicates that any contaminant may cause an endangerment to a USDW; or

(2) Any noncompliance or malfunction of the injection system which may cause fluid migration into or between USDWs.

Any information shall be provided orally within 24 hours from the time the owner or operator becomes aware of the circumstances. A written submission shall also be provided within five days of the time the owner or operator becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

(c) *Plugging and abandonment plan.*

(1) The owner or operator shall prepare, maintain, and comply with a plan for plugging and abandonment of the well or project that meets the requirements of § 146.10 of this chapter and is acceptable to the Director. For purposes of this paragraph, temporary intermittent cessation of injection operations is not abandonment.

(2) For EPA administered programs:

(i) The owner or operator shall submit the plan, on a form provided by the Regional Administrator, no later than one year after the effective date of the UIC program in the state.

(ii) The owner or operator shall submit any proposed significant revision to the method of plugging reflected in the plan no later than the notice of plugging required by § 144.28(j)(2) (i.e., 45 days prior to plugging unless shorter notice is approved).

(iii) The plan shall include the following information:

(A) The nature and quantity and material to be used in plugging;

(B) The location and extent (by depth) of the plugs;

(C) Any proposed test or measurement to be made;

(D) The amount, size, and location (by depth) of casing to be left in the well;

(E) The method and location where casing is to be parted; and

(G) The estimated cost of plugging the well.

(iv) After a cessation of operations of two years the owner or operator shall plug and abandon the well in accordance with the plan unless he:

(A) Provides notice to the Regional Administrator;

(B) Describe actions or procedures, satisfactory to the Regional Administrator, that the owner or operator will take to ensure that the well will not endanger USDWs during the

period of temporary abandonment. These actions and procedures shall include compliance with the technical requirements applicable to active injection wells unless waived by the Regional Administrator.

(v) The owner or operator of any well that has been temporarily abandoned [ceased operations for more than two years and has met the requirements of paragraph (A) and (B) above] shall notify the Regional Administrator prior to resuming operation of the well.

(d) *Financial responsibility.* (1) The owner or operator of a Class I, II, or III well is required to maintain financial responsibility and resources to close, plug, and abandon the underground injection operation in a manner prescribed by the Director. The owner or operator shall show evidence of such financial responsibility to the Director by the submission of a surety bond, or other adequate assurance, such as a financial statement.

(2) For EPA administered programs the owner or operator shall submit such evidence no later than one year after the effective date of the UIC program in the State.

(3) For EPA administered programs the Regional Administrator may require the owner or operator to submit a revised demonstration of financial responsibility if the Regional Administrator has reason to believe that the original demonstration is no longer adequate to cover the cost of closing, plugging and abandoning the well.

(4) For EPA administered programs the owner or operator of a well injecting hazardous waste must comply with the financial responsibility requirements of Subpart F of this part.

(e) *Casing and cementing requirements.* For enhanced recovery and hydrocarbon storage wells:

(1) The owner or operator shall case and cement the well to prevent movement of fluids into or between underground sources of drinking water. In determining and specifying casing and cementing requirements, the following factors shall be considered:

(i) Depth to the injection zone;

(ii) Depth to the bottom of all USDWs; and

(iii) Estimated maximum and average injection pressures.

(2) In addition, in determining and specifying casing and cementing requirements the Director may consider information on:

(i) Nature of formation fluids;

(ii) Lithology of injection and confining zones;

(iii) External pressure, internal pressure, and axial loading;

(iv) Hole size;

(v) Size and grade of all casing strings; and

(vi) Class of cement.

(3) The requirements in paragraphs (1) and (2) of this paragraph need not apply if:

(i) Regulatory controls for casing and cementing existed at the time of drilling of the well and the well is in compliance with those controls; and

(ii) Well injection will not result in the movement of fluids into an underground source of drinking water so as to create a significant risk to the health of persons.

(4) When a State did not have regulatory controls for casing and cementing prior to the time of the submission of the State program to the Administrator, the Director need not apply the casing and cementing requirements in paragraph (e)(1) of this section if he submits as a part of his application for primacy, an appropriate plan for casing and cementing of existing, newly converted, and newly drilled wells in existing fields, and the Administrator approves the plan.

(f) *Operating requirements.* (1) Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited.

(2) For Class I wells, unless an alternative to a packer has been approved under § 146.12(c) of this chapter, the owner or operator shall fill the annulus between the tubing and the long string of casings with a fluid approved by the Director and maintain a pressure, also approved by the Director, on the annulus. For EPA administered programs, the owner or operator of a Class I well completed with tubing and packer shall fill the annulus between tubing and casing with a noncorrosive fluid and maintain a positive pressure on the annulus. For other Class I wells, the owner or operator shall insure that the alternative completion method will reliably provide a comparable level of protection to underground sources of drinking water.

(3) Injection pressure.

(i) For Class I and III wells:

(A) Except during stimulation, the owner or operator shall not exceed an injection pressure at the wellhead which shall be calculated so as to assure that the pressure during injection does not initiate new fractures or propagate existing fractures in the injection zone; and

(B) The owner or operator shall not inject at a pressure which will initiate fractures in the confining zone or cause the movement of injection or formation fluids into an underground source of drinking water.

(ii) For Class II wells:

(A) The owner or operator shall not exceed a maximum injection pressure at the wellhead which shall be calculated so as to assure that the pressure during injection does not initiate new fractures of propagate existing fractures in the confining zone adjacent to the USDWs; and

(B) The owner or operator shall not inject at a pressure which will cause the movement of injection or formation fluids into an underground source of drinking water.

(g) *Monitoring requirements.* The owner or operator shall perform the monitoring as described in this paragraph. For EPA administered programs, monitoring of the nature of the injected fluids shall comply with applicable analytical methods cited and described in Table I of 40 CFR 136.3 or in Appendix III of 40 CFR Part 261 or by other methods that have been approved by the Regional Administrator.

(1) The owner or operator of a Class I well shall:

(i) Analyze the nature of the injected fluids with sufficient frequency to yield data representative of their characteristics;

(ii) Install and use continuous recording devices to monitor injection pressure, flow rate and volume, and the pressure on the annulus between the tubing and the long string of casing;

(iii) Install and use monitoring wells within the area of review if required by the Director, to monitor any migration of fluids into and pressure in the underground sources of drinking water. The type, number and location of the wells, the parameters to be measured, and the frequency of monitoring must be approved by the Director.

[Sec. 144.28(g)(1)(iii)]

(2) For Class II wells:

(i) The owner or operator shall monitor the nature of the injected fluids with sufficient frequency to yield data representative of their characteristics. For EPA administered programs, this frequency shall be at least once within the first year of the authorization and thereafter when changes are made to the fluid.

(ii) The owner or operator shall observe the injection pressure, flow rate, and cumulative volume at least with the following frequencies:

(A) Weekly for produced fluid disposal operations;

(B) Monthly for enhanced recovery operations;

(C) Daily during the injection of liquid hydrocarbons and injection for withdrawal of stored hydrocarbons; and

(D) Daily during the injection phase of cyclic steam operations.

(iii) The owner or operator shall record one observation of injection pressure, flow rate and cumulative volume at reasonable intervals no greater than thirty days.

(iv) For enhanced recovery and hydrocarbon storage wells:

(A) The owner or operator shall demonstrate mechanical integrity pursuant to § 146.8 of this chapter at least once every five years during the life of the injection well.

(B) For EPA administered programs, the Regional Administrator by written notice may require the owner or operator to comply with a schedule describing when such demonstrations shall be made.

(C) For EPA administered programs, the owner or operator of any well required to be tested for mechanical integrity shall notify the Regional Administrator at least 30 days prior to any required mechanical integrity test. The Regional Administrator may allow a shorter notification period if it would be sufficient to enable EPA to witness the mechanical integrity testing if it chose. Notification may be in the form of a yearly or quarterly schedule of planned mechanical integrity tests, or it may be on an individual basis.

(v) The owner or operator of a hydrocarbon storage or enhanced recovery wells may monitor them by manifold monitoring on a field or project basis rather than on an individual well basis if such facilities consist of more than one injection well, operate with a common manifold, and provided the owner or operator demonstrates to the Director that manifold monitoring is comparable to individual well monitoring.

(3)(i) For Class III wells the owner or operator shall provide to the Director a qualitative analysis and ranges in concentrations of all constituents of injected fluids at least once within the first year of authorization and thereafter whenever the injection fluid is modified to the extent that the initial data are incorrect or incomplete. The owner or operator may request Federal confidentiality as specified in 40 CFR Part 2. If the information is proprietary the owner or operator may in lieu of the ranges in concentrations choose to submit maximum concentrations which shall not be exceeded. In such a case the owner or operator shall retain records of the undisclosed concentrations and provide them upon request to the Regional Administrator as part of any enforcement investigation; and

(ii) Monitor injection pressure and either flow rate or volume semi-monthly, or meter and record daily injected and produced fluid volumes as appropriate;

(iii) Monitor the fluid level in the injection zone semi-monthly, where appropriate;

(iv) All Class III wells may be monitored on a field or project basis rather than an individual well basis by manifold monitoring. Manifold monitoring may be used in cases of facilities consisting of more than one injection well, operating with a common manifold. Separate monitoring systems for each well are not required provided the owner or operator demonstrates to the Director that manifold monitoring is comparable to individual well monitoring.

(h) *Reporting requirements.* The owner or operator shall submit reports to the Director as follows:

(1) For Class I wells, quarterly reports on:

(i) The physical, chemical, and other relevant characteristics of the injection fluids;

(ii) Monthly average, maximum, and minimum values for injection pressure, flow rate and volume, and annular pressure;

(iii) The results from ground-water monitoring wells prescribed in paragraph (g)(1)(iii) of this section.

(iv) The results of any test of the injection well conducted by the owner or operator during the reported quarter if required by the Director; and

(v) Any well work over performed during the reported quarter.

(2) For Class II wells:

(i) An annual report to the Director summarizing the results of all monitoring, as required in paragraph (g)(2) of this section. Such summary shall include monthly records of injected fluids, and any major changes in characteristics or sources of injected fluids. Previously submitted information may be included by reference.

(ii) The owner or operator of hydrocarbon storage and enhanced recovery projects may report on a field or project basis rather than on an individual well basis where manifold monitoring is used.

(3) For Class III wells:

(i) Quarterly reporting on all monitoring, as required in paragraph (g)(3) of this section;

(ii) Quarterly reporting of the results of any periodic tests required by the Director that are performed during the reported quarter;

(iii) Monitoring may be reported on a project or field basis rather than an individual well basis where manifold monitoring is used.

(i) *Retention of records.* The owner or operator shall retain records of all monitoring information, including the following:

(1) Calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, and copies of all reports required by this section, for a period of at least three years from the date of the sample, measurement, or report. This period may be extended by request of the Director at any time; and

(2) The nature and composition of all injected fluids until three years after the completion of any plugging and abandonment procedures specified under § 144.52(1)(6). The Director may require the owner or operator to deliver the records to the Director at the conclusion of the retention period. For EPA administered programs, the owner or operator shall continue to retain the records after the three year retention period unless he delivers the records to

the Regional Administrator or obtains written approval from the Regional Administrator to discard the records.

(j) *Notice of abandonment.* (1) The owner or operator shall notify the Director, according to a time period required by the Director, before conversion or abandonment of the well.

(2) For EPA-administered programs, the owner or operator shall notify the Regional Administrator at least 45 days before plugging and abandonment. The Regional Administrator, at his discretion, may allow a shorter notice period.

(k) *Plugging and abandonment report.* For EPA-administered programs, within 60 days after plugging a well, or at the time of the next quarterly report (whichever is less) the owner or operator shall submit a report to the Regional Administrator. If the quarterly report is due less than 15 days before completion of plugging, then the report shall be submitted within 60 days. The report shall be certified as accurate by the person who performed the plugging operation. Such report shall consist of either:

(1) A statement that the well was plugged in accordance with the plan previously submitted to the Regional Administrator; or

(2) Where actual plugging differed from the plan previously submitted, an updated version of the plan, on the form supplied by the Regional Administrator, specifying the different procedures used.

(l) *Change of ownership.* For EPA administered programs, the owner or operator shall notify the Regional Administrator of a transfer of ownership of the well within 30 days of such transfer.

(m) *Requirements for Class I Hazardous Waste Wells.* The owner or operator of any Class I well injecting hazardous waste shall comply with § 144.14(c). In addition, for EPA-administered programs the owner or operator shall properly dispose of, or decontaminate by removing all hazardous waste residues, all injection well equipment.

## Subpart D—Authorization by Permit

### § 144.31 Application for a permit; authorization by permit

(a) *Permit application.* Except for owners or operators authorized by rule, all underground injections wells are prohibited unless authorized by permit. Persons currently authorized by rule must still apply for a permit under this section unless authorization was for the life of the well or project. Rules authorizing well injections for which permit applications have been submitted shall lapse for a particular well injection or project upon the effective date of the permit or permit denial for that well injection or project. Procedures for applications, issuance and administration of emergency permits are found exclusively in § 144.34.

(b) *Who applies?* When a facility or activity is owned by one person but is operated by another person, it is the operator's duty to obtain a permit.

(c) *Time to apply.* Any person who performs or proposes an underground injection for which a permit is or will be required shall submit an application to the Director in accordance with the UIC program as follows:

(1) For existing wells, as expeditiously as practicable and in accordance with the schedule in any program description under § 145.23(f) or (for EPA administered programs) on a schedule established by the Regional Administrator, but no later than 4 years from the approval or promulgation of the UIC program, or as required under § 144.14(b) for wells injecting hazardous waste. For EPA administered programs the owner or operator of Class I or III wells shall submit a complete permit application no later than 1 year after the effective date of the program.

[144.31(c)(1) revised by 49 FR 20181, May 11, 1984]

(2) For new injection wells, except new wells in projects authorized under § 144.21(b) or covered by an existing area permit under § 144.33(c), a reasonable time before construction is expected to begin.

(d) *Completeness.* The Director shall not issue a permit before receiving a complete application for a permit except for emergency permits. An application for a permit is complete when the Director receives an application form and any supplemental information which are completed to his or her satisfaction. The completeness of any application for a permit shall be judged independently of the status of any other permit application or permit for the same facility or activity. For EPA-administered programs, an application which is reviewed under § 124.3 is complete when the Director receives either a complete application or the information listed in a notice of deficiency.

(e) *Information requirements.* All applicants for permits shall provide the following information to the Director, using the application form provided by the Director.

(1) The activities conducted by the applicant which require it to obtain permits under RCRA, UIC, the National Pollution Discharge Elimination system (NPDES) program under the Clean Water Act, or the Prevention of Significant Deterioration (PSD) program under the Clean Air Act.

(2) Name, mailing address, and location of the facility for which the application is submitted.

(3) Up to four SIC codes which best reflect the principal products or services provided by the facility.

(4) The operator's name, address, telephone number, ownership status, and status as Federal, State, private, public, or other entity.

(5) Whether the facility is located on Indian lands.

(6) A listing of all permits or construction approvals received or applied for under any of the following programs:

(i) Hazardous Waste Management program under RCRA.

(ii) UIC program under SDWA.

(iii) NPDES program under CWA.

(iv) Prevention of Significant Deterioration (PSD) program under the Clean Air Act.

(v) Nonattainment program under the Clean Air Act.

(vi) National Emission Standards for Hazardous Pollutants (NESHAPS) preconstruction approval under the Clean Air Act.

(vii) Ocean dumping permits under the Marine Protection Research and Sanctuaries Act.

(viii) Dredge and fill permits under section 404 of CWA.

(ix) Other relevant environmental permits, including State permits.

(7) A topographic map (or other map if a topographic map is unavailable) extending one mile beyond the property boundaries of the source depicting the facility and each of its intake and discharge structures; each of its hazardous waste treatment, storage, or disposal facilities; each well where fluids from the facility are injected underground; and those wells, springs, and other surface water bodies, and drinking water wells listed in public records or otherwise known to the ap-

[Sec. 144.31(e)(7)]

plicant within a quarter mile of the facility property boundary.

(8) A brief description of the nature of the business.

(9) For EPA-administered programs, the applicant shall identify and submit on a list with the permit application the names and addresses of all owners of record of land within one-quarter mile of the facility boundary. This requirement may be waived by the Regional Administrator where the site is located in a populous area and the Regional Administrator determines that the requirement would be impracticable.

[144.31(c)(9) added by 49 FR 20181, May 11, 1984]

(f) *Recordkeeping.* Applicants shall keep records of all data used to complete permit applications and any supplemental information submitted under § 144.31 for a period of at least 3 years from the date the application is signed.

(g) Contents of UIC application. [Reserved]

**§ 144.32 Signatories to permit applications and reports.**

(a) *Applications.* All permit applications, except those submitted for Class II wells (see paragraph (b) of this section), shall be signed as follows:

(1) *For a corporation:* by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decisionmaking functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

Note.—EPA does not require specific assignments or delegations of authority to responsible corporate officers identified in § 144.32(a)(1)(i). The Agency will presume that these responsible corporate officers have the requisite authority to sign permit applications unless the corporation has notified the Director to the contrary. Corporate procedures governing authority to sign permit applications may provide for assignment or delegation to applicable corporate positions under § 144.32(a)(1)(ii) rather than to specific individuals.

[144.32(a)(1) revised by 48 FR 39619, September 1, 1983]

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) *For a municipality, State, Federal, or other public agency:* by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes: (i) The chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

[144.32(a)(3) revised by 48 FR 39619, September 1, 1983]

(b) *Reports.* All reports required by permits, other information requested by the Director, and all permit applications submitted for Class II wells under § 144.31 shall be signed by a person described in paragraph (a) of this section, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described in paragraph (a) of this section;

(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); and

(3) The written authorization is submitted to the Director.

(c) *Changes to authorization.* If an authorization under paragraph (b) 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 (b) of this section must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

(d) *Certification.* Any person signing a document under paragraph (a) or (b) of this section shall make the following certification:

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

(d) *Certification.* Any person signing a document under paragraphs (a) or (b) of this section shall make the following certification:

I certify under 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 submitted 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.

[The second 144.32(d) was added by 48 FR 39619, September 1, 1983]

**§ 144.33 Area permits.**

(a) The Director may issue a permit on an area basis, rather than for each well individually, provided that the permit is for injection wells:

(1) Described and identified by location in permit application(s) if they are existing wells, except that the Director may accept a single description of wells with substantially the same characteristics;

(2) Within the same well field, facility site, reservoir, project, or similar unit in the same State;

(3) Operated by a single owner or operator; and

(4) Used to inject other than hazardous waste.

(b) Area permits shall specify:

(1) The area within which underground injections are authorized, and

(2) The requirements for construction, monitoring, reporting, operation, and abandonment, for all wells authorized by the permit.

(c) The area permit may authorize the permittee to construct and operate, convert, or plug and abandon

wells within the permit area provided:

(1) The permittee notifies the Director at such time as the permit requires;

(2) The additional well satisfies the criteria in paragraph (a) of this section and meets the requirements specified in the permit under paragraph (b) of this section; and

(3) The cumulative effects of drilling and operation of additional injection wells are considered by the Director during evaluation of the area permit application and are acceptable to the Director.

(d) If the Director determines that any well constructed pursuant to paragraph (c) of this section does not satisfy any of the requirements of paragraphs (c)(1) and (c)(2) of this section the Director may modify the permit under § 144.39, terminate under § 144.40, or take enforcement action. If the Director determines that cumulative effects are unacceptable, the permit may be modified under § 144.39.

**§ 144.34 Emergency permits.**

(a) *Coverage.* Notwithstanding any other provision of this Part or Part 124, the Director may temporarily permit a specific underground injection if:

[144.34 introductory paragraph amended by 49 FR 20181, May 11, 1984]

(1) An imminent and substantial endangerment to the health of persons will result unless a temporary emergency permit is granted; or

(2) A substantial and irretrievable loss of oil or gas resources will occur unless a temporary emergency permit is granted to a Class II well; and

(i) Timely application for a permit could not practicably have been made; and

(ii) The injection will not result in the movement of fluids into underground sources of drinking water; or

(3) A substantial delay in production of oil or gas resources will occur unless a temporary emergency permit is granted to a new Class II well and the temporary authorization will not result in the movement of fluids into an underground source of drinking water.

(b) *Requirements for issuance.* (1) Any temporary permit under paragraph (a)(1) of this section shall be for no longer term than required to prevent the hazard.

(2) Any temporary permit under paragraph (a)(2) of this section shall be for no longer than 90 days, except that if a permit application has been submitted prior to the expiration of the 90-day period, the Director may extend the temporary permit until final action on the application.

(3) Any temporary permit under paragraph (a)(3) of this section shall be issued only after a complete permit application has been submitted and shall be effective until final action on the application.

(4) Notice of any temporary permit under this paragraph shall be published in accordance with § 124.11 within 10 days of the issuance of the permit.

(5) The temporary permit under this section may be either oral or written. If oral, it must be followed within 5 calendar days by a written temporary emergency permit.

(6) The Director shall condition the temporary permit in any manner he or she determines is necessary to ensure that the injection will not result in the movement of fluids into an underground source of drinking water.

**§ 144.35 Effect of a permit.**

(a) Except for Class II and III wells, compliance with a permit during its term constitutes compliance, for purposes of enforcement, with Part C of the SDWA. However, a permit may be modified, revoked and reissued, or terminated during its term for cause as set forth in §§ 144.39 and 144.40.

(b) The issuance of a permit does not convey any property rights of any sort, or any exclusive privilege.

(c) The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

**§ 144.36 Duration of permits.**

(a) Permits for Class I and Class V wells shall be effective for a fixed term not to exceed 10 years. UIC permits for Class II and III wells shall be issued for a period up to the operating life of the facility. The Director shall review each issued Class II or III well UIC permit at least once every 5 years to determine whether it should be modified, revoked and reissued, terminated, or a minor modification made as provided in §§ 144.39, 144.40, and 144.41.

(b) Except as provided in § 144.37, the term of a permit shall not be extended by modification beyond the maximum duration specified in this section.

(c) The Director may issue any permit for a duration that is less than the full allowable term under this section.

**§ 144.37 Continuation of expiring permits.**

(a) *EPA permits.* When EPA is the permit-issuing authority, the conditions of an expired permit continue in force under 5 U.S.C. 558(c) until the effective date of a new permit if:

(1) The permittee has submitted a timely application which is a complete application for a new permit; and

(2) The Regional Administrator, through no fault of the permittee does not issue a new permit with an effective date on or before the expiration date of the previous permit (for example, when issuance is impracticable due to time or resource constraints).

(b) *Effect.* Permits continued under this section remain fully effective and enforceable.

(c) *Enforcement.* When the permittee is not in compliance with the conditions of the expiring or expired permit the Regional Administrator may choose to do any or all of the following:

(1) Initiate enforcement action based upon the permit which has been continued;

(2) Issue a notice of intent to deny the new permit. If the permit is denied, the owner or operator would then be required to cease the activities authorized by the continued permit or be subject to enforcement action for operating without a permit;

(3) Issue a new permit under Part 124 with appropriate conditions; or

(4) Take other actions authorized by these regulations.

(d) *State continuation.* An EPA issued permit does not continue in force beyond its time expiration date under Federal law if at that time a State is the permitting authority. A State authorized to administer the UIC program may continue either EPA or State-issued permits until the effective date of the new permits, if State law allows. Otherwise, the facility or activity is operating without a permit from the time of expiration of the old permit to the effective date of the State-issued new permit.

**§ 144.38 Transfer of permits.**

(a) *Transfers by modification.* Except as provided in paragraph (b) of this section, a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued (under § 144.39(b)(2)), or a minor modification made (under § 144.41(d)) to identify the new permittee and incorporate such other requirements as may be necessary under the Safe Drinking Water Act.

(b) *Automatic transfers.* As an alternative to transfers under paragraph (a) of this section, any UIC permit for a well not injecting hazardous waste may be automatically transferred to a new permittee if:

(1) The current permittee notifies the Director at least 30 days in advance of the proposed transfer date referred to in paragraph (b)(2) of this section;

(2) The notice includes a written agreement between the existing and new permittees containing a specific date for transfer or permit responsibility, coverage, and liability between them, and the notice demonstrates that the financial responsibility requirements of § 144.52(a)(7) will be met by the new permittee; and

(3) The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify or revoke and reissue the permit. A modification under this paragraph may also be a minor modification under § 144.41. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph (b)(2) of this section.

**§ 144.39 Modification or revocation and reissuance of permits.**

When the Director receives any information (for example, inspects the facility, receives information submitted by the permittee as required in the permit (see § 144.51 of this chapter), receives a request for modification or revocation and reissuance under § 124.5, or conducts a review of the permit file) he or she may determine whether or not one or more of the causes listed in paragraphs (a) and (b) of this section for modification or revocation and reissuance or both exist. If cause exists, the Director may modify or revoke and reissue the permit accordingly, subject to the limitations of paragraph (c) of this section, and may request an updated application if necessary. When a permit is modified, only the conditions subject to modification are reopened. If a permit is revoked and reissued, the entire permit is reopened and subject to revision and the permit is reissued for a new term. See § 124.5(c)(2) of this chapter. If cause does not exist under this section or § 144.41 of this chapter, the Director shall not modify or revoke and reissue the permit. If a permit modification satisfies the criteria in § 144.41 for "minor modifications" the permit may be modified without a draft permit or public review. Otherwise, a draft permit must be prepared and other procedures in Part 124 must be followed.

(a) *Causes for modification.* The following are causes for modification. For Class II or III wells the following may be causes for revocation and reissuance as well as modification; and for all other wells the following may be cause for revocation or reissuance as well as modification when the permittee requests or agrees.

(1) *Alterations.* There are material and substantial alterations or additions to the permitted facility or activity which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit.

(2) *Information.* The Director has received information. Permits other than for Class II and III wells may be modified during their terms for this cause only if the information was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and would have justified the application of different permit conditions at the time of issuance. For UIC area permits (§ 144.33), this cause shall include any information indicating that cumulative effects on the environment are unacceptable.

(3) *New regulations.* The standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued. Permits other than for Class II or III wells may be modified during their terms for this cause only as follows:

(i) For promulgation of amended standards or regulations, when:

(A) The permit condition requested to be modified was based on a promulgated Part 146 regulation; and

(B) EPA has revised, withdrawn, or modified that portion of the regulation on which the permit condition was based, and

(C) A permittee requests modification in accordance with § 124.5 within ninety (90) days after FEDERAL REGISTER notice of the action on which the request is based.

(ii) For judicial decisions, a court of competent jurisdiction has remanded and stayed EPA promulgated regulations if the remand and stay concern that portion of the regulations on which the permit condition was based and a request is filed by the permittee in accordance with § 124.5 within ninety (90) days of judicial remand.

(4) *Compliance schedules.* The Director determines good cause exists for modification of a compliance schedule, such as an act of God, strike, flood, or materials shortage or other events over which the permittee has little or no control and for which there is no reasonably available remedy. See also § 144.41(c) (minor modifications).

(b) *Causes for modification or revocation and reissuance.* The following are causes to modify or, alternatively, revoke and reissue a permit:

(1) Cause exists for termination under § 144.40, and the Director determines that modification or revocation and reissuance is appropriate.

(2) The Director has received notification (as required in the permit, see § 144.41(d)) of a proposed transfer of the permit. A permit also may be modified to reflect a transfer after the effective date of an automatic transfer (§ 144.38(b)) but will not be revoked and reissued after the effective date of the transfer except upon the request of the new permittee.

(c) *Facility siting.* Suitability of the facility location will not be considered at the time of permit modification or revocation and reissuance unless new information or standards indicate that a threat to human health or the environment exists which was unknown at the time of permit issuance.

**§ 144.40 Termination of permits.**

(a) The Director may terminate a permit during its term, or deny a permit renewal application for the following causes:

(1) Noncompliance by the permittee with any condition of the permit;

(2) The permittee's failure in the application or during the permit issuance process to disclose fully all relevant facts, or the permittee's misrepresentation of any relevant facts at any time; or

(3) A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination;

(b) The Director shall follow the applicable procedures in Part 124 in terminating any permit under this section.

**§ 144.41 Minor modifications of permits.**

Upon the consent of the permittee, the Director may modify a permit to make the corrections or allowances for changes in the permitted activity listed in this section, without following the procedures of Part 124. Any permit modification not processed as a minor modification under this section must be made for cause and with Part 124 draft permit and public notice as required in § 144.39. Minor modifications may only:

(a) Correct typographical errors;

(b) Require more frequent monitoring or reporting by the permittee;

(c) Change an interim compliance date in a schedule of compliance, provided the new date is not more than 120 days after the date specified in the existing permit and does not interfere with attainment of the final compliance date requirement; or

(d) Allow for a change in ownership or operational control of a facility where the Director determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittees has been submitted to the Director.

(e) Change quantities or types of fluids injected which are within the capacity of the facility as permitted and, in the judgment of the Director, would not interfere with the operation of the facility or its ability to meet conditions described in the permit and would not change its classification.

(f) Change construction requirements approved by the Director pursuant to § 144.52(a)(1) (establishing UIC permit conditions), provided that any such alteration shall comply with the requirements of this part and Part 146.

(g) Amend a plugging and abandonment plan which has been updated under § 144.52(a)(6).

## Subpart E—Permit Conditions

**§ 144.51 Conditions applicable to all permits.**

The following conditions apply to all UIC permits. All conditions applicable to all permits shall be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to these regulations (or the corresponding approved State regulations) must be given in the permit.

(a) *Duty to comply.* The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Safe Drinking Water Act 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 § 144.34.

(b) *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.

(c) *Need to halt or reduce activity not a defense.* It shall not be a defense for a 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.

(d) *Duty to mitigate.* The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.

(e) *Proper operation and maintenance.* The permittee shall 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 the permit.

(f) *Permit actions.* This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

(g) *Property rights.* This permit does not convey any property rights of any sort, or any exclusive privilege.

(h) *Duty to provide information.* The permittee shall furnish to the Director, within a time specified, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

(i) *Inspection and entry.* The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

(1) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

(2) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

(3) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(4) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the SDWA, any substances or parameters at any location.

(j) *Monitoring and records.* (1) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(2) The permittee shall retain records of all monitoring information, including the following:

(i) 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 the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of the Director at any time; and

(ii) The nature and composition of all injected fluids until three years after the completion of any plugging and abandonment procedures specified under § 144.52(a)(6). The Director may require the owner or operator to deliver the records to the Director at the conclusion of the retention period. For EPA administered programs, the owner or operator shall continue to retain the records after the three year retention period unless he delivers the records to the Regional Administrator or obtains written approval from the Regional Administrator to discard the records.

[144.51(j)(2)(ii) revised by 49 FR 20181, May 11, 1984]

(3) Records of monitoring information shall include:

(i) The date, exact place, and time of sampling or measurements;

(ii) The individual(s) who performed the sampling or measurements;

(iii) The date(s) analyses were performed;

(iv) The individual(s) who performed the analyses;

(v) The analytical techniques or methods used; and

(vi) The results of such analyses.

(k) *Signatory requirement.* All applications, reports, or information submitted to the Administrator shall be signed and certified. (See § 144.32.)

(l) *Reporting requirements.* (1) *Planned changes.* The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility.

(2) *Anticipated noncompliance.* The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(3) *Transfers.* This permit is not transferable to any person except after notice to the Director. 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 Safe Drinking Water Act. (See § 144.38; in some cases, modification or revocation and reissuance is mandatory.)

(4) *Monitoring reports.* Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(5) *Compliance schedules.* Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 30 days following each schedule date.

(6) *Twenty-four hour reporting.* The permittee shall report any noncompliance which may endanger health or the environment, including:

(i) Any monitoring or other information which indicates that any contaminant may cause an endangerment to a USDW; or

(ii) Any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between USDWs.

Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

(7) *Other noncompliance.* The permittee shall report all instances of noncompliance not reported under paragraphs (l) (4), (5), and (6) of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph (l)(6) of this section.

(8) *Other information.* Where 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 the Director, it shall promptly submit such facts or information.

(m) *Requirements prior to commencing injection.* Except for all new wells authorized by an area permit under § 144.33(c), a new injection well may not commence injection until construction is complete, and

(1) The permittee has submitted notice of completion of construction to the Director; and

(2)(i) The Director has inspected or otherwise reviewed the new injection well and finds it is in compliance with the conditions of the permit; or

(ii) The permittee has not received notice form the Director of his or her intent to inspect or otherwise review the new injection well within 13 days of the date of the notice in paragraph (m)(1) of this section, in which case prior inspection or review is waived and the permittee may commence injection. The Director shall include in his notice a reasonable time period in which he shall inspect the well.

(n) The permittee shall notify the Director at such times as the permit requires before conversion or abandonment of the well or in the case of area permits before closure of the project.

[144.51(o) and (p) added by 49 FR 20181, May 11, 1984]

(o) *Plugging and abandonment report.* For EPA-administered programs, within 60 days after plugging a well or at the time of the next quarterly report (whichever is less) the owner or operator shall submit a report to the Regional Administrator. If the quarterly report is due less than 15 days before completion of plugging, then the report shall be submitted within 60 days. The report shall be certified as accurate by the person who performed the plugging operation. Such report shall consist of either:

(1) A statement that the well was plugged in accordance with the plan previously submitted to the Regional Administrator; or

(2) Where actual plugging differed from the plan previously submitted, and updated version of the plan on the form supplied by the regional administrator, specifying the differences.

(p) *Mechanical integrity demonstrations.* For EPA administered

programs, the Regional Administrator by written notice may require the owner or operator to comply with a schedule describing when such demonstrations shall be made.

**§ 144.52 Establishing permit conditions.**

(a) In addition to conditions required in § 144.51, the Director shall establish conditions, as required on a case-by-case basis under § 144.36, (duration of permits), § 144.53(a) (schedules of compliance), § 144.54 (monitoring), and for EPA permits only § 144.53(b) (alternate schedules of compliance) and § 144.4 (considerations under Federal law). In addition, each permit shall include conditions meeting the following requirements, when applicable.

(1) *Construction requirements* as set forth in Part 146. Existing wells shall achieve compliance with such requirements according to a compliance schedule established as a permit condition. The owner or operator of a proposed new injection well shall submit plans for testing, drilling, and construction as part of the permit application. Except as authorized by an area permit, no construction may commence until a permit has been issued containing construction requirements (see §144.11). New wells shall be in compliance with these requirements prior to commencing injection operations. Changes in construction plans during construction may be approved by the Administrator as minor modifications (§ 144.41). No such changes may be physically incorporated into construction of the well prior to approval of the modification by the Director.

(2) *Corrective action* as set forth in § 144.55 and § 146.7

(3) *Operation requirements* as set forth in 40 CFR Part 146; the permit shall establish any maximum injection volumes and/or pressures necessary to assure that fractures are not initiated in the confining zone, that injected fluids do not migrate into any underground source of drinking water, that formation fluids are not displaced into any underground source of drinking water, and to assure compliance with the Part 146 operating requirements.

(4) *Requirements for wells managing hazardous waste*, as set forth in § 144.14.

[144.52(a)(5)–(7) revised by 49 FR 20181, May 11, 1984]

(5) Monitoring and reporting requirements as set forth in 40 CFR Part 146. The permittee shall be required to identify types of tests and methods used to generate the monitoring data. For EPA administered programs, monitoring of the nature of injected fluids shall comply with applicable analytical methods cited and described in Table I of 40 CFR 136.3 or in Appendix III of 40 CFR Part 261 or in certain circumstances by other methods that have been approved by the Regional Administrator.

(6) After a cessation of operations of two years the owner or operator shall plug and abandon the well in accordance with the plan unless he:

(i) Provides notice to the Regional Administrator;

(ii) Describes actions or procedures, satisfactory to the Regional Administrator, that the owner or operator will take to ensure that the well will not endanger USDWs during the period of temporary abandonment. These actions and procedures shall include compliance with the technical requirements applicable to active injection wells unless waived by the Regional Administrator.

(7) *Financial responsibility*. The permittee is required to maintain financial responsibility and resources to close, plug, and abandon the underground injection operation in a manner prescribed by the Director. The permittee shall show evidence of such financial responsibility to the Director by the submission of a surety bond, or other adequate assurance, such as financial statements or other materials acceptable to the Director. For EPA administered programs, the Regional Administrator may on a periodic basis require the holder of a lifetime permit to submit an estimate of the resources needed to plug and abandon the well revised to reflect inflation of such costs, and a revised demonstration of financial responsibility if necessary. The owner or operator of a well injecting hazardous waste must comply with the financial responsibility requirements of Subpart F of this part.

(8) *Mechanical integrity*. A permit for any Class I, II or III well or injection project which lacks mechanical integrity shall include, and for any Class V well may include, a condition prohibiting injection operations until the permittee shows to the satisfaction of the Director under § 146.08 that the well has mechanical integrity.

(9) *Additional conditions*. The Director shall impose on a case-by-case basis such additional conditions as are necessary to prevent the migration of fluids into underground sources of drinking water.

(b)(1) In addition to conditions required in all permits the Director shall establish conditions in permits as required on a case-by-case basis, to provide for and assure compliance with all applicable requirements of the SDWA and Parts 144, 145, 146 and 124.

(2) For a State issued permit, an applicable requirement is a State statutory or regulatory requirement which takes effect prior to final administrative disposition of the permit. For a permit issued by EPA, an applicable requirement is a statutory or regulatory requirement (including any interim final regulation) which takes effect prior to the issuance of the permit (except as provided in § 124.86(c) for UIC permits being processed under Subparts E or F of Part 124). Section 124.14 (reopening of comment period) provides a means for reopening EPA permit proceedings at the discretion of the Director where new requirements become effective during the permitting process and are of sufficient magnitude to make additional proceedings desirable. For State and EPA administered programs, an applicable requirement is also any requirement which takes effect prior to the modification or revocation and reissuance of a permit, to the extent allowed in § 144.39.

(3) New or reissued permits, and to the extent allowed under § 144.39 modified or revoked and reissued permits, shall incorporate each of the applicable requirements referenced in § 144.52.

(c) *Incorporation*. All permit conditions shall be incorporated either expressly or by reference. If incorporated by reference, a specific citation to the applicable regulations or requirements must be given in the permit.

§ 144.53 Schedule of compliance.

(a) *General.* The permit may, when appropriate, specify a schedule of compliance leading to compliance with the SDWA and Parts 144, 145, 146, and 124.

(1) *Time for compliance.* Any schedules of compliance shall require compliance as soon as possible and in no case later than 3 years after the effective date of the permit.

(2) *Interim dates.* Except as provided in paragraph (b)(1)(ii) of this section, if a permit establishes a schedule of compliance which exceeds 1 year from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievement.

(i) The time between interim dates shall not exceed 1 year.

(ii) If the time necessary for completion of any interim requirement is more than 1 year and is not readily divisible into stages for completion, the permit shall specify interim dates for the submission of reports of progress toward completion of the interim requirements and indicate a projected completion date.

(3) *Reporting.* The permit shall be written to require that if paragraph (a)(1) of this section is applicable, progress reports be submitted no later than 30 days following each interim date and the final date of compliance.

(b) *Alternative schedules of compliance.* A permit applicant or permittee may cease conducting regulated activities (by plugging and abandonment) rather than continue to operate and meet permit requirements as follows:

(1) If the permittee decides to cease conducting regulated activities at a given time within the term of a permit which has already been issued:

(i) The permit may be modified to contain a new or additional schedule leading to timely cessation of activities; or

(ii) The permittee shall cease conducting permitted activities before noncompliance with any interim or final compliance schedule requirement already specified in the permit.

(2) If the decision to cease conducting regulated activities is made before issuance of a permit whose term will include the termination date, the permit shall contain a schedule leading to termination which will ensure timely compliance with applicable requirements.

(3) If the permittee is undecided whether to cease conducting regulated activities, the Director may issue or modify a permit to contain two schedules as follows:

(i) Both schedules shall contain an identical interim deadline requiring a final decision on whether to cease conducting regulated activities no later than a date which ensures sufficient time to comply with applicable requirements in a timely manner if the decision is to continue conducting regulated activities;

(ii) One schedule shall lead to timely compliance with applicable requirements;

(iii) The second schedule shall lead to cessation of regulated activities by a date which will ensure timely compliance with applicable requirements;

(iv) Each permit containing two schedules shall include a requirement that after the permittee has made a final decision under paragraph (b)(3)(i) of this section it shall follow the schedule leading to compliance if the decision is to continue conducting regulated activities, and follow the schedule leading to termination if the decision is to cease conducting regulated activities.

(4) The applicant's or permittee's decision to cease conducting regulated activities shall be evidenced by a firm public commitment satisfactory to the Director, such as a resolution of the board of directors of a corporation.

§ 144.54 Requirements for recording and reporting of monitoring results.

All permits shall specify:

(a) Requirements concerning the proper use, maintenance, and installation, when appropriate, of monitoring equipment or methods (including biological monitoring methods when appropriate);

(b) Required monitoring including type, intervals, and frequency sufficient to yield data which are representative of the monitored activity including when appropriate, continuous monitoring;

(c) Applicable reporting requirements based upon the impact of the regulated activity and as specified in Part 146. Reporting shall be no less frequent than specified in the above regulations.

§ 144.55 Corrective action.

(a) *Coverage.* Applicants for Class I, II, (other than existing), or III injection well permits shall identify the location of all known wells within the injection well's area of review which penetrate the injection zone, or in the case of Class II wells operating over the fracture pressure of the injection formation, all known wells within the area of review penetrating formations affected by the increase in pressure. For such wells which are improperly sealed, completed, or abandoned, the applicant shall also submit a plan, consisting of such steps or modifications as are necessary to prevent movement of fluid into underground sources of drinking water ("corrective action"). Where the plan is adequate, the Director shall incorporate it into the permit as a condition. Where the Director's review of an application indicates that the permittee's plan is inadequate (based on the factors in § 146.07), the Director shall require the applicant to revise the plan, prescribe a plan for corrective action as a condition of the permit under paragraph (b) of this section, or deny the application. The Director may disregard the provisions of § 146.06 (Area of Review) and § 146.07 (Corrective Action) when reviewing an application to permit an existing Class II well.

(b) *Requirements.*—(1) *Existing injection wells.* Any permit issued for an existing injection well (other than Class II) requiring corrective action shall include a compliance schedule requiring any corrective action accepted or prescribed under paragraph (a) of this section to be completed as soon as possible.

(2) *New injection wells.* No owner or operator of a new injection well may begin injection until all required corrective action has been taken.

(3) *Injection pressure limitation.* The Director may require as a permit condition that injection pressure be so limited that pressure in the injection zone does not exceed hydrostatic pressure at the site of any improperly completed or abandoned well within the area of review. This pressure limitation shall satisfy the corrective action requirement. Alternatively, such injection pressure limitation can be part of a compliance schedule and last until all other required corrective action has been taken.

(4) *Class III Wells only.* When setting corrective action requirements

the Director shall consider the overall effect of the project on the hydraulic gradient in potentially affected USDWs, and the corresponding changes in potentiometric surface(s) and flow direction(s) rather than the discrete effect of each well. If a decision is made that corrective action is not necessary based on the determinations above, the monitoring program required in § 146.33(b) shall be designed to verify the validity of such determinations.

## Subpart F—Financial Responsibility: Class I hazardous Waste Injection Wells

[Subpart F added by 49 FR 20181, May 11, 1984]

### § 144.60 Applicability.

(a) The requirements of §§ 144.62, 144.63, and 144.70 apply to owners and operators of all existing and new Class I Hazardous waste injection wells, except as provided otherwise in this section.

### § 144.61 Definitions of terms as used in this Subpart.

(a) "Plugging and abandonment plan" means the plan for plugging and abandonment prepared in accordance with the requirements of § 144.28 and § 144.51.

(b) "Current plugging cost estimate" means the most recent of the estimates prepared in accordance with § 144.62(a), (b) and (c).

(c) "Parent corporation" means a corporation which directly owns at least 50 percent of the voting stock of the corporation which is the injection well owner or operator; the latter corporation is deemed a "subsidiary" of the parent corporation.

(d) The following terms are used in the specifications for the financial test for plugging and abandonment. The definitions are intended to represent the common meanings of the terms as they are generally used by the business community.

"Assets" means all existing and all probable future economic benefits obtained or controlled by a particular entity.

"Current assets" means cash or other assets or resources commonly identified as those which are reasonably expected to be realized in cash or sold or consumed during the normal operating cycle of the business.

"Current liabilities" means obligations whose liquidation is reasonably expected to require the use of existing resources properly classifiable as current assets or the creation of other current liabilities.

"Independently audited" refers to an audit performed by an independent certified public accountant in accordance with generally accepted auditing standards.

"Liabilities" means probable future sacrifices of economic benefits arising from present obligations to transfer assets or provide services to other entities in the future as a result of past transactions or events.

"Net working capital" means current assets minus current liabilities.

"Net worth" means total assets minus total liabilities and is equivalent to owner's equity.

"Tangible net worth" means the tangible assets that remain after deducting liabilities; such assets would not include intangibles such as goodwill and rights to patents or royalties.

### § 144.62 Cost estimate for plugging and abandonment.

(a) The owner or operator must prepare a written estimate, in current dollars, of the cost of plugging the injection well in accordance with the plugging and abandonment plan as specified in §§ 144.28 and 144.51. The plugging and abandonment cost estimate must equal the cost of plugging and abandonment at the point in the facility's operating life when the extent and manner of its operation would making plugging and abandonment the most expensive, as indicated by its plugging and abandonment plan.

(b) The owner or operator must adjust the plugging and abandonment cost estimate for inflation within 30 days after each anniversary of the date on which the first plugging and abandonment cost estimate was prepared. The adjustment must be made as specified in paragraphs (b)(i) and (b)(ii) of this section, using an inflation factor derived from the annual Oil and Gas Field Equipment Cost Index. The inflation factor is the result of dividing the latest published annual Index by the Index for the previous year.

(i) The first adjustment is made by multiplying the plugging and abandonment cost estimate by the inflation factor. The result is the adjusted plugging and abandonment cost estimate.

(ii) Subsequent adjustments are made by multiplying the latest adjusted plugging and abandonment cost estimate by the latest inflation factor.

(c) The owner or operator must revise the plugging and abandonment cost estimate whenever a change in the plugging and abandonment plan increases the cost of plugging and abandonment. The revised plugging and abandonment cost estimate must be adjusted for inflation as specified in § 144.62(b).

(d) The owner or operator must keep the following at the facility during the operating life of the facility: the latest plugging and abandonment cost estimate prepared in accordance with § 144.62 (a) and (c) and, when this estimate has been adjusted in accordance with § 144.62(b), the latest adjusted plugging and abandonment cost estimate.

### § 144.63 Financial assurance for plugging and abandonment.

An owner or operator of each facility must establish financial assurance for the plugging and abandonment of each existing and new Class I hazardous waste injection well. He must choose from the options as specified in paragraphs (a) through (f) of this section.

(a) *Plugging and abandonment trust fund.*

(1) An owner or operator may satisfy the requirements of this section by establishing a plugging and abandonment trust fund which conforms to the requirements of this paragraph and submitting an originally signed duplicate of the trust agreement to the Regional Administrator. An owner or operator of a Class I well injecting hazardous waste must submit the originally signed duplicate of the trust agreement to the Regional Administrator with the permit application or for approval to operate under rule. The trustee must be an entity which has the

authority to act as a trustee and whose trust operations are regulated and examined by a Federal or State agency.

(2) The wording of the trust agreement must be identical to the wording specified in § 144.70(a)(1), and the trust agreement must be accompanied by a formal certification of acknowledgment (for example, see § 144.70(a)(2)). Schedule A of the trust agreement must be updated within 60 days after a change in the amount of the current plugging and abandonment cost estimate covered by the agreement.

(3) Payments into the trust fund must be made annually by the owner or operator over the term of the initial permit or over the remaining operating life of the injection well as estimated in the plugging and abandonment plan, whichever period is shorter; this period is hereafter referred to as the "pay-in period." The payments into the plugging and abandonment trust fund must be made as follows:

(i) For a new well, the first payment must be made before the initial injection of hazardous waste. A receipt from the trustee for this payment must be submitted by the owner or operator to the Regional Administrator before this initial injection of hazardous waste. The first payment must be at least equal to the current plugging and abandonment cost estimate, except as provided in § 144.70(g), divided by the number of years in the pay-in period. Subsequent payments must be made no later than 30 days after each anniversary date of the first payment. The amount of each subsequent payment must be determined by this formula:

$$\text{Next payment} = \frac{PE - CV}{Y}$$

where PE is the current plugging and abandonment cost estimate, CV is the current value of the trust fund, and Y is the number of years remaining in the pay-in period.

(ii) If an owner or operator establishes a trust fund as specified in § 144.63(a) of this chapter, and the value of that trust fund is less than the current plugging and abandonment cost estimate when a permit is awarded for the injection well, the amount of the current plugging and abandonment cost estimate still to be paid into the trust fund must be paid in over the pay-in period as defined in paragraph (a)(3) of this section. Payments must continue to be made no later than 30 days after each anniversary date of the first payment made pursuant to Part 144 of this chapter. The amount of each payment must be determined by this formula:

$$\text{Next payment} = \frac{PE - CV}{Y}.$$

where PE is the current plugging and abandonment cost estimate, CV is the current value of the trust fund, and Y is the number of years remaining in the pay-in period.

(4) The owner or operator may accelerate payments into the trust fund or he may deposit the full amount of the current plugging and abandonment cost estimate at the time the fund is established. However, he must maintain the value of the fund at no less than the value that the fund would have if annual payments were made as specified in paragraph (a)(3) of this section.

(5) If the owner or operator establishes a plugging and abandonment trust fund after having used one or more alternate mechanisms specified in this section or in § 144.63 of this chapter, his first payment must be in at least the amount that the fund would contain if the trust fund were established initially and annual payments made according to specifications of this paragraph.

(6) After the pay-in period is completed, whenever the current plugging and abandonment cost estimate changes, the owner or operator must compare the new estimate with the trustee's most recent annual valuation of the trust fund. If the value of the fund is less than the amount of the new estimate, the owner or operator, within 60 days after the change in the cost estimate, must either deposit an amount into the fund so that its value after this deposit at least equals the amount of the current plugging and abandonment cost estimate, or obtain other financial assurance as specified in this section to cover the difference.

(7) If the value of the trust fund is greater than the total amount of the current plugging and abandonment cost estimate, the owner or operator may submit a written request to the Regional Administrator for release of the amount in excess of the current plugging and abandonment cost estimate.

(8) If an owner or operator substitutes other financial assurance as specified in this section for all or part of the trust fund, he may submit a written request to the Regional Administrator for release of the amount in excess of the current plugging and abandonment cost estimate covered by the trust fund.

(9) Within 60 days after receiving a request from the owner or operator for release of funds as specified in paragraphs (a)(7) or (8) of this section, the Regional Administrator will instruct the trustee to release to the owner or operator such funds as the Regional Administrator specifies in writing.

(10) After beginning final plugging and abandonment, an owner or operator or any other person authorized to perform plugging and abandonment may request reimbursement for plugging and abandonment expenditures by submitting itemized bills to the Regional Administrator. Within 60 days after receiving bills for plugging and abandonment activities, the Regional Administrator will determine whether the plugging and abandonment expenditures are in accordance with the plugging and abandonment plan or otherwise justified, and if so, he will instruct the trustee to make reimbursement in such amounts as the Regional Administrator specifies in writing. If the Regional Administrator has reason to believe that the cost of plugging and abandonment will be significantly greater than the value of the trust fund, he may withhold reimbursement of such amounts as he deems prudent until he determines, in accordance with § 144.63(i), that the owner or operator is no longer required to maintain financial assurance for plugging and abandonment.

(11) The Regional Administrator will agree to termination of the trust when:

(i) An owner or operator substitutes alternate financial assurance as specified in this section; or

(ii) The Regional Administrator releases the owner or operator from the requirements of this section in accordance with § 144.63(i).

(b) *Surety bond guaranteeing payment into a plugging and abandonment trust fund.* (1) An owner or operator must satisfy the requirements of this section by obtaining a surety bond which conforms to the requirements of this paragraph and submitting the bond to the Regional Administrator with the application for a permit or for approval to operate under rule. The bond must be effective before the initial injection of hazardous waste. The surety company issuing the trust must, at a minimum, be among those listed as acceptable sureties on Federal bonds in Circular 570 of the U.S. Department of the Treasury.

(2) The wording of the surety bond must be identical to the wording in § 144.70(b).

(3) The owner or operator who uses a surety bond to satisfy the requirements of this section must also establish a standby trust fund. Under the terms of the bond, all payments made thereunder will be deposited by the surety directly into the standby trust fund in accordance with instructions from the Regional Administrator. This standby trust fund must meet the requirements specified in § 144.63(a), except that:

(i) An originally signed duplicate of the trust agreement must be submitted to the Regional Administrator with the surety bond, and

(ii) Until the standby trust fund is funded pursuant to the requirements of this section, the following are not required by these requirements:

(A) Payments into the trust fund as specified in § 144.63(a);

(B) Updating of Schedule A of the trust agreement [see § 144.70(a)] to show current plugging and abandonment cost estimates;

(C) Annual valuations as required by the trust agreement; and

(D) Notices of nonpayment as required by the trust agreement.

(4) The bond must guarantee that the owner or operator will:

(i) Fund the standby trust fund in an amount equal to the penal sum of the bond before beginning of plugging and abandonment of the injection well; or

(ii) Fund the standby trust fund in an amount equal to the penal sum within 15 days after an order to begin plugging and abandonment is issued by the Regional Administrator or a U.S. district court or other court of competent jurisdiction; or

(iii) Provide alternate financial assurance as specified in this section, and obtain the Regional Administrator's written approval of the assurance provided, within 90 days after receipt by both the owner or operator and the Regional Administrator of a notice of cancellation of the bond from the surety.

(5) Under the terms of the bond, the surety will become liable on the bond obligation when the owner or operator fails to perform as guaranteed by the bond.

(6) The penal sum of the bond must be in amount at least equal to the current plugging and abandonment cost estimate, except as provided in § 144.63(g).

(7) Whenever the current plugging and abandonment cost estimate increases to an amount greater than the penal sum, the owner or operator, within 60 days after the increase, must either cause the penal sum to be increased to an amount at least equal to the current plugging and abandonment cost estimate and submit evidence of such increase to the Regional Administrator, or obtain other financial assurance as specified in this section to cover the increase. Whenever the current plugging and abandonment cost estimate decreases, the penal sum may be reduced to the amount of the current plugging and abandonment cost estimate following written approval by the Regional Administrator.

(8) Under the terms of the bond, the surety may cancel the bond by sending notice of cancellation by certified mail to the owner or operator and to the Regional Administrator. Cancellation may not occur, however, during 120 days beginning on the date of the receipt of the notice of cancellation by both owner or operator and the Regional Administrator as evidenced by the returned receipts.

(9) The owner or operator may cancel the bond if the Regional Administrator has given prior written consent based on his receipt of evidence of alternate financial assurance as specified in this section.

(c) *Surety bond guaranteeing performance of plugging and abandonment.* (1) An owner or operator may satisfy the requirements of this section by obtaining a surety bond which conforms to the requirements of this paragraph and submitting the bond to the Regional Administrator. An owner or operator of a new facility must submit the bond to the Regional Administrator with the permit application or for approval to operate under rule. The bond must be effective before injection of hazardous waste is started. The surety company issuing the bond must, at a minimum, be among those listed as acceptable sureties on Federal bonds in Circular 570 of the U.S. Department of the Treasury.

(2) The wording of the surety bond must be identical to the wording specified in § 144.70(c).

(3) The owner or operator who uses a surety bond to satisfy the requirements of this section must also establish a standby trust fund. Under the terms of the bond, all payments made thereunder will be deposited by the surety directly into the standby trust fund in accordance with instructions from the Regional Administrator. The standby trust must meet the requirements specified in § 144.63(a), except that:

(i) An original signed duplicate of the trust agreement must be submitted to the Regional Administrator with the surety bond; and

(ii) Unless the standby trust fund is funded pursuant to the requirements of this section, the following are not required by these regulations:

(A) Payments into the trust fund as specified in § 144.63(a);

(B) Updating of Schedule A of the trust agreement [see § 144.70(a)] to show current plugging and abandonment cost estimates;

(C) Annual valuations as required by the trust agreement; and

(D) Notices of nonpayment as required by the trust agreement.

(4) The bond must guarantee that the owner or operator will:

(i) Perform plugging and abandonment in accordance with the plugging and abandonment plan and other requirements of the permit for the injection well whenever required to do so; or

(ii) Provide alternate financial assurance as specified in this section, and obtain the Regional Administrator's written approval of the assurance provided, within 90 days after receipt by both the owner or operator and the

Regional Administrator of a notice of cancellation of the bond from the surety.

(5) Under the terms of the bond, the surety will become liable on the bond obligation when the owner or operator fails to perform as guaranteed by the bond. Following a determination that the owner or operator has failed to perform plugging and abandonment in accordance with the plugging and abandonment plan and other permit requirements when required to do so, under terms of the bond the surety will perform plugging and abandonment as guaranteed by the bond or will deposit the amount of the penal sum into the standby trust fund.

(6) The penal sum of the bond must be in an amount at least equal to the current plugging and abandonment cost estimate.

(7) Whenever the current plugging and abandonment cost estimate increases to an amount greater than the penal sum, the owner or operator, within 60 days after the increase, must either cause the penal sum to be increased to an amount at least equal to the current plugging and abandonment cost estimate and submit evidence of such increase to the Regional Administrator, or obtain other financial assurance as specified in this section. Whenever the plugging and abandonment cost estimate decreases, the penal sum may be reduced to the amount of the current plugging and abandonment cost estimate following written approval by the Regional Administrator.

(8) Under the terms of the bond, the surety may cancel the bond by sending notice of cancellation by certified mail to the owner or operator and to the Regional Administrator. Cancellation may not occur, however, during the 120 days beginning on the date of receipt of the notice of cancellation by both the owner or operator and the Regional Administrator, as evidenced by the return receipts.

(9) The owner or operator may cancel the bond if the Regional Administrator has given prior written consent. The Regional Administrator will provide such written consent when:

(i) An owner or operator substitute alternate financial assurance as specified in this section; or

(ii) The Regional Administrator releases the owner or operator from the requirements of this section in accordance with § 144.63(i).

(10) The surety will not be liable for deficiencies in the performance of plugging and abandonment by the owner or operator after the Regional Administrator releases the owner or operator from the requirements of this section in accordance with § 144.63(i).

(d) *Plugging and abandonment letter of credit* (1) An owner or operator may satisfy the requirements of this section by obtaining an irrevocable standby letter of credit which conforms to the requirements of this paragraph and submitting the letter to the Regional Administrator. An owner or operator of an injection well must submit the letter of credit to the Regional Administrator during submission of the permit application or for approval to operate under rule. The letter of credit must be effective before initial injection of hazardous waste. The issuing institution must be an entity which has the authority to issue letters of credit and whose letter-of-credit operations are regulated and examined by a Federal or State agency.

(2) The wording of the letter of credit must be identical to the wording specified in § 144.70(d).

(3) An owner or operator who uses a letter of credit to satisfy the requirements of this section must also establish a standby trust fund. Under the terms of the letter of credit, all amounts paid pursuant to a draft by the Regional Administrator will be deposited by the issuing institution directly into the standby trust fund in accordance with instructions from the Regional Administrator. This standby trust fund must meet the requirements of the trust fund specified in § 144.63(a), except that:

(i) An originally signed duplicate of the trust agreement must be submitted to the Regional Administrator with the letter of credit; and

(ii) Unless the standby trust fund is funded pursuant to the requirements of this section, the following are not required by these regulations:

(A) Payments into the trust fund as specified in § 144.63(a);

(B) Updating of Schedule A of the trust agreement (see § 144.70(a)) to show current plugging and abandonment cost estimates;

(C) Annual valuations as required by the trust agreement; and

(D) Notices of nonpayment as required by the trust agreement.

(4) The letter of credit must be accompanied by a letter from the owner or operator referring to the letter of credit by number, issuing institution, and date, and providing the following information: the EPA Identification Number, name, and address of the facility, and the amount of funds assured for plugging and abandonment of the well by the letter of credit.

(5) The letter of credit must be irrevocable and issued for a period of at least 1 year. The letter of credit must provide that the expiration date will be automatically extended for a period of at least 1 year unless, at least 120 days before the current expiration date, the issuing institution notifies both the owner or operator and the Regional Administrator by certified mail of a decision not to extend the expiration date. Under the terms of the letter of credit, the 120 days will begin on the date when both the owner or operator and the Regional Administrator have received the notice, as evidenced by the return receipts.

(6) The letter of credit must be issued in an amount at least equal to the current plugging and abandonment cost estimate, except as provided in § 144.63(g).

(7) Whenever the current plugging and abandonment cost estimate increases to an amount greater than the amount of the credit, the owner or operator, within 60 days after the increase, must either cause the amount of the credit to be increased so that it at least equals the current plugging and abandonment cost estimate and submit evidence of such increase to the Regional Administrator, or obtain other financial assurance as specified in this section to cover the increase. Whenever the current plugging and abandonment cost estimate decreases, the amount of the credit may be reduced to the amount of the current plugging and abandonment cost estimate following written approval by the Regional Administrator.

(8) Following a determination that the owner or operator has failed to perform final plugging and abandonment in

accordance with the plugging and abandonment plan and other permit requirements when required to do so, the Regional Administrator may draw on the letter of credit.

(9) If the owner or operator does not establish alternate financial assurance as specified in this section and obtain written approval of such alternate assurance from the Regional Administrator within 90 days after receipt by both the owner or operator and the Regional Administrator of a notice from the issuing institution that it has decided not to extend the letter of credit beyond the current expiration date, the Regional Administrator will draw on the letter of credit. The Regional Administrator may delay the drawing if the issuing institution grants an extension of the term of the credit. During the last 30 days of any such extension the Regional Administrator will draw on the letter of credit if the owner or operator has failed to provide alternate financial assurance as specified in this section and obtain written approval of such assurance from the Regional Administrator.

(10) The Regional Administrator will return the letter of credit to the issuing institution for termination when:

(i) An owner or operator substitutes alternate financial assurance as specified in this section; or

(ii) The Regional Administrator releases the owner or operator from the requirements of this section in accordance with § 144.63(i).

(e) *Plugging and abandonment insurance.* (1) An owner or operator may satisfy the requirements of this section by obtaining plugging and abandonment insurance which conforms to the requirements of this paragraph and submitting a certificate of such insurance to the Regional Administrator. An owner or operator of a new injection well must submit the certificate of insurance to the Regional Administrator with the permit application or for approval operate under rule. The insurance must be effective before injection starts. At a minimum, the insurer must be licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in one or more States

(2) The wording of the certificate of insurance must be identical to the wording specified in § 144.70(e).

(3) The plugging and abandonment insurance policy must be issued for a face amount at least equal to the current plugging and abandonment estimate, except as provided in § 144.63(g). The term "face amount" means the total amount the insurer is obligated to pay under the policy. Actual payments by the insurer will not change the face amount, although the insurers future liability will be lowered by the amount of the payments.

(4) The plugging and abandonment insurance policy must guarantee that funds will be available whenever final plugging and abandonment occurs. The policy must also guarantee that once plugging and abandonment begins, the issurer will be responsible for paying out funds, up to an amount equal to the face amount of the policy, upon the direction of the Regional Administrator, to such party or parties as the Regional Administrator specifies.

(5) After beginning plugging and abandonment, an owner or operator or any other person authorized to perform plugging and abandonment may request reimbursement for plugging and abandonment expenditures by submitting itemized bills to the Regional Administrator. Within 60 days after receiving bills for plugging and abandonment activities, the Regional Administrator will determine whether the plugging and abandonment expenditures are in accordance with the plugging and abandonment plan or otherwise justified, and if so, he will instruct the insurer to make reimbursement in such amounts as the Regional Administrator specifies in writing. If the Regional Administrator has reason to believe that the cost of plugging and abandonment will be significantly greater than the face amount of the policy, he may withhold reimbursement of such amounts as he deems prudent until he determines, in accordance with §144.63(i), that the owner or operator is no longer required to maintain financial assurance for plugging and abandonment of the injection well.

(6) The owner or operator must maintain the policy in full force and effect until the Regional Administrator consents to termination of the policy by the owner or operator as specified in paragraph (e)(10) of this section. Failure to pay the premium, without substitution of alternate financial assurance as specified in this section, will constitute a significant violation of these regulations, warranting such remedy as the Regional Administrator deems necessary. Such violation will be deemed to begin upon receipt by the Regional Administrator of a notice of future cancellation, termination, or failure to renew due to nonpayment of the premium, rather than upon the date of expiration.

(7) Each policy must contain provisions allowing assignment to a successor owner or operator. Such assignment may be conditional upon consent of the insurer, provided such consent is not unreasonably refused.

(8) The policy must provide that the insurer may not cancel, terminate, or fail to renew the policy except for failure to pay the premium. The automatic renewal of the policy must, at a minimum, provide the insured with the option of renewal at the face amount of the expiring policy. If there is a failure to pay the premium, the insurer may elect to cancel, terminate, or fail to renew the policy by sending notice by certified mail to the owner or operator and the Regional Administrator. Cancellation, termination, or failure to renew may not occur, however, during 120 days beginning with the date of receipt of the notice by both the Regional Administrator and the owner or operator, as evidenced by the return of receipts. Cancellation, termination, or failure to renew may not occur and the policy will remain in full force and effect in the event that on or before the date of expiration:

(i) The Regional Administrator deems the injection well abandoned; or

(ii) The permit is terminated or revoked or a new permit is denied; or

(iii) Plugging and abandonment is ordered by the Regional Administrator or a U.S. district court or other court of competent jurisdiction; or

(iv) The owner or operator is named as debtor in a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, or

(v) The premium due is paid.

[Sec. 144.63(e)(8)(v)]

(9) Whenever the current plugging and abandonment cost estimate increases to an amount greater than the face amount of the policy, the owner or operator, within 60 days after the increase, must either cause the face amount to be increased to an amount at least equal to the current plugging and abandonment estimate and submit evidence of such increase to the Regional Administrator, or obtain other financial assurance as specified in this section to cover the increase. Whenever the current plugging and abandonment cost estimate decreases, the face amount may be reduced to the amount of the current plugging and abandonment cost estimate following written approval by the Regional Administrator.

(10) The Regional Administrator will give written consent to the owner or operator that he may terminate the insurance policy when:

(i) An owner or operator substitutes alternate financial assurance as specified in this section; or

(ii) The Regional Administrator releases the owner or operator from the requirements of this section in accordance with § 144.63(i).

(f) *Financial test and corporate guarantee for plugging and abondonment.* (1) An owner or operator may satisfy the requirements of this section by demonstrating that he passes a financial test as specified in this paragraph. To pass this test the owner or operator must meet the criteria of either paragraphs (f)(1)(i) or (f)(1)(ii) of this section:

(i) The owner or operator must have:

(A) Two of the following three ratios: a ratio of total liabilities to net worth less than 2.0; a ratio of the sum of net income plus depreciation, depletion, and amortization to total liabilities greater than 0.1; and a ratio of current assets to current liabilities greater than 1.5; and

(B) Net working capital and tangible net worth each at least six times the sum of the current plugging and abandonment cost estimate; and

(C) Tangible net worth of at least $10 million; and

(D) Assets in the United States amounting to at least 90 percent of his total assets or at least six times the sum of the current plugging and abandonment cost estimate.

(ii) The owner or operator must have:

(A) A current rating for his most recent bond issuance of AAA, AA, A or BBB as issued by Standard and Poor's or Aaa, Aa, A, or Baa as issued by Moody's; and

(B) Tangible net worth at least six times the sum of the current plugging and abandonment cost estimate; and

(C) Tangible net worth of at least $10 million; and

(D) Assets located in the United States amounting to at least 90 percent of his total assets or at least six times the sum of the current plugging and abandonment cost estimates.

(2) The phrase "current plugging and abandonment cost estimate" as used in paragraph (f)(1) of this section refers to the cost estimate required to be shown in paragraphs 1–4 of the letter from the owner's or operator's chief financial officer [144.70(f)].

(3) To demonstrate that he meets this test, the owner or operator must submit the following items to the Regional Administrator:

(i) A letter signed by the owner's or operator's chief financial officer and worded as specified in 144.70(f); and

(ii) A copy of the independent certified public accountant's report on examination of the owner's or operator's financial statements for the latest completed fiscal year; and

(iii) A special report from the owner's or operator's independent certified public accountant to the owner or operator stating that:

(A) He has compared the data which the letter from the chief financial officer specifies as having been derived from the independently audited, year-end financial statements for the latest fiscal year with the amounts in such financial statements; and

(B) In connection with that procedure, no matters came to his attention which caused him to believe that the specified data should be adjusted.

(4) An owner or operator of a new injection well must submit the items specified in paragraph (f)(3) of this section to the Regional Administrator within 90 days after the close of each succeeding fiscal year. This information must consist of all three items specified in paragraph (f)(3) of this section.

(5) After the initial submission of items specified in paragraph (f)(3) of this section, the owner or operator must send updated information to the Regional Administrator within 90 days after the close of each succeeding fiscal year. This information must consist of all three items specified in paragraph (f)(3) of this section.

(6) If the owner or operator no longer meets the requirements of paragraph (f)(1) of this section, he must send notice to the Regional Administrator of intent to establish alternate financial assurance as specified in this section. The notice must be sent by certified mail within 90 days after the end of the fiscal year for which the year-end financial data show that the owner or operator no longer meets the requirements. The owner or operator must provide the alternate financial assurance within 120 days after the end of such fiscal year.

(7) The Regional Administrator may, based on a reasonable belief that the owner or operator may no longer meet the requirements of paragraph (f)(1) of this section, require reports of financial condition at any time from the owner or operator in addition to those specified in paragraph (f)(3) of this section. If the Regional Administrator finds, on the basis of such reports or other information, that the owner or operator no longer meets the requirements of (f)(1) of this section, the owner or operator must provide alternate financial assurance as specified in this section within 30 days after notification of such a finding.

(8) The Regional Administrator may disallow use of this test on the basis of qualifications in the opinion expressed by the independent certified public accountant in his report on examination of the owner's or operator's financial statements [see paragraph (f)(3)(ii) of this section]. An adverse opinion or disclaimer of opinion will be cause for disallowance. The Regional Administrator will evaluate other qualifications on an individual basis. The owner or operator must provide

alternate financial assurance as specified in this section within 30 days after notification of the disallowance.

(9) The owner or operator is no longer required to submit the items specified in paragraph (f)(3) of this section when:

(i) An owner or operator substitutes alternate financial assurance as specified in this section; or

(ii) The Regional Administrator releases the owner or operator from the requirements of this section in accordance with § 144.63(i).

(10) An owner or operator may meet the requirements of this section by obtaining a written guarantee, hereafter referred to as "corporate guarantee." The guarantee must be the parent corporation of the owner or operator. The guarantee must meet the requirements for owners or operators in paragraphs (f)(1) through (f)(8) of this section and must comply with the terms of the corporate guarantee. The wording of the corporate guarantee must be identical to the wording specified in § 144.70(h). The corporate guarantee must accompany the items sent to the Regional Administrator as specified in paragraph (f)(3) of this section. The terms of the corporate guarantee must provide that:

(i) If the owner or operator fails to perform plugging and abandonment of the injection well covered by the corporate guarantee in accordance with the plugging and abandonment plan and other permit requirements whenever required to do so, the guarantee will do so or establish a trust fund as specified in § 144.63(a) in the name of the owner or operator.

(ii) The corporate guarantee will remain in force unless the guarantor sends notice of cancellation by certified mail to the owner or operator and the Regional Administrator, as evidenced by the return receipts. Cancellation may not occur, however, during the 120 days beginning on the date of receipt of the notice of cancellation by both the owner or operator and the Regional Administrator, as evidenced by the return receipts.

(iii) If the owner or operator fails to provide alternate financial assurance as specified in this section and obtain the written approval of such alternate assurance from the Regional Administrator within 90 days after receipt by both the owner or operator and the Regional Administrator of a notice of cancellation of the corporate guarantee from the guarantor, the guarantor will provide such alternative financial assurance in the name of the owner or operator.

(g) *Use of multiple financial mechanisms.* An owner or operator may satisfy the requirements of this section by establishing more than one financial mechanism per injection well. These mechanisms are limited to trust funds, surety bonds, guaranteeing payment into a trust fund, letters of credit, and insurance. The mechanisms must be as specified in paragraphs (a), (b), (d), and (e), respectively, of this section, except that it is the combination of mechanisms, rather than the single mechanism, which must provide financial assurance for an amount at least equal to the adjusted plugging and abandonment cost. If an owner or operator uses a trust fund in combination with a surety bond or letter of credit, he may use that trust fund as the standby trust fund for the other mechanisms. A single standby trust may be established for two or more mechanisms. The Regional Administrator may invoke any or all of the mechanisms to provide for plugging and abandonment of the injection well.

(h) *Use of a financial mechanism for multiple facilities.* An owner or operator may use a financial assurance mechanism specified in this section to meet the requirements of this section for more than one injection well. Evidence of financial assurance submitted to the Regional Administrator must include a list showing, for each injection well, the EPA Identification Number, name, address, and the amount of funds for plugging and abandonment assured by the mechanism. If the injection wells covered by the mechanism are in more than one Region, identical evidence of financial assurance must be submitted to and maintained with the Regional Administrators of all such Regions. The amount of funds available through the mechanism must be no less than the sum of funds that would be available if a separate mechanism had been established and maintained for each injection well. In directing funds available through the mechanism for plugging and abandonment of any of the injection wells covered by the mechanism, the Regional Administrator may direct only the amount of funds designated for that injection well, unless the owner or operator agrees to use additional funds available under the mechanism.

(i) *Release of the owner or operator from the requirements of this Section.* Within 60 days after receiving certifications from the owner or operator and an independent registered professional engineer that plugging and abandonment has been accomplished in accordance with the plugging and abandonment plan, the Regional Administrator will notify the owner or operator in writing that he is no longer required by this section to maintain financial assurance for plugging and abandonment of the injection well, unless the Regional Administrator has reason to believe that plugging and abandonment has not been in accordance with the plugging and abandonment plan.

**§ 144.64 Incapacity of owners or operators, guarantors, or financial institutions.**

(a) 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. A guarantor of a corporate guarantee as specified in § 144.63(f) must make such a notification if he is named as debtor, as required under the terms of the guarantee (§ 144.70(f)).

(b) An owner or operator who fulfills the requirements of § 144.63 by obtaining a letter of credit, surety bond, or insurance policy will be deemed to be without the required financial assurance or liability coverage in the event of bankruptcy, insolvency, or a suspension or revocation of the license or charter of the issuing institution. The owner or operator must establish other financial assurance or liability coverage within 60 days after such an event.

**§ 144.65 Use of State-required mechanisms.**

(a) For a facility located in a State where EPA is administering the requirements of this Subpart but where the State has plugging and abandonment regulations that include requirements for financial assurance of plugging and abandonment, an owner or operator may use State-required financial mechanisms to meet the requirements of this Subpart if the Regional Administrator determines that the State mechanisms are at least equivalent to the mechanisms specified in this Subpart. The Regional Administrator will evaluate the equivalency of the mechanisms mainly in terms of (1) certainty of the availability of funds for the required plugging and abandonment activities and (2) the amount of funds that will be made available. The Regional Administrator may also consider other factors. The owner or operator must submit to the Regional Administrator evidence of the establishment of the mechanism together with a letter requesting that the State-required mechanism be considered acceptable for meeting the requirements of this Subpart. The submittal must include the following information: The facility's EPA Identification Number, name and address, and the amounts of funds for plugging and abandonment coverage assured by the mechanism. The Regional Administrator will notify the owner or operator of his determination regarding the mechanism's acceptability. The Regional Administrator may require the owner or operator to submit additional information as is deemed necessary for making this determination.

(b) If a State-required mechanism is found acceptable as specified in paragraph (a) of this Section except for the amount of funds available, the owner or operator may satisfy the requirements of this Subpart by increasing the funds available through the State-required mechanism or using additional mechanisms as specified in this Subpart. The amounts of funds available through the State and Federal mechanisms must at least equal the amounts required by this Subpart.

**§ 144.66 State assumption of responsibility.**

(a) If a State either assumes legal responsibility for an owner's or operator's compliance with the plugging and abandonment requirements of these regulations or assures that funds will be availeble from State sources to cover these requirements, the owner or operator will be in compliance with the requirements of this Subpart if the Regional Administrator determines that the State's assumption of responsibility is at least equivalent to the mechanisms specified in this Subpart. The Regional Administrator will evaluate the equivalency of State guarantees mainly in terms of (1) certainty of the availability of funds for the required plugging and abandonment coverage and (2) the amount of funds that will be made available. The Regional Administrator may also consider other factors. The owner or operator must submit to the Regional Administrator a letter from the State describing the nature of the State's assumption of responsibility together with a letter from the owner or operator requesting that the State's asumption of responsibility be considered acceptable for meeting the requirements of this Subpart. The letter from the State must include, or have attached to it, the following information: the facility's EPA Identification Number, name and address, and the amounts of funds for plugging and abandonment coverage that are guaranteed by the State. The Regional Administrator will notify the owner or operator of his determination regarding the acceptability of the State's guarantee in lieu of mechanisms specified in this Subpart. The Regional Administrator may require the owner or operator to submit additional information as is deemed necessary to make this determination. Pending this determination, the owner or operator will be deemed to be in compliance with § 144.63.

(b) If a State's assumption of responsibility is found acceptable as specified in paragraph (a) of this section except for the amount of funds available, the owner or operator may satisfy the requirements of this Subpart by use of both the State's assurance and additional financial mechanisms as specified in this Subpart. The amount of funds available through the State and Federal mechanisms must at least equal the amount required by this Subpart.

**§ 144.70 Wording of the instruments.**

(a)(1) A trust agreement for a trust fund, as specified in § 144.63(a) of this chapter, must be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

**Trust Agreement**

TRUST AGREEMENT, the "Agreement," entered into as of [date] by and between [name of the owner or operator], a [name of State] [insert "corporation," "partnership," "association," or "proprietorship"], the "Grantor," and [name of corporate trustee], [insert "incorporated in the State of ———" or "a national bank"], the "Trustee."

Whereas, the United States Environmental Protection Agency, "EPA," an agency of the United States Government, has established certain regulations applicable to the Grantor, requiring that an owner or operator of an injection well shall provide assurance that funds will be available when needed for plugging and abandonment of the injection well.

Whereas, the Grantor has elected to establish a trust to provide all or part of such financial assurance for the facility(ies) identified herein.

Whereas, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this agreement, and the Trustee is willing to act as trustee.

Now, therefore, the Grantor and the Trustee agree as follows:

*Section 1. Definitions.* As used in this Agreement:

(a) The term "Grantor" means the owner or operator who enters into this Agreement and any successors or assigns of the Grantor.

(b) The term "Trustee" means the Trustee who enters into this Agreement and any successor Trustee.

(c) Facility or activity means any "underground injection well" or any other facility or activity that is subject to regulation under the Underground Injection Control Program.

*Section 2. Identification of Facilities and Cost Estimates.* This Agreement pertains to the facilities and cost estimates identified on attached Schedule A [on Schedule A, for each facility list the EPA Identification Number,

name, address, and the current plugging and abandonment cost estimate, or portions thereof, for which financial assurance is demonstrated by this Agreement).

*Section 3. Establishment of Fund.* The Grantor and the Trustee hereby establish a trust fund, the "Fund," for the benefit of EPA. The Grantor and the Trustee intend that no third party have access to the Fund except as herein provided. The Fund is established initially as consisting of the property, which is acceptable to the Trustee, described in Schedule B attached hereto. Such property and any other property subsequently transferred to the Trustee is referred to as the Fund, together with all earnings and profits thereon, less any payments or distributions made by the Trustee pursuant to this Agreement. The Fund shall be held by the Trustee, IN TRUST, as hereinafter provided.

The Trustee shall not be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the Grantor, any payments necessary to discharge any liabilities of the Grantor established by EPA.

*Section 4. Payment for Plugging and Abandonment.* The Trustee shall make payments from the Fund as the EPA Regional Administrator shall direct, in writing, to provide for the payment of the costs of plugging and abandonment of the injection wells covered by this Agreement. The Trustee shall reimburse the Grantor or other persons as specified by the EPA Regional Administrator from the Fund for plugging and abandonment expenditures in such amounts as the EPA Regional Administrator shall direct in writing. In addition, the Trustee shall refund to the Grantor such amounts as the EPA Regional Administrator specifies in writing. Upon refund, such funds shall no longer constitute part of the Fund as defined herein.

*Section 5. Payments Comprising the Fund.* Payments made to the Trustee for the Fund shall consist of cash or securities acceptable to the Trustee.

*Section 6. Trustee Management.* The Trustee shall invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject, however, to the provisions of this Section. In investing, reinvesting, exchanging, selling and managing the Fund, the Trustee shall discharge his duties with respect to the trust fund solely in the interest of the beneficiary and with the care, skill, prudence, and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims: *except that:*

(i) Securities or other obligations of the Grantor, or any other owner or operator of the facilities, or any of their affiliates as defined in the Investment Company Act of 1940, as amended, 15 USC § 80a-2.(a), shall not be acquired or held, unless they are securities or other obligations of the Federal or a State government;

(ii) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the Federal or State government; and

(iii) The Trustee is authorized to hold cash awaiting investment or distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

*Section 7. Commingling and Investment.* The Trustee is expressly authorized in its discretion:

(a) To transfer from time to time any or all of the assets of the Fund to any common, commingled, or collective trust fund created by the Trustee in which the Fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and

(b) To purchase shares in any investment company registered under the Investment Company Act of 1940, 15 U.S.C. 80a-1 et seq., including one which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the Trustee. The Trustee may vote shares in its discretion.

*Section 8. Express Powers of Trustee.* Without in any way limiting the powers and discretions conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered:

(a) To sell, exchange, convey, transfer or otherwise dispose of any property held by it, by public or private sale. No person dealing with the Trustee shall be bound to see to the application of the purchase money or to inquire into the validity or expediency of any such sale or other disposition;

(b) To make, execute, acknowledge, and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted;

(c) To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in a qualified central depository even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depository with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the United States Government, or any agency or instrumentality thereof, with a Federal Reserve bank, but the books and records of the Trustee shall at all times show that all such securities are part of the Fund;

(d) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the Federal or State government; and

(e) To compromise or otherwise adjust all claims in favor of or against the Fund.

*Section 9. Taxes and Expenses.* All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commissions incurred by the Fund shall be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the Grantor, and all other proper charges and disbursements of the Trustee shall be paid from the Fund.

*Section 10. Annual Valuation.* The Trustee shall annually, at least 30 days prior to the anniversary date of establishment of the Fund, furnish to the Grantor and to the appropriate EPA Regional Administrator a statement confirming the value of the Trust. Any securities in the Fund shall be valued at market value as of no more than 60 days prior to the anniversary date of establishment of the Fund. The failure of the Grantor to object in writing to the Trustee within 90 days after the statement has been furnished to the Grantor and the EPA Regional Administrator shall constitute a conclusively binding assent by the Grantor, barring the Grantor from asserting any claim or liability against the Trustee with respect to matters disclosed in the statement.

*Section 11. Advice of Counsel.* The Trustee may from time to time consult with counsel, who may be counsel to the Grantor, with respect to any question arising as to the construction of this Agreement or any action to be taken hereunder. The Trustee shall be fully protected, to the extent permitted by law, in acting upon the advice of counsel.

*Section 12. Trustee Compensation.* The Trustee shall be entitled to reasonable compensation for its services as agreed upon in writing from time to time with the Grantor.

*Section 13. Successor Trustee.* The Trustee may resign or the Grantor may replace the Trustee, but such resignation or replacement shall not be effective until the Grantor has appointed a successor trustee and this successor accepts the appointment. The successor trustee shall have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor trustee's acceptance of the appointment, the Trustee shall assign, transfer, and pay over to the successor trustee the funds and properties

[Sec. 144.70(a)(1)]

then constituting the Fund, for any reason the Grantor cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor trustee or for instructions. The successor trustee shall specify the date on which it assumes administration of the trust in a writing sent to the Grantor, the EPA Regional Administrator, and the present Trustee by certified mail 10 days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this Section shall be paid as provided in Section 9.

*Section 14. Instructions to the Trustee.* All orders, requests, and instructions by the Grantor to the Trustee shall be in writing, signed by such persons as are designated in the attached Exhibit A or such other designees as the Grantor may designate by amendment to Exhibit A. The Trustee shall be fully protected in acting without inquiry in accordance with the Grantor's orders, requests, and instructions. All orders, requests, and instructions by the EPA Regional Administrator to the Trustee shall be in writing, signed by the EPA Regional Administrators of the Regions in which the facilities are located, or their designees, and the Trustee shall act and shall be fully protected in acting in accordance with such orders, requests, and instructions. The Trustee shall have the right to assume, in the absence of written notice to the contrary, that no event constituting a change or a termination of the authority of any person to act on behalf of the Grantor or EPA hereunder has occurred. The Trustee shall have no duty to act in the absence of such orders, requests, and instructions from the Grantor and/or EPA, except as provided for herein.

*Section 15. Notice of Nonpayment.* The Trustee shall notify the Grantor and the appropriate EPA Regional Administrator, by certified mail within 10 days following the expiration of the 30-day period after the anniversary of the establishment of the Trust, if no payment is received from the Grantor during that period. After the pay-in period is completed, the Trustee shall not be required to send a notice of nonpayment.

*Section 16. Amendment of Agreement.* This Agreement may be amended by an instrument in writing executed by the Grantor, the Trustee, and the appropriate EPA Regional Administrator, or by the Trustee and the appropriate EPA Regional Administrator if the Grantor ceases to exist.

*Section 17. Irrevocability and Termination.* Subject to the right of the parties to amend this Agreement as provided in Section 16, this Trust shall be irrevocable and shall continue until terminated at the written agreement of the Grantor, the Trustee, and the EPA Regional Administrator, or by the Trustee and the EPA Regional Administrator if the Grantor ceases to exist. Upon termination of the Trust, all remaining trust property, less final trust administration expenses, shall be delivered to the Grantor.

*Section 18. Immunity and Indemnification.* The Trustee shall not incur personal liability of any nature in connection with any act or omission, made in good faith, in the administration of this Trust, or in carrying out any directions by the Grantor or the EPA Regional Administrator issued in accordance with this Agreement. The Trustee shall be indemnified and saved harmless by the Grantor or from the Trust Fund, or both, from and against any personal liability to which the Trustee may be subjected by reason of any act or conduct in its official capacity, including all expenses reasonably incurred in its defense in the event the Grantor fails to provide such defense.

*Section 19. Choice of Law.* This Agreement shall be administered, construed, and enforced according to the laws of the State of [insert name of State].

*Section 20. Interpretation.* As used in this Agreement, words in the singular include the plural and words in the plural include the singular. The descriptive headings for each Section of this Agreement shall not affect the interpretation or the legal efficacy of this Agreement.

In Witness Whereof the parties have caused this Agreement to be executed by their respective officers duly authorized and their corporate seals to be hereunto affixed and attested as of the date first above written. The parties below certify that the wording of this Agreement is identical to the wording specified in 40 CFR 144.70(a)(1) as such regulations were constituted on the date first above written.

[Signature of Grantor]
By [Title]
Attest:

[Title]

[Seal]

[Signature of Trustee]
By
Attest:

[Title]

[Seal]

(2) The following is an example of the certification of acknowledgment which must accompany the trust agreement for a trust fund as specified in § 144.63(a). State requirements may differ on the proper content of this acknowledgment.

State of _____
County of _____

On this [date], before me personally came [owner or operator] to me known, who, being by me duly sworn, did depose and say that she/he resides at [address], that she/he is [title] of [corporation], the corporation described in and which executed the above instrument; that she/he knows the seal of said corporation; that the seal affixed to such instrument is such corporate seal; that it was so affixed by order to the Board of Directors of said corporation, and that she/he signed her/his name thereto by like order.

[Signature of Notary Public]

(b) A surety bond guaranteeing payment into a trust fund, as specified in § 144.63 of this chapter, must be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

**Financial Guarantee Bond**

Dated bond executed: _____
Effective date: _____
Principal: [legal name and business address of owner or operator].
Type of organization: [insert "individual," "joint venture," "partnership," or "corporation"].
State of incorporation: _____
Surety(ies): [name(s) and business address(es)].
EPA Identification Number, name, address, and plugging and abandonment amount(s) for each facility guaranteed by this bond [indicate plugging and abandonment amounts separately]: _____
Total penal sum of bond: $_____
Surety's bond number: _____

Know All Persons By These Presents, That we, the Principal and Surety(ies) hereto are firmly bound to the U.S. Environmental Protection Agency (hereinafter called EPA), in the above penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally; provided that, where the Surety(ies) are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum.

Whereas said Principal is required, under the Underground Injection Control Regulations (UIC), to have a permit or comply with requirements to operate under rule in order to own or operate each injection well identified above, and

Whereas said Principal is required to provide financial assurance for plugging and abandonment as a condition of the permit or provisions to operate under rule, and

Whereas said Principal shall establish a standby trust fund as is required when a surety bond is used to provide such financial assurance;

Now, therefore, the conditions of the obligation are such that if the Principal shall faithfully, before the beginning of plugging and abandonment of each injection well identified above, fund the standby trust fund in the amount(s) identified above for the injection well.

Or if the Principal shall fund the standby trust fund in such amount(s) within 15 days after an order to begin plugging and abandonment is issued by an EPA Regional Administrator or a U.S. district court or other court of competent jurisdiction,

Or, if the Principal shall provide alternate financial assurance, as specified in Subpart F of 40 CFR 144, as applicable, and obtain the EPA Regional Administrator's written approval of such assurance, within 90 days after the date of notice of cancellation is received by both the Principal and the EPA Regional Administrator(s) from the Surety(ies), then this obligation shall be null and void, otherwise it is to remain in full force and effect.

The Surety(ies) shall become liable on this bond obligation only when the Principal has failed to fulfill the conditions described above. Upon notification by an EPA Regional Administrator that the Principal has failed to perform as guaranteed by this bond, the Surety(ies) shall place funds in the amount guaranteed for the injection well(s) into the standby trust funds as directed by the EPA Regional Administrator.

The liability of the Surety(ies) shall not be discharged by any payment or succession of payments hereunder, unless and until such payment or payments shall amount in the aggregate to the penal sum of the bond, but in no event shall the obligation of the Surety(ies) hereunder exceed the amount of said penal sum.

The Surety(ies) may cancel the bond by sending notice of cancellation by certified mail to the Principal and to the EPA Regional Administrator(s) for the Region(s) in which the injection well(s) is (are) located, provided, however, that that cancellation shall not occur during the 120 days beginning on the date of receipt of the notice of cancellation by both the Principal and the EPA Regional Administrator(s), as evidenced by the return receipts.

The Principal may terminate this bond by sending written notice to the Surety(ies), provided, however, that no such notice shall become effective until the Surety(ies) receive(s) written authorization for termination of the bond by the EPA Regional Administrator(s) of the Region(s) in which the bonded facility(ies) is (are) located.

[The following paragraph is an optional rider that may be included but is not required.]

Principal and Surety(ies) hereby agree to adjust the penal sum of the bond yearly so that it guarantees a new plugging and abandonment amount, provided that the penal sum does not increase by more than 20 percent in any one year, and no decrease in the penal sum takes place without the written permission of the EPA Regional Administrator(s).

In Witness Whereof, the Principal and Surety(ies) have executed this Financial Guarantee Bond and have affixed their seals on the date set forth above

The persons whose signatures appear below hereby certify that they are authorized to execute this surety bond on behalf of the Principal and Surety(ies) and that the wording of this surety bond is identical to the wording specified in 40 CFR 144.70(b) as such regulations were constituted on the date this bond was executed.

Principal

[Signature(s)]
[Name(s)]
[Title(s)]
[Corporate seal]

Corporate Surety(ies)

[Name and address]
State of incorporation: ———.
Liability limit: $———.
[Signature(s)]
[Name(s) and title(s)]
[Corporate seal]
[For every co-surety, provide signature(s), corporate seal, and other information in the same manner as for Surety above.]
Bond premium: $———.

(c) A surety bond guaranteeing performance of plugging and abandonment, as specified in § 144.63(c), must be worded as follows, except that the instructions in brackets are to be replaced with the relevant information and the brackets deleted:

**Performance Bond**

Date bond executed: ———.
Effective date: ———.
Principal: [legal name and business address of owner or operator].
Type of organization: [insert "individual," "joint venture," "partnership," or "corporation"].
State of incorporation: ———.
Surety(ies): [name(s) and business address(es)]

---

EPA Identification Number, name, address, and plugging and abandonment amounts(s) for each injection well guaranteed by this bond [indicate plugging and abandonment amounts for each well].

---

Total penal sum of bond: $———.
Surety's bond number: ———.

Know All Persons By These Presents, That We, the Principal and Surety(ies) hereto are firmly bound to the U.S. Environmental Protection Agency [hereinafter called EPA], in the above penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally; provided that, where the Surety(ies) are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum.

Whereas said Principal is required, under the Underground Injection Control Regulations, as amended, to have a permit or comply with provisions to operate under rule for each injection well identified above, and

Whereas said Principal is required to provide financial assurance for plugging and abandonment as a condition of the permit or approval to operate under rule, and

Whereas said Principal shall establish a standby trust fund as is required when a surety bond is used to provide such financial assurance;

Now, Therefore, the conditions of this obligation are such that if the Principal shall faithfully perform plugging and abandonment, whenever required to do so, of each injection well for which this bond guarantees plugging and abandonment, in accordance with the plugging and abandonment plan and other requirements of the permit or provisions for operating under rule and other requirements of the permit or provisions for operating under rule as may be amended, pursuant to all applicable laws, statutes, rules and regulations, as such laws, statutes, rules, and regulations may be amended,

Or, if the Principal shall provide alternate financial assurance as specified in Subpart F of 40 CFR 144, and obtain the EPA Regional Administrator's written approval of such assurance, within 90 days after the date of notice of cancellation is received by both the Principal and the EPA Regional Administrator(s) from the Surety(ies), then this obligation shall be null and void, otherwise it is to remain in full force and effect.

The Surety(ies) shall become liable on this bond obligation only when the Principal has failed to fulfill the conditions described above.

Upon notification by an EPA Regional Administrator that the Principal has been found in violation of the plugging and abandonment requirements of 40 CFR 144, for an injection well which this bond guarantees performances of plugging and abandonment, the Surety(ies) shall either perform plugging and abandonment in accordance with the plugging and abandonment plan and other permit requirements or provisions for operating under rule and other requirements or place the amount for plugging and abandonment into a standby trust fund as directed by the EPA Regional Administrator.

Upon notification by an EPA Regional Administrator that the Principal has failed to provide alternate financial assurance as specified in Subpart F of 40 CFR 144, and obtain written approval of such assurance from the EPA Regional Administrator(s) during the 90 days following receipt by both the Principal and the EPA Regional Administrator(s) of a notice of cancellation of the bond, the Surety(ies) shall place funds in the amount guaranteed for the injection well(s) into the standby trust fund as directed by the EPA Regional Administrator.

The surety(ies) hereby waive(s) notification of amendments to plugging and abandonment plans, permits, applicable laws, statutes, rules, and regulations and agrees that no such amendment shall in any way alleviate its (their) obligation on this bond.

The liability of the Surety(ies) shall not be discharged by any payment or succession of payments hereunder, unless and until such payment or payments shall amount in the aggregate to the penal sum of the bond, but in no event shall the obligation of the Surety(ies) hereunder exceed the amount of said penal sum.

The Surety(ies) may cancel the bond by sending notice by certified mail to the owner or operator and to the EPA Regional Administrator(s) for the Region(s) in which the injection well(s) is (are) located, provided, however, that cancellation shall not occur during the 120 days beginning on the date of receipt of the notice of cancellation by both the Principal and the EPA Regional Administrator(s), as evidenced by the return receipts.

The principal may terminate this bond by sending written notice to the Surety(ies), provided, however, that no such notice shall become effective until the Surety(ies) receive(s) written authorization for termination of the bond by the EPA Regional Administrator(s) of the EPA Region(s) in which the bonded injection well(s) is (are) located.

[The following paragraph is an optional rider that may be included but is not required.]

Principal and Surety(ies) hereby agree to adjust the penal sum of the bond yearly so that it guarantees a new plugging and abandonment amount, provided that the penal sum does not increase by more than 20 percent in any one year, and no decrease in the penal sum takes place without the written permission of the EPA Regional Administrator(s).

In Witness Whereof, The Principal and Surety(ies) have executed this Performance Bond and have affixed their seals on the date set forth above.

The persons whose signatures appear below hereby certify that they are authorized to execute this surety bond on behalf of the Principal and Surety(ies) and that the wording on this surety bond is identical to the wording specified in 40 CFR 144.70(c) as such regulation was constituted on the date this bond was executed.

Principal.
[Signature(s)]
[Name(s)]
[Title(s)]
[Corporate seal]
[Corporate Surety(ies)]
[Name and address]
State of incorporation:

---

Liability limit: $————.
[Signature(s)]

[Name(s) and title(s)]
Corporate seal:
[For every co-surety, provide signature(s), corporate seal, and other information in the same manner as for Surety above.]
Bond premium: $————.

(d) A letter of credit, as specified in § 144.63(d) of this chapter, must be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

**Irrevocable Standby Letter of Credit**

Regional Administrator(s)
Region(s) ————————————
U.S. Environmental Protection Agency.
Dear Sir or Madam:

We hereby establish our Irrevocable Standby Letter of Credit No. —— in your favor, at the request and for the account of [owner's or operator's name and address] up to the aggregate amount of [in words] U.S dollars $————, available upon presentation [insert, if more than one Regional Administrator is a beneficiary, "by any one of you"] of

(1) Your sight draft, bearing reference to this letter of credit No. ————, and

(2) Your signed statement reading as follows: "I certify that the amount of the draft is payable pursuant to regulations issued under authority of the Safe Drinking Water Act."

This letter of credit is effective as of [date] and shall expire on [date at least 1 year later], but such expiration date shall be automatically extended for a period of [at least 1 year] on [date] and on each successive expiration date, unless, at least 120 days before the current expiration date, we notify both you and [owner's or operator's name] by certified mail that we have decided not to extend this letter of credit beyond the current expiration date. In the event you are so notified, any unused portion of the credit shall be available upon presentation of your sight draft for 120 days after the date of receipt by both you and [owner's or operator's name], as shown on the signed return receipts.

Whenever this letter of credit is drawn on under and in compliance with the terms of this credit, we shall duly honor such draft upon presentation to us, and we shall deposit the amount of the draft directly into the standby trust fund of [owner's or operator's name] in accordance with your instructions.

We certify that the wording of this letter of credit is identical to the wording specified in 40 CFR 144.70(d) as such regulations were constituted on the date shown immediately below.

[Signature(s) and title(s) of official(s) of issuing institution]
[Date]

This credit is subject to [insert "the most recent edition of the Uniform Customs and Practice for Documentary Credits, published by the International Chamber of Commerce," or "the Uniform Commercial Code"].

(e) A certificate of insurance, as specified in § 144.63(e) of this chapter, must be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

Certificate of Insurance for Plugging and Abandonment

Name and Address of Insurer (herein called the "insurer"):

---

Name and Address of Insurer (herein called the "insurer"):

---

Injection Wells covered. [list for each well: The EPA Identification Number, name, address, and the amount of insurance for plugging and abandonment (these amounts for all injection wells covered must total the face amount shown below).]
Face Amount: ————————————
Policy Number: ————————————
Effective Date: ————————————

The insurer hereby certifies that it has issued to the Insured the policy of insurance identified above to provide financial assurance for plugging and abandonment for the injection wells identified above. The Insurer further warrants that such policy

conforms in all respects with the requirements of 40 CFR 144.63(e), as applicable and as such regulations were constituted on the date shown immediately below. It is agreed that any provision of the policy inconsistent with such regulations is hereby amended to eliminate such inconsistency.

Whenever requested by the EPA Regional Administrator(s) of the U.S. Environmental Protection Agency, the Insurer agrees to furnish to the EPA Regional Administrator(s) a duplicate original of the policy listed above, including all endorsements thereon.

I hereby certify that the wording of this certificate is identical to the wording specified in 40 CFR 144.70(e) as such regulations were constituted on the date shown immediately below.

[Authorized signature of Insurer]
[Name of person signing]
[Title of person signing]
[Signature of witness or notary:]

[Date]

(f) A letter from the chief financial officer, as specified in § 144.63(f) of this chapter, must be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

**Letter From Chief Financial Officer**

[Address to Regional Administrator of every Region in which injection wells for which financial responsibility is to be demonstrated through the financial test are located.]

I am the chief financial officer of [name and address of firm.] This letter is in support of this firm's use of the financial test to demonstrate financial assurance, as specified in Subpart F of 40 CFR Part 144.

[Fill out the following four paragraphs regarding injection wells and associated cost estimates. If your firm has no injection wells that belong in a particular paragraph, write "None" in the space indicated. For each injection well, include its EPA Identification Number, name, address, and current plugging and abandonment cost estimate.]

1. This firm is the owner or operator of the following injection wells for which financial assurance for plugging and abandonment is demonstrated through the financial test specified in Subpart F of 40 CFR Part 144. The current plugging and abandonment cost estimate covered by the test is shown for each injection well: ———.

2. This firm guarantees, through the corporate guarantee specified in Subpart F of 40 CFR Part 144, the plugging and abandonment of the following injection wells owned or operated by subsidiaries of this firm. The current cost estimate for plugging and abandonment so guaranteed is shown for each injection well: ———.

3. In States where EPA is not administering the financial requirements of Subpart F of 40 CFR 144, this firm, as owner or operator or guarantor, is demonstrating financial assurance for the plugging and abandonment of the following injection wells through the use of a test equivalent or substantially equivalent to the financial test specified in Subpart F of 40 CFR 144. The current plugging and abandonment cost estimate covered by such a test is shown for each injection well: ———.

4. This firm is the owner or operator of the following injection wells for which financial assurance for plugging and abandonment is not demonstrated either to EPA or a State through the financial test or any other financial assurance mechanism specified in Subpart F of 40 CFR 144 or equivalent or substantially equivalent State mechanisms. The current plugging and abandonment cost estimate not covered by such financial assurance is shown for each injection well. ———.

This firm [insert "is required" or "is not required"] to file a Form 10K with the Securities and Exchange Commission (SEC) for the latest fiscal year.

The fiscal year of this firm ends on [month, day]. The figures for the following items marked with an asterisk are derived from this firm's independently audited, year-end financial statements for the latest completed fiscal year, ended [date].

[Fill in Alternative I if the criteria of paragraph (f)(1)(i) of § 144.63 of this chapter are used. Fill in Alternative II if the criteria of paragraph (f)(1)(ii) of § 144.63 of this chapter are used.]

**ALTERNATIVE I**

| | |
|---|---|
| 1 (a) Current plugging and abandonment cost | $ ——— |
| (b) Sum of the company's financial responsibilities under 40 CFR 264 and 265, Subpart H, currently met using the financial test or corporate guarantee | |
| (c) Total of lines a and b | |
| *2 Total liabilities (if any portion of the plugging and abandonment cost is included in total liabilities, you may deduct the amount of that portion from this line and add that amount to lines 3 and 4) | |
| *3 Tangible net worth | |
| *4. Net worth | |
| *5 Current assets | |
| *6 Current liabilities | |
| *7. Net working capital (line 5 minus line 6) | |
| *8 The sum of net income plus depreciation, depletion and amortization | |
| *9 Total assets in U.S. (required only if less than 90% of firm's assets are located in U.S.) | |

| | Yes | No |
|---|---|---|
| 10 Is line 3 at least $10 million? | | |
| 11 Is line 3 at least 6 times line 1(c)? | | |
| 12 Is line 7 at least 6 times line 1(c)? | | |
| *13 Are at least 90% of firm's assets located in the U.S.? If not, complete line 14 | | |
| 14 Is line 8 at least 6 times line 1(c)? | | |

**ALTERNATIVE I—Continued**

| | |
|---|---|
| 15 Is line 2 divided by line 4 less than 2.0? | |
| 16 Is line 8 divided by line 2 greater than 0.1? | |
| 17 Is line 5 divided by line 6 greater than 1.5? | |

**Alternative II**

| | |
|---|---|
| 1 (a) Current plugging and abandonment cost | $ ——— |
| (b) Sum of the company's financial responsibilities under 40 CFR 264 and 265, Subpart H, currently met using the financial test or corporate guarantee | |
| (c) Total of lines a and b | |
| 2 Current bond rating of most recent issuance of this firm and name of rating service | |
| 3 Date of issuance of bond | |
| 4 Date of maturity of bond | |
| *5 Tangible net worth (if any portion of the plugging and abandonment cost estimate is included in "total liabilities" on your firm's financial statements, you may add the amount of that portion to this line) | |
| *6 Total assets in U.S. (required only if less than 90% of firm's assets are located in U.S.) | |

| | Yes | No |
|---|---|---|
| 7. Is line 5 at least $10 million? | | |
| 8. Is line 5 at least 6 times line 1(c)? | | |
| *9. Are at least 90% of the firm's assets located in the U.S.? If not, complete line 10 | | |
| 10 Is line 6 at least 6 times line 1(c)? | | |

I hereby certify that the wording of this letter is identical to the wording specified in 40 CFR 144.70(f) as such regulations were constituted on the date shown immediately below.

[Signature]
[Name]
[Title]
[Date]

(g) A corporate guarantee as specified in § 144.63(e) must be worded as follows except that instructions in brackets are to be replaced with the relevant information and the bracketed material deleted:

**Guarantee for Plugging and Abandonment**

Guarantee made this ——day of ———— 19 ——, by [name of guaranteeing entity], a business corporation organized under the laws of the State of ————, herein referred to as guarantor, to the United States Environmental Protection Agency (EPA), obligee, on behalf of our subsidiary [owner or operator] of [business address].

Recitals

1. Guarantor meets or exceeds the financial test criteria and agrees to comply with the reporting requirements for guarantors as specified in 40 CFR 144.63(e).

[Sec. 144.70(f)]

2. [Owner or operator] owns or operates the following Class I hazardous waste injection well covered by this guarantee: [List for each facility: EPA Identification Number, name, and address. Indicate for each whether guarantee is for closure, post-closure care, or both.]

3. "Plugging and abandonment plan" as used below refers to the plans maintained as required by 40 CFR Part 144 for the plugging and abandonment of injection wells as identified above.

4. For value received from [owner or operator], guarantor guarantees to EPA that in the event that [owner or operator] fails to perform ["plugging and abandonment"] of the above facility(ies) in accordance with the plugging and abandonment plan and other requirements when required to do so, the guarantor will do so or fund a trust fund as specified in 40 CFR 144.63 in the name of [owner or operator] in the amount of the adjusted plugging and abandonment cost estimates prepared as specified in 40 CFR 144.62.

5. Guarantor agrees that, if at the end of any fiscal year before termination of this guarantee, the guarantor fails to meet the financial test criteria, guarantor will send within 90 days, by certified mail, notice to the EPA Regional Administrator(s) for the Region(s) in which the facility(ies) is (are) located and to [owner or operator] that he intends to provide alternate financial assurance as specified in 40 CFR 144.63 in the name of [owner or operator]. Within 30 days after sending such notice, the guarantor will establish such financial assurance if [owner or operator] has not done so.

6. The guarantor agrees to notify the Regional Administrator, by certified mail, of a voluntary or involuntary case under Title 11, U.S. Code, naming guarantor as debtor, within 10 days after its commencement.

7. Guarantor agrees that within 30 days after being notified by an EPA Regional Administrator of a determination that guarantor no longer meets the financial test criteria or that he is disallowed from continuing as a guarantor of plugging and abandonment, he will establish alternate financial assurance, as specified in 40 CFR 144.63, in the name of [owner or operator] if [owner or operator] has not done so.

8. Guarantor agrees to remain bound under this guarantee notwithstanding any or all of the following: amendment or modification of the plugging and abandonment plan, the extension or reduction of the time of performance of plugging and abandonment or any other modification or alteration of an obligation of [owner or operator] pursuant to 40 CFR Part 144.

9. Guarantor agrees to remain bound under this guarantee for so long as [owner or operator] must comply with the applicable financial assurance requirements of 40 CFR Part 144 for the above-listed facilities, except that guarantor may cancel this guarantee by sending notice by certified mail, to the EPA Regional Administrator(s) for the Region(s) in which the facility(ies) is (are) located and to [owner or operator], such cancellation to become effective no earlier than 120 days after actual receipt of such notice by both EPA and [owner or operator] as evidenced by the return receipts.

10. Guarantor agrees that if [owner or operator] fails to provide alternate financial assurance and obtain written approval of such assurance from the EPA Regional Administrator(s) within 90 days after a notice of cancellation by the guarantor is received by both the EPA Regional Administrator(s) and [owner or operator], guarantor will provide alternate financial assurance as specified in 40 CFR 144.63 in the name of [owner or operator].

11. Guarantor expressly waives notice of acceptance of this guarantee by the EPA or by [owner or operator]. Guarantor also expressly waives notice of amendments or modifications of the plugging and abandonment plan.

I hereby certify that the wording of this guarantee is identical to the wording specified in 40 CFR 144.70(f).

Effective date: ———.

[Name of guarantor]

[Authorized signature for guarantor]

[Type name of person signing]

[Title of person signing]

Signature of witness or notary: ———

## Appendix A—Underground Injection Control Permit Application

Form Approved. OMB No. 2040-0042. Expires 9-30-86

| Form 4 UIC | EPA | UNITED STATES ENVIRONMENTAL PROTECTION AGENCY<br>**UNDERGROUND INJECTION CONTROL PERMIT APPLICATION**<br>*(Collected under the authority of the Safe Drinking Water Act, Sections 1421, 1422, 40 CFR 144)* | I EPA ID NUMBER<br>U |
|---|---|---|---|

*READ ATTACHED INSTRUCTIONS BEFORE STARTING*
FOR OFFICIAL USE ONLY

| Application approved mo day year | Date Received mo day year | Permit/Well Number | Comments |
|---|---|---|---|
| | | | |

**II FACILITY NAME AND ADDRESS**

Facility Name

Street Address

City | State | ZIP Code

**III OWNER/OPERATOR AND ADDRESS**

Owner/Operator Name

Street Address

City | State | ZIP Code

**IV OWNERSHIP STATUS** *(Mark 'x')*

☐ A. Federal ☐ B. State ☐ C. Private
☐ D. Public ☐ E. Other *(Explain)*

**V SIC CODES**

**VI WELL STATUS** *(Mark 'x')*

☐ A. Operating — Date Started mo day year ☐ B. Modification/Conversion ☐ C. Proposed

**VII TYPE OF PERMIT REQUESTED** *(Mark 'x' and specify if required)*

☐ A. Individual ☐ B. Area | Number of Existing wells | Number of Proposed wells | Name(s) of field(s) or project(s)

**VIII CLASS AND TYPE OF WELL** *(see reverse)*

| A. Class(es) *(enter code(s))* | B. Type(s) *(enter code(s))* | C. If class is "other" or type is code 'x,' explain | D. Number of wells per type (if area permit) |
|---|---|---|---|
| | | | |

**IX LOCATION OF WELL(S) OR APPROXIMATE CENTER OF FIELD OR PROJECT**

| C. | A. Latitude | | | B. Longitude | | | Township and Range | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Deg | Min | Sec | Deg | Min | Sec | Twsp | Range | Sec | ¼ Sec | Feet from | Line | Feet from | Line |
| | | | | | | | | | | | | | | |

**X. INDIAN LANDS** *(Mark 'x')* ☐ Yes ☐ No

**XI ATTACHMENTS**

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

FOR CLASSES I, II, III (and other classes) complete and submit on separate sheet(s) Attachments A — U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application:

**XII CERTIFICATION**

*I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)*

| A. Name and Title *(Type or Print)* | B. Phone No. *(Area Code and No.)* |
|---|---|
| C. Signature | D. Date Signed |

EPA Form 7520-6 (2-84)

[Appendix A]



Published by THE BUREAU OF NATIONAL AFFAIRS INC., Washington, D.C. 20037

## Well Class and Type Codes

| | |
|---|---|
| **Class I** | Wells used to inject waste below the deepest underground source of drinking water |
| Type "I" | Nonhazardous industrial disposal well |
| "M" | Nonhazardous municipal disposal well |
| "W" | Hazardous waste disposal well injecting below USDWs |
| "X" | Other Class I wells (not included in Type "I," "M," or "W") |
| **Class II** | Oil and gas production and storage related injection wells |
| Type "D" | Produced fluid disposal well |
| "R" | Enhanced recovery well |
| "H" | Hydrocarbon storage well (excluding natural gas) |
| "X" | Other Class II wells (not included in Type "D," "R," or "H") |
| **Class III** | Special process injection wells. |
| Type "G" | Solution mining well |
| "S" | Sulfur mining well by Frasch process |
| "U" | Uranium mining well (excluding solution mining of conventional mines) |
| "X" | Other Class III wells (not included in Type "G," "S," or "U") |
| **Other Classes** | Wells not included in classes above. |
| | Class V wells which may be permitted under §144.12 |
| | Wells not currently classified as Class I, II, III, or V. |

## Attachments to Permit Application

| **Class** | **Attachments** |
|---|---|
| I new well | A, B, C, D, F, H — S, U |
| existing | A, B, C, D, F, H — U |
| II new well | A, B, C, E, G, H, M, O, R, optional — I, J, K, O, P, U |
| existing | A, E, G, H, M, O, R — U, optional — J, K, O, P, Q |
| III new well | A, B, C, D, F, H, I, J, K, M — S, U |
| existing | A, B, C, D, F, H, J, K, M — U |
| Other Classes | To be specified by the permitting authority |

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## INSTRUCTIONS — Form 4 — Underground Injection Control (UIC) Permit Application

Form 4 must be completed by all owners or operators of Class I, II, and III injection wells and others who may be directed to apply for a UIC permit by the Director

**I. EPA I.D. NUMBER** – Fill in your EPA Identification Number If you do not have a number, leave blank

**II FACILITY NAME AND ADDRESS** — Name of well, well field or company and address

**III. OWNER/OPERATOR NAME AND ADDRESS** — Name and address of owner/operator of well or well field

**IV. OWNERSHIP STATUS** — Mark the appropriate box to indicate the type of ownership

**V. SIC CODES** — List at least one and no more than four Standard Industrial Classification (SIC) Codes that best describe the nature of the business in order of priority

**VI. WELL STATUS** — Mark Box A if the well(s) were operating as injection wells on the effective date of the UIC Program for the State Mark Box B if the well(s) existed on the effective date of the UIC Program for the State but were not utilized for injection. Box C should be marked if the application is for an underground injection project not constructed or not completed by the effective date of the UIC Program for the State

**VII. TYPE OF PERMIT** — Mark "Individual" or "Area" to indicate the type of permit desired Note that area permits are at the discretion of the Director and that wells covered by an area permit must be at one site, under the control of one person and do not inject hazardous waste If an area permit is requested the number of wells to be included in the permit must be specified and the wells described and identified by location If the area has a commonly used name, such as the "Jay Field," submit the name in the space provided In the case of a project or field which crosses State lines, it may be possible to consider an area permit if EPA has jurisdiction in both States Each such case will be considered individually, if the owner/operator elects to seek an area permit

**VIII CLASS AND TYPE OF WELL** — Enter in these two positions the Class and type of injection well for which a permit is requested Use the most pertinent code selected from the list on the reverse side of Form 4 When selecting type 7 please explain in the space provided

**IX. LOCATION OF WELL** — Enter the latitude and longitude of the existing or proposed well expressed in degrees minutes, and seconds or the location by township, and range, and section, as required by 40 CFR 146 If an area permit is being requested, give the latitude and longitude of the approximate center of the area

**X. INDIAN LANDS** — Place an "X" in the box if any part of the facility is located on Indian lands

**XI. ATTACHMENTS** — Note that information requirements vary depending on the injection well class and status Attachments for Class I, II, and III are described on pages 4 and 5 of this document and listed by Class on page 2 Place EPA ID number in the upper right hand corner of each page

**XII. CERTIFICATION** — All permit applications (except Class II) must be signed by a responsible corporate officer for a corporation, by a general partner for a partnership, by the proprietor of a sole proprietorship, and by a principal executive or ranking elected official for a public agency For Class II, the person described above should sign, or a representative duly authorized in writing

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[Appendix A]



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## INSTRUCTIONS — Attachments to Form 4

Attachments to be submitted with permit application for Class I, II, III and other wells

**A. AREA OF REVIEW METHODS** — Give the methods and, if appropriate, the calculations used to determine the size of the area of review (fixed radius or equation). The area of review shall be a fixed radius of ¼ mile from the well bore unless the use of an equation is approved in advance by the Director.

**B. MAPS OF WELLS / AREA AND AREA OF REVIEW** — Submit a topographic map, extending one mile beyond the property boundaries, showing the injection well(s) or project area for which a permit is sought and the applicable area of review. The map must show all intake and discharge structures and all hazardous waste, treatment, storage or disposal facilities. If the application is for an area permit, the map should show the distribution manifold (if applicable) applying injection fluid to all wells in the area, including all system monitoring points. Within the area of review, the map must show the following:

**Class I**

The number, or name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, mines (surface and subsurface), quarries, and other pertinent surface features, including residences and roads, and faults, if known or suspected. In addition, the map must identify those wells, springs, other surface water bodies, and drinking water wells located with one quarter mile of the facility property boundary. Only information of public record is required to be included on this map.

**Class II**

In addition to requirements for Class I, include pertinent information known to the applicant. This requirement does not apply to existing Class II wells.

**Class III**

In addition to requirements for Class I, include public water systems and pertinent information known to the applicant.

**C. CORRECTIVE ACTION PLAN AND WELL DATA** — Submit a tabulation of data reasonably available from public records or otherwise known to the applicant on all wells within the area of review, including those on the map required in B, which penetrate the proposed injection zone. Such data shall include the following:

**Class I**

A description of each well's type, construction, date drilled, location, depth, record of plugging and / or completion and any additional information the Director may require. In the case of new injection wells, include the corrective action proposed to be taken by the applicant under 40 CFR 144.55.

**Class II**

In addition to requirements for Class I, in the case of Class II wells operating over the fracture pressure of the injection formation, all known wells within the area of review which penetrate formations affected by the increase in pressure. This requirement does not apply to existing Class II wells.

**Class III**

In addition to requirements for Class I, the corrective action proposed under 40 CFR 144.55 for all Class III wells.

**D. MAPS AND CROSS SECTIONS OF USDWs** — Submit maps and cross sections indicating the vertical limits of all underground indicating the vertical limits of all underground sources of drinking water within the area of review (both vertical and lateral limits for Class I), their position relative to the injection formation and the direction of water movement, where known, in every underground source of drinking water which may be affected by the proposed injection. (Does not apply to Class II wells.)

**E. NAME AND DEPTH OF USDWs (CLASS II)** — For Class II wells, submit geologic name and depth to bottom of all underground sources of drinking water which may be affected by the injection.

**F. MAPS AND CROSS SECTIONS OF GEOLOGIC STRUCTURE OF AREA** — Submit maps and cross sections detailing the geologic structure of the local area (including the lithology of injection and confining intervals) and generalized maps and cross sections illustrating the regional geologic setting. (Does not apply to Class II wells.)

**G. GEOLOGICAL DATA ON INJECTION AND CONFINING ZONES (CLASS II)** — For Class II wells, submit appropriate geological data on the injection zone and confining zones including lithologic description, geological name, thickness, depth and fracture pressure.

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H. **OPERATING DATA** — Submit the following proposed operating data for each well (including all those to be covered by area permits) (1) average and maximum daily rate and volume of the fluids to be injected, (2) average and maximum injection pressure, (3) nature of annulus fluid, (4) for Class I wells, source and analysis of the chemical, physical, radiological and biological characteristics, including density and corrosiveness, of injection fluids, (5) for Class II wells, source and analysis of the physical and chemical characteristics of the injection fluid, (6) for Class III wells, a qualitative analysis and ranges in concentrations of all constituents of injected fluids. If the information is proprietary, maximum concentrations only may be submitted, but all records must be retained

I. **FORMATION TESTING PROGRAM** — Describe the proposed formation testing program. For Class I wells the program must be designed to obtain data on fluid pressure, temperature, fracture pressure, other physical, chemical, and radiological characteristics of the injection matrix and physical and chemical characteristics of the formation fluids

For Class II wells the testing program must be designed to obtain data on fluid pressure, estimated fracture pressure, physical and chemical characteristics of the injection zone (Does not apply to existing Class II wells or projects.)

For Class III wells the program must be designed to obtain data on fluid pressure, fracture pressure, and physical and chemical characteristics of the formation fluids if the formation is naturally water bearing. Only fracture pressure is required if the formation is not water bearing. (Does not apply to existing Class III wells or projects.)

J. **STIMULATION PROGRAM** — Outline any proposed stimulation program.

K. **INJECTION PROCEDURES** — Describe the proposed injection procedures including pump, surge, tank, etc.

L. **CONSTRUCTION PROCEDURES** — Discuss the construction procedures (according to §146.12 for Class I, §146.22 for Class II, and §146.32 for Class III) to be utilized. This should include details of the casing and cementing program, logging procedures, deviation checks, and the drilling, testing and coring programs, and proposed annulus fluid. (Request and submission of justifying data must be made to use an alternative to a packer for Class I.)

M. **CONSTRUCTION DETAILS** — Submit schematic or other appropriate drawings of the surface and subsurface construction details of the well.

N. **CHANGES IN INJECTED FLUID** — Discuss expected changes in pressure, native fluid displacement, and direction of movement of injected fluid. (Class III wells only.)

O. **PLANS FOR WELL FAILURES** — Outline contingency plans (proposed plans, if any, for Class II) to cope with all shut-ins or well failures, so as to prevent migration of fluids into any USDW.

P. **MONITORING PROGRAM** -- Discuss the planned monitoring program. This should be thorough, including maps showing the number and location of monitoring wells as appropriate and a discussion of monitoring devices, sampling frequency, and parameters measured. If a manifold monitoring program is utilized, pursuant to §146.23(b)(5), describe the program and compare it to individual well monitoring.

Q. **PLUGGING AND ABANDONMENT PLAN** — Submit a plan for plugging and abandonment of the well including (1) describe the type, number, and placement (including the elevation of the top and bottom) of plugs to be used, (2) describe the type, grade, and quantity of cement to be used, and (3) describe the method to be used to place plugs, including the method used to place the well in a state of static equilibrium prior to placement of the plugs. Also for a Class III well that underlies or is in an exempted aquifer, demonstrate adequate protection of USDWs. Submit this information on EPA Form 7520-14, Plugging and Abandonment Plan.

R. **NECESSARY RESOURCES** — Submit evidence such as a surety bond or financial statement to verify that the resources necessary to close, plug or abandon the well are available.

S. **AQUIFER EXEMPTIONS** — If an aquifer exemption is requested, submit data necessary to demonstrate that the aquifer meets the following criteria: (1) does not serve as a source of drinking water, (2) cannot now and will not in the future serve as a source of drinking water, and (3) the TDS content of the ground water is more than 3,000 and less than 10,000 mg/l and is not reasonably expected to supply a public water system. Data to demonstrate that the aquifer is expected to be mineral or hydrocarbon producing, such as general description of the mining zone, analysis of the amenability of the mining zone to the proposed method, and time table for proposed development must also be included. For additional information on aquifer exemptions, see 40 CFR 144.7 and 146.04.

T. **EXISTING EPA PERMITS** — List program and permit number of any existing EPA permits, for example, NPDES, PSD, RCRA, etc.

U. **DESCRIPTION OF BUSINESS** — Give a brief description of the nature of the business.

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[Appendix A]

# ENVIRONMENTAL PROTECTION AGENCY CRITERIA AND STANDARDS FOR THE UNDERGROUND INJECTION CONTROL PROGRAM

(40 CFR 146; 45 FR 42500, June 24, 1980, Effective July 24, 1980; Amended by 46 FR 43160, August 27, 1981; 47 FR 4998, February 3, 1982; 47 FR 32129, July 26, 1982; 48 FR 14153, April 1, 1983; 48 FR 31404, July 8, 1983)

## PART 146—UNDERGROUND INJECTION CONTROL PROGRAM: CRITERIA AND STANDARDS

### Subpart A—General Provisions



Authority: Secs. 1421, 1422, 1423, 1431, 1445, 1447, and 1450 of the Safe Drinking Water Act, as amended, 42 U.S.C. 300(f) et. seq.

### Subpart A—General Provisions

#### § 146.01 Applicability and scope.

(a) This Part sets forth technical criteria and standards for the Underground Injection Control Program. This part should be read in conjunction with 40 CFR Parts 144, 145, and 124 which also apply to UIC programs. 40 CFR Part 144 defines the regulatory framework of EPA administered permit programs, 40 CFR Part 145 describes the elements of an approvable State program and procedures for EPA approval of State participation in the permit programs. 40 CFR Part 124 describes the procedures the Agency will use for issuing permits under the covered programs. Certain of these procedures will also apply to State-administered programs as specified in 40 CFR Part 145.

[146.01(a) amended by 48 FR 14153, April 1, 1983]

(b) Upon the approval, partial approval or promulgation of a State UIC program by the Administrator, any underground injection which is not authorized by the Director by rule or by permit is unlawful.

#### § 146.02 Law authorizing these regulations.

The laws authorizing these regulations and all other UIC program regulations are referenced in 40 CFR part 144. They include Sections 1421, 1422, 1423, 1431, 1445, 1447 and 1450 of the Public Health Service Act as amended by the Safe Drinking Water Act ("SDWA") (Pub. L. 93–523) and by the SDWA Amendments of 1977 (Pub. L. 95–190).

[146.02 amended by 48 FR 14153, April 1, 1983]

#### §146.03 Definitions.

The following definitions apply to the underground injection control program.

*Abandoned well* means a well whose use has been permanently discontinued or which is in a state of disrepair such that it cannot be used for its intended purpose or for observation purposes.

*Administrator* means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

*Application* means the EPA standard national forms for applying for a permit, including any additions, revisions or modifications to the forms; or forms approved by EPA for use in approved States, including any approved modifications or revisions. For RCRA, application also includes the information required by the Director under § 122.25 (contents of Part B of the RCRA application).

*Aquifer* means a geological formation, group of formations, or part of a formation that is capable of yielding a significant amount of water to a well or spring.

*Area of review* means the area surrounding an injection well described according to the criteria set forth in §146.06 or in the case of an area permit, the project area plus a circumscribing area the width of which is either ¼ of a mile or a number calculated according to the criteria set forth in §146.06.

*Casing* means a pipe or tubing of appropriate material, or varying diameter and weight, lowered into a borehole during or after drilling in order to support the sides of the hole and thus prevent the walls from caving, to prevent loss of drilling mud into porous ground, or to prevent water, gas, or other fluid from entering or leaving the hole.

*Catastrophic collapse* means the sudden and utter failure of overlying "strata" caused by removal of underlying materials.

*Cementing* means the operation whereby a cement slurry is pumped into a drilled hole and/or forced behind the casing.

*Confining bed* means a body of impermeable or distinctly less permeable material stratigraphically adjacent to one or more aquifers.

*Confining zone* means a geological formation, group of formations, or part of a formation that is capable of limiting fluid movement above an injection zone.

*Contaminant* means any physical, chemical, biological, or radiological substance or matter in water.

Conventional mine means an open pit or underground excavation for the production of minerals.

[Added by 47 FR 4998, February 3, 1982]

*Director* means the Regional Administrator or the State Director, as the context requires, or an authorized representative. When there is no approved State program, and there is an EPA administered program, "Director" means the Regional Administrator. When there is an approved State program, "Director" normally means the State Director. In some circumstances, however, EPA retains the authority to take certain actions even where there is an approved State program. (For example, when EPA issued an NPDES permit prior to the approval of a State program, EPA may retain jurisdiction over that permit after program approval, see § 123.69.) In such cases, the term "Director" means the Regional Administrator and not the State Director.

*Disposal well* means a well used for the disposal of waste into a subsurface stratum.

*Effective date of a UIC program* means the date that a State UIC program is approved or established by the Administrator.

*Environmental Protection Agency* ("EPA") means the United States Environmental Protection Agency.

*EPA* means the United States "Environmental Protection Agency."

*Exempted aquifer* means an aquifer or its portion that meets the criteria in the definition of "underground source of drinking water" but which has been exempted according to the procedures of §144.8(b).

[Amended by 48 FR 14153, April 1, 1983]

*Existing injection well* means an "injection well" other than a "new injection well."

Experimental technology means a technology which has not been proven feasible under the conditions in which it is being tested.

[Added by 47 FR 4998, February 3, 1982]

*Facility or activity* means any "HWM facility," UIC "injection well," NPDES "point source," or State 404 dredge and fill activity, or any other facility or activity (including land or appurtenances thereto) that is subject to regulation under the RCRA, UIC, NPDES, or 404 programs.

*Fault* means a surface or zone of rock fracture along which there has been displacement.

*Flow rate* means the volume per time unit given to the flow of gases or other fluid substance which emerges from an orifice, pump, turbine or passes along a conduit or channel.

*Fluid* means material or substance which flows or moves whether in a semisolid, liquid, sludge, gas, or any other form or state.

*Formation* means a body of rock characterized by a degree of lithologic homogeneity which is prevailingly, but not necessarily, tabular and is mappable on the earth's surface or traceable in the subsurface.

*Formation fluid* means "fluid" present in a "formation" under natural conditions as opposed to introduced fluids, such as drilling mud.

*Generator* means any person, by site location, whose act or process produces hazardous waste identified or listed in 40 CFR Part 261.

*Ground water* means water below the land surface in a zone of saturation.

*Hazardous waste* means a hazardous waste as defined in 40 CFR 261.3.

*Hazardous Waste Management facility* ("HWM facility") means all contiguous land, and structures, other appurtenances, and improvements on the land used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (for example, one or more landfills, surface impoundments, or combination of them).

*HWM facility* means "Hazardous Waste Management facility."

*Injection well* means a "well" into which "fluids" are being injected.

*Injection zone* means a geological "formation", group of formations, or part of a formation receiving fluids through a well.

*Lithology* means the description of rocks on the basis of their physical and chemical characteristics.

*Owner or operator* means the owner or operator of any facility or activity subject to regulation under the RCRA, UIC, NPDES, or 404 programs.

Packer means a device lowered into a well to produce a fluid-tight seal.

[Revised by 47 FR 4998, February 3, 1982]

*Permit* means an authorization, license, or equivalent control document issued by EPA or an "approved State" to implement the requirements of this part and Parts 144, 145 and 124. Permit does not include RCRA interim status (§ 122.23), UIC authorization by rule (§144.21—.26 and 144.15), or any permit which has not yet been the subject of final agency action, such as a "draft permit" or a "proposed permit."

*Plugging* means the act or process of stopping the flow of water, oil, or gas in "formations" penetrated by a borehole or "well."

*Plugging* means the act or process of stopping the flow of water, oil or gas into or out of a formation through a borehole or well penetrating that formation.

*Pressure* means the total load or force per unit area acting on a surface.

Project means a group of wells in a single operation.

[Added by 47 FR 4998, February 3, 1982]

*Radioactive Waste* means any waste which contains radioactive material in concentrations which exceed those listed in 10 CFR Part 20, Appendix B, Table II column 2.

[Amended by 46 FR 43160, August 27, 1981]

*RCRA* means the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976 (Pub. L. 94–580, as amended by Pub. L. 95–609, 42 U.S.C. 6901 et seq.).

*SDWA* means the Safe Drinking Water Act (Pub. L. 95–523, as amended by Pub. L. 95–190, 42 U.S.C. 300(f) *et seq.).*

*Site* means the land or water area where any facility or activity is physically located or conducted, including adjacent land used in connection with the facility or activity.

*Sole or principal source aquifer* means an aquifer which has been designated by the Administrator pursuant to sections 1424 (a) or (e) of the SDWA.

*State Director* means the chief administrative officer of any State or interstate agency operating an approved program, or the delegated representative of the State Director. If responsibility is divided among two or more State or interstate agencies, "State Director" means the chief administrative officer of the State or interstate agency authorized to perform the particular procedure or function to which reference is made.

*Stratum* (plural *strata*) means a single sedimentary bed or layer, regardless of thickness, that consists of generally the same kind of rock material.

*Subsidence* means the lowering of the natural land surface in response to: Earth movements; lowering of fluid pressure; removal of underlying

supporting material by mining or solution of solids, either artificially or from natural causes; compaction due to wetting (Hydrocompaction); oxidation of organic matter in soils; or added load on the land surface.

*Surface casing* means the first string of well casing to be installed in the well.

*Total dissolved solids* ("TDS") means the total dissolved (filterable) solids as determined by use of the method specified in 40 CFR Part 136.

*UIC* means the Underground Injection Control program under Part C of the Safe Drinking Water Act, including an "approved program."

*Underground injection* means a "well injection."

Underground source of drinking water (USDW) means an aquifer or its portion:

(1)(i) Which supplies any public water system; or

(ii) Which contains a sufficient quantity of ground water to supply a public water system; and

(A) Currently supplies drinking water for human consumption; or

(B) Contains fewer than 10,000 mg/l total dissolved solids; and

(2) Which is not an exempted aquifer.

[Revised by 47 FR 4998, February 3, 1982]

*USDW* means "underground source of drinking water."

*Well* means a bored, drilled or driven shaft, or a dug hole, whose depth is greater than the largest surface dimension.

*Well injection* means the subsurface emplacement of fluids through a bored, drilled or driven well; or through a dug well, where the depth of the dug well is greater than the largest surface dimension.

*Well plug* means a watertight and gastight seal installed in a borehole or well to prevent movement of fluids.

*Well stimulation* means several processes used to clean the well bore, enlarge channels, and increase pore space in the interval to be injected thus making it possible for waatewater to move more readily into the formation, and includes (1) surging, (2) jetting, (3) blasting, (4) acidizing, (5) hydraulic fracturing.

*Well monitoring* means the measurement, by on-site instruments or laboratory methods, of the quality of water in a well.

**§ 146.04 Criteria for exempted aquifers.**

An aquifer or a portion thereof which meets the criteria for an "underground source of drinking water" in § 146.03 may be determined under 40 CFR 144.8 to be an "exempted aquifer" if it meets the following criteria:

[146.04 introductory paragraph amended by 48 FR 14153, April 1, 1983]

(a) It does not currently serve as a source of drinking water; and

(b) It cannot now and will not in the future serve as a source of drinking water because:

(1) It is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible.

[146.04(b)(1) revised by 47 FR 4998, February 3, 1982]

(2) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;

(3) It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; or

(4) It is located over a Class III well mining area subject to subsidence or catastrophic collapse; or

[146.04(b)(4) amended by 47 FR 4998, February 3, 1982]

(c) The Total Dissolved Solids content of the ground water is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system.

[146.04(c) added by 47 FR 4998, February 3, 1982]

**§ 146.05 Classification of injection wells.**

Injection wells are classified as follows:

(a) *Class I.* (1) Wells used by generators of hazardous waste or owners or operators of hazardous waste management facilities to inject hazardous waste beneath the lowermost formation containing, within one quarter (1/4) mile of the well bore, an underground source of drinking water.

[146.05(a)(1) revised by 47 FR 4998, February 3, 1982]

(2) Other industrial and municipal disposal wells which inject fluids beneath the lowermost formation containing, within one quarter mile of the well bore, an underground source of drinking water.

(b) *Class II.* Wells which inject fluids:

(1) Which are brought to the surface in connection with conventional oil or natural gas production and may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection.

[146.05(b)(1) revised by 47 FR 4998, February 3, 1982]

(2) For enhanced recovery of oil or natural gas; and

(3) For storage of hydrocarbons which are liquid at standard temperature and pressure.

(c) Class III. Wells which inject for extraction of minerals including:

[146.05(c) amended by 47 FR 4998, February 3, 1982]

(1) Mining of sulfur by the Frasch process;

(2) In situ production of uranium or other metals. This category includes only in-situ production from ore bodies which have not been conventionally mined. Solution mining of conventional mines such as stopes leaching is included in Class V.

[146.05(c)(2) revised by 46 FR 43160, August 27, 1981]

(3) Solution mining of salts or potash.

[New 146.05(c)(3) added and former (3), (4) redesignated as (4), (5) by 46 FR 43160, August 27, 1981]

(4) [Removed]

146.05(c)(4) removed by 47 FR 4998, February 3, 1982]

(5) [Removed]

[146.05(c)(5) removed by 47 FR 4998, February 3, 1982]

(d) Class IV

(1) Wells used by generators of hazardous waste or of radioactive waste, by owners or operators of hazardous waste management facilities, or by owners or operators of radioactive waste disposal sites to dispose of hazardous waste or radioactive waste into a formation which within one quarter (¼) mile of the well contains an underground source of drinking water.

(2) Wells used by generators of hazardous waste or of radioactive waste, by owners or operators of hazardous waste management facilities or by owners or operators of radioactive waste disposal sites to dispose of hazardous waste or radioactive waste above a formation which within one quarter (¼) mile of the well contains an underground source of drinking water.

(3) Wells used by generators of hazardous waste or owners or operators of hazardous waste management facilities to dispose of hazardous waste which cannot be classified under §§ 146.05(a)(1) or 146.05(d) (1) and (2) (e.g., wells used to dispose of hazardous wastes into or above a formation which contains an aquifer which has been exempted pursuant to § 146.04).

[146.05(d) revised by 47 FR 4998 February 3, 1982]

[Sec. 146.05(d)(3)]

(e) Class V—Injection wells not included in Class I, II, III, or IV. Class V wells include:

[146.05(e) amended by 47 FR 4998, February 3, 1982]

(1) Air conditioning return flow wells used to return to the supply aquifer the water used for heating or cooling in a heat pump;

(2) Cesspools including multiple dwelling, community or regional cesspools, or other devices that receive wastes which have an open bottom and sometimes have perforated sides. The UIC requirements do not apply to single family residential cesspools nor to non-residential cesspools which receive solely sanitary wastes and have the capacity to serve fewer than 20 persons a day.

[146.05(e)(2) revised by 47 FR 4998, February 3, 1982]

(3) Cooling water return flow wells used to inject water previously used for cooling;

(4) Drainage wells used to drain surface fluid, primarily storm runoff, into a subsurface formation;

(5) Dry wells used for the injection of wastes into a subsurface formation;

(6) Recharge wells used to replenish the water in an aquifer;

(7) Salt water intrusion barrier wells used to inject water into a fresh water aquifer to prevent the intrusion of salt water into the fresh water;

(8) Sand backfill and other backfill wells used to inject a mixture of water and sand, mill tailings or other solids into mined out portions of subsurface mines whether what is injected is a radioactive waste or not. [146.05(e)(8) amended by 46 FR 43160, August 27, 1981]

(9) Septic system wells used to inject the waste or effluent from a multiple dwelling, business establishment, community or regional business establishment septic tank. The UIC requirements do not apply to single family residential septic system wells, nor to non-residential septic system wells which are used solely for the disposal of sanitary waste and have the capacity to serve fewer than 20 persons a day.

[146.05(e)(9) revised by 47 FR 4998, February 3, 1982]

(10) Subsidence control wells (not used for the purpose of oil or natural gas production) used to inject fluids into a non-oil or gas producing zone to reduce or eliminate subsidence associated with the overdraft of fresh water.

(11) Radioactive waste disposal wells other than Class IV;

[146.05(e)(11) revised by 46 FR 43160, August 27, 1981]

(12) Injection wells associated with the recovery of geothermal energy for heating, aquaculture and production of electric power.

[146.05(e)(12) revised by 47 FR 4998, February 3, 1982]

(13) Wells used for solution mining of conventional mines such as stopes leaching; [146.05(e)(14) and (15) added by 46 FR 43160, August 27, 1981]

(14) Wells used to inject spent brine into the same formation from which it was withdrawn after extraction of halogens or their salts;

(15) Injection wells used in experimental technologies.

(16) Injection wells used for in situ recovery of lignite, coal, tar sands, and oil shale.

[146.05(e)(16) added by 47 FR 4998, February 3, 1982]

**§ 146.06 Area of Review.**

The area of review for each injection well or each field, project or area of the State shall be determined according to either paragraph (a) or (b) of this section. The Director may solicit input from the owners or operators of injection wells within the State as to which method is most appropriate for each geographic area or field. [146.06(a) and (b) revised by 46 FR 43160, August 27, 1981]

(a) *Zone of endangering influence.* (1) The zone of endangering influence shall be:

(i) In the case of application(s) for well permit(s) under §122.38 that area the radius which is the lateral distance in which the pressures in the injection zone may cause the migration of the injection and/or formation fluid into an underground source of drinking water; or

(ii) In the case of an application for an area permit under §122.39, the project area plus a circumscribing area the width of which is the lateral distance from the perimeter of the project area, in which the pressures in the injection zone may cause the migration of the injection and/or formation fluid into an underground source of drinking water.

[146.06(a)(2) amended by 47 FR 4998, February 3, 1982]

(2) Computation of the zone of endangering influence may be based upon the parameters listed below and should be calculated for an injection time period equal to the expected life of the injection well or pattern. The following modified Theis equation illustrates one form which the mathematical model may take.

$$r = \left(\frac{2.25KHt}{S10^{x}}\right)^{1/2}$$

where

$$x = \frac{4\pi KH(h_w - h_{uw}S_uG_u)}{2.3Q}$$

r = Radius of endangering influence from injection well (length)
k = Hydraulic conductivity of the injection zone (length/time)
H = Thickness of the injection zone (length)
t = Time of injection (time)
S = Storage coefficient (dimensionless)
Q = Injection rate (volume/time)
$h_w$ = Observed original hydrostatic head of injection zone (length) measured from the base of the lowermost underground source of drinking water
$h_{uw}$ = Hydrostatic head of underground source of drinking water (length) measured from the base of the lowest underground source of drinking water
$S_uG_u$ = Specific gravity of fluid in the injection zone (dimensionless)
$\pi$ = 3.142 (dimensionless)

The above equation is based on the following assumptions:

(i) The injection zone is homogenous and isotropic;

(ii) The injection zone has infinite area extent;

(iii) The injection well penetrates the entire thickness of the injection zone;

(iv) The well diameter is infinitesimal compared to "r" when injection time is longer than a few minutes; and

(v) The emplacement of fluid into the injection zone creates instantaneous increase in pressure.

(b) *Fixed Radius.* (1) In the case of application(s) for well permit(s) under §122.38 a fixed radius around the well of not less than one-fourth (¼) mile may be used.

(2) In the case of an application for an area permit under §122.39 a fixed width of not less than one-fourth (¼) mile for the circumscribing area may be used.

In determining the fixed radius, the following factors shall be taken into consideration: Chemistry of injected and formation fluids; hydrogeology; population and ground-water use and dependence; and historical practices in the area.

(c) If the area of review is determined by a mathematical model pursuant to paragraph (a) of this section, the permissible radius is the result of such calculation even if it is less than one-fourth (¼) mile.

**§ 146.07 Corrective Action.**

[146.07 introductory paragraph amended by 48 FR 14153, April 1, 1983]

In determining the adequacy of corrective action proposed by the applicant under 40 CFR 144.55 and in determining the additional steps needed to prevent fluid movement into underground sources of drinking water, the following criteria and factors shall be considered by the Director:

[146.07(a) and (b) revised by 46 FR 43160, August 27, 1981]

(a) Nature and volume of injected fluid;

(b) Nature of native fluids or by-products of injection;

(c) Potentially affected population;
(d) Geology;
(e) Hydrology;
(f) History of the injection operation;
(g) Completion and plugging records;
(h) Abandonment procedures in effect at the time the well was abandoned; and
(i) Hydraulic connections with underground sources of drinking water.

**§ 146.08 Mechanical Integrity**

(a) An injection well has mechanical integrity if:

(1) There is no significant leak in the casing, tubing or packer; and

(2) There is no significant fluid movement into an underground source of drinking water through vertical channels adjacent to the injection well bore.

(b) One of the following methods must be used to evaluate the absence of significant leaks under paragraph (a)(1) of this section:

[146.08(b) amended by 47 FR 4998, February 3, 1982]

(1) Monitoring of annulus pressure; or

(2) Pressure test with liquid or gas; or

[146.08(b)(2) amended by 47 FR 4998, February 3, 1982]

(3) Records of monitoring showing the absence of significant changes in the relationship between injection pressure and injection flow rate for the following Class II enhanced recovery wells:

(i) Existing wells completed without a packer provided that a pressure test has been performed and the data is available and provided further that one pressure test shall be performed at a time when the well is shut down and if the running of such a test will not cause further loss of significant amounts of oil or gas; or

(ii) Existing wells constructed without a long string casing, but with surface casing which terminates at the base of fresh water provided that local geological and hydrological features allow such construction and provided further that the annular space shall be visually inspected. For these wells, the Director shall prescribe a monitoring program which will verify the absence of significant fluid movement from the injection zone into an USDW.

[146.08(b)(3) added by 47 FR 4998, February 3, 1982]

(c) One of the following methods must be used to determine the absence of significant fluid movement under paragraph (a)(2) of this section:
[146.08 (c)(1) and (2) revised by 46 FR 43160, August 27, 1981]

(1) The results of a temperature or noise log; or

(2) For Class II only, cementing records demonstrating the presence of adequate cement to prevent such migration; or

[146.08(c)(3) and (4) added by 47 FR 4998, February 3, 1982]

(3) For Class III wells where the nature of the casing precludes the use of the logging techniques prescribed at paragraph (c)(1) of this section, cementing records demonstrating the presence of adequate cement to prevent such migration;

(4) For Class III wells where the Director elects to rely on cementing records to demonstrate the absence of significant fluid movement, the monitoring program prescribed by § 146.33(b) shall be designed to verify the absence of significant fluid movement.

(d) The Director may allow the use of a test to demonstrate mechanical integrity other than those listed in paragraphs (b) and (c)(2) of this section with the written approval of the Administrator. To obtain approval, the Director shall submit a written request to the Administrator, which shall set forth the proposed test and all technical data supporting its use. The Administrator shall approve the request if it will reliably demonstrate the mechanical integrity of wells for which its use is proposed. Any alternate method approved by the Administrator shall be published in the Federal Register and may be used in all States unless its use is restricted at the time of approval by the Administrator.

(e) In conducting and evaluating the tests enumerated in this section or others to be allowed by the Director, the owner or operator and the Director shall apply methods and standards generally accepted in the industry. When the owner or operator reports the results of mechanical integrity tests to the Director, he shall include a description of the test(s) and the method(s) used. In making his/her evaluation, the Director shall review monitoring and other test data submitted since the previous evaluation.

**§ 146.09 Criteria for Establishing Permitting Priorities.**

In determining priorities for setting times for owners or operators to submit applications for authorization to inject under the procedures of §144.31(a),(c),(g) or §144.22(f), the Director shall base these priorities upon consideration of the following factors:

[146.09 introductory paragraph amended by 48 FR 14153, April 1, 1983]

(a) Injection wells known or suspected to be contaminating underground sources of drinking water;

(b) Injection wells known to be injecting fluids containing hazardous contaminants;

(c) Likelihood of contamination of underground sources of drinking water;

(d) Potentially affected population;

(e) Injection wells violating existing State requirements;

(f) Coordination with the issuance of permits required by other State or Federal permit programs;

(g) Age and depth of the injection well; and

(h) Expiration dates of existing State permits, if any.

**§ 146.10 Plugging and abandoning Class I—III wells.**

(a) Prior to abandoning Class I—III wells the well shall be plugged with cement in a manner which will not allow the movement of fluids either into or between underground sources of drinking water. The Director may allow Class III wells to use other plugging materials if he is satisfied that such materials will prevent movement of fluids into or between underground sources of drinking water.

[146.10(a) revised by 47 FR 4998, February 3, 1982]

(b) Placement of the cement plugs shall be accomplished by one of the following:

(1) The Balance Method;

[146.10(b)(2) and (3) amended by 47 FR 4998, February 3, 1982]

(2) The Dump Bailer Method;

(3) The Two-Plug Method; or

(4) An alternative method approved by the Director, which will reliably provide a comparable level of protection to underground sources of drinking water.

[146.10(b)(4) added by 47 FR 4998, February 3, 1982]

(c) The well to be abandoned shall be in a state of static equilibrium with the mud weight equalized top to bottom, either by circulating the mud in the well at least once or by a comparable method prescribed by the Director, prior to the placement of the cement plug(s).

(d) The plugging and abandonment plan required in 40 CFR §144.52(a)(6) and §144.51(n) shall, in the case of a Class III project which underlies or is in an aquifer which has been exempted under 40 CFR 146.04, also demonstrate adequate protection of USDWs. The Director shall prescribe aquifer cleanup and monitoring where he deems it necessary and feasible to insure adequate protection of USDWs.

[146.10(d) amended by 47 FR 4998, February 3, 1982; 48 FR 14153, April 1, 1983]

[Sec. 146.10(d)]

## Subpart B—Criteria and Standards Applicable to Class I Wells

### § 146.11 Applicability.

This subpart establishes criteria and standards for underground injection control programs to regulate Class I wells.

### § 146.12 Construction Requirements.

(a) All Class I wells shall be sited in such a fashion that they inject into a formation which is beneath the lowermost formation containing, within one quarter mile of the well bore, an underground source of drinking water.

(b) All Class I wells shall be cased and cemented to prevent the movement of fluids into or between underground sources of drinking water. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements, the following factors shall be considered:

(1) Depth to the injection zone;

(2) Injection pressure, external pressure, internal pressure, and axial loading;

(3) Hole size;

(4) Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, and construction material);

(5) Corrosiveness of injected fluid, formation fluids, and temperatures;

(6) Lithology of injection and confining intervals; and

(7) Type or grade of cement.

(c) All Class I injection wells, except those municipal wells injecting non-corrosive wastes, shall inject fluids through tubing with a packer set immediately above the injection zone, or tubing with an approved fluid seal as an alternative. The tubing, packer, and fluid seal shall be designed for the expected service.

(1) The use of other alternatives to a packer may be allowed with the written approval of the Director. To obtain approval, the operator shall submit a written request to the Director, which shall set forth the proposed alternative and all technical data supporting its use. The Director shall approve the request if the alternative method will reliably provide a comparable level of protection to underground sources of drinking water. The Director may approve an alternative method solely for an individual well or for general use.

(2) In determining and specifying requirements for tubing, packer, or alternatives the following factors shall be considered:

(i) Depth of setting;

(ii) Characteristics of injection fluid (chemical content, corrosiveness, and density);

(iii) Injection pressure;

(iv) Annular pressure;

(v) Rate, temperature and volume of injected fluid; and

(vi) Size of casing.

(d) Appropriate logs and other tests shall be conducted during the drilling and construction of new Class I wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a knowledgeable log analyst and submitted to the Director. At a minimum, such logs and tests shall include:

[146.12(d) amended by 46 FR 43160, August 27, 1981]

(1) Deviation checks on all holes constructed by first drilling a pilot hole, and then enlarging the pilot hole by reaming or another method. Such checks shall be at sufficiently frequent intervals to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling.

(2) Such other logs and tests as may be needed after taking into account the availability of similar data in the area of the drilling site, the construction plan, and the need for additional information that may arise from time to time as the construction of the well progresses. In determining which logs and tests shall be required, the following logs shall be considered for use in the following situations:

(i) For surface casing intended to protect underground sources of drinking water:

(A) Resistivity, spontaneous potential, and caliper logs before the casing is installed; and

(B) A cament bond, temperature, or density log after the casing is set and cemented.

(ii) For intermediate and long strings of casing intended to facilitate injection:

(A) Resistivity, spontaneous potential, porosity, and gamma ray logs before the casing is installed;

(B) Fracture finder logs; and

(C) A cement bond, temperature, or density log after the casing is set and cemented.

(e) At a minimum, the following information concerning the injection formation shall be determined or calculated for new Class I wells:

(1) Fluid pressure;

(2) Temperature;

(3) Fracture pressure;

(4) Other physical and chemical characteristics of the injection matrix; and

(5) Physical and chemical characteristics of the formation fluids.

### § 146.13 Operating, Monitoring and Reporting Requirements.

[Editor's note: EPA July 26, 1982 (47 FR 32139) amended §146.13 to add OMB control No. 2000–0456.]

(a) *Operating Requirements.* Operating requirements shall, at a minimum, specify that:

(1) Except during stimulation injection pressure at the wellhead shall not exceed a maximum which shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone. In no case shall injection pressure initiate fractures in the confining zone or cause the movement of injection or formation fluids into an underground source of drinking water.

[146.13(a)(1) amended by 46 FR 43160, August 27, 1981]

(2) Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited.

(3) Unless an alternative to a packer has been approved under § 146.12(c), the annulus between the tubing and the long string of casings shall be filled with a fluid approved by the Director and a pressure, also approved by the Director, shall be maintained on the annulus.

(b) *Monitoring Requirements.* Monitoring requirements shall, at a minimum, include:

(1) The analysis of the injected fluids with sufficient frequency to yield representative data of their characteristics;

(2) Installation and use of continuous recording devices to monitor injection pressure, flow rate and volume, and the pressure on the annulus between the tubing and the long string of casing;

(3) A demonstration of mechanical integrity pursuant to § 146.08 at least once every five years during the life of the well; and

(4) The type, number and location of wells within the area of review to be used to monitor any migration of fluids into and pressure in the underground sources of drinking water, the parameters to be measured and the frequency of monitoring.

(c) *Reporting Requirements.* Reporting requirements shall, at a minimum, include:

(1) Quarterly reports to the Director on:

(i) The physical, chemical and other relevant characteristics of injection fluids;

(ii) Monthly average, maximum and minimum values for injection pressure, flow rate and volume, and annular pressure; and

(iii) The results of monitoring prescribed under subparagraph (b)(4) of this section.

(2) Reporting the results, with the first quarterly report after the completion, of:

(i) Periodic tests of mechanical integrity;

(ii) Any other test of the injection well conducted by the permittee if required by the Director; and

(iii) Any well work over.

**§ 146.14 Information to be Considered by the Director.**

This section sets forth the information which must be considered by the Director in authorizing Class I wells. For an existing or converted new Class I well the Director may rely on the existing permit file for those items of information listed below which are current and accurate in the file. For a newly drilled Class I well, the Director shall require the submission of all the information listed below. For both existing and new Class I wells certain maps, cross-sections, tabulations of wells within the area of review and other data may be included in the application by reference provided they are current, readily available to the Director (for example, in the permitting agency's files) and sufficiently identified to be retrieved. In cases where EPA issues the permit all the information in this Section must be submitted to the Administrator.

(a) Prior to the issuance of a permit for an existing Class I well to operate or the construction or conversion of a new Class I well the Director shall consider the following:

(1) Information required in 40 CFR 144.31 and 144.31(g):

[146.14(a)(1) amended by 48 FR 14153, April 1, 1983]

(2) A map showing the injection well(s) for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number, or name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells and other pertinent surface features including residences and roads. The map should also show faults, if known or suspected. Only information of public record is required to be included on this map;

(3) A tabulation of data on all wells within the area of review which penetrate into the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Director may require;

(4) Maps and cross sections indicating the general vertical and lateral limits of all underground sources of drinking water within the area of review, their position relative to the injection formation and the direction of water movement, where known, in each underground source of drinking water which may be affected by the proposed injection;

(5) Maps and cross sections detailing the geologic structure of the local area;

(6) Generalized maps and cross sections illustrating the regional geologic setting;

(7) Proposed operating data:

(i) Average and maximum daily rate and volume of the fluid to be injected;

(ii) Average and maximum injection pressure; and

(iii) Source and an analysis of the chemical, physical, radiological and biological characteristics of injection fluids;

(8) Proposed formation testing program to obtain an analysis of the chemical, physical and radiological characteristics of and other information on the receiving formation;

(9) Proposed stimulation program;

(10) Proposed injection procedure;

(11) Schematic or other appropriate drawings of the surface and subsurface construction details of the well.

[146.14(a)(11) amended by 46 FR 43160, August 27, 1981]

(12) Contingency plans to cope with all shut-ins or well failures so as to prevent migration of fluids into any underground source of drinking water;

(13) Plans (including maps) for meeting the monitoring requirements in § 146.13(b);

(14) For wells within the area of review which penetrate the injection zone but are not properly completed or plugged, the corrective action proposed to be taken under 40 CFR 144.55;

[146.14(a)(14) amended by 48 FR 14153, April 1, 1983]

(15) Construction procedures including a cementing and casing program, logging procedures, deviation checks, and a drilling, testing, and coring program; and

(16) A certificate that the applicant has assured, through a performance bond or other appropriate means, the resources necessary to close, plug or abandon the well as required by 40 CFR 144.52(a)(1).

[146.14(a)(16) amended by 46 FR 43160, August 27, 1981; 48 FR 14153, April 1, 1983]

(b) Prior to granting approval for the operation of a Class I well the Director shall consider the following information:

(1) All available logging and testing program data on the well;

(2) A demonstration of mechanical integrity pursuant to §146.08.

(3) The anticipated maximum pressure and flow rate at which the permittee will operate;

[146.14(b)(3) revised by 46 FR 43160, August 27, 1981]

(4) The results of the formation testing program;

(5) The actual injection procedure;

(6) The compatibility of injected waste with fluids in the injection zone and minerals in both the injection zone and the confining zone; and

(7) The status of corrective action on defective wells in the area of review.

(c) Prior to granting approval for the plugging and abandonment of a Class I well the Director shall consider the following information:

(1) The type and number of plugs to be used;

(2) The placement of each plug including the elevation of the top and bottom;

(3) The type and grade and quantity of cement to be used;

(4) The method for placement of the plugs; and

(5) The procedure to be used to meet the requirements of § 146.10(c).

**§ 146.15 Mid-course evaluation requirements.**

In compliance with 40 CFR 144.9(b)(2) the data to be submitted on each Class I permit at six month intervals during the first two years of operation of the State program shall at a minimum include the following:

[146.15 introductory paragraph amended by 48 FR 14153, April 1, 1983]

(a) The data required in § 146.14(a)(1);

(b) The data required in § 146.14(a)(3) including, under location, the distance and direction from the injection well;

(c) The depth to the top and bottom of any USDW;

(d) The distance to the nearest down-gradient water supply well;

(e) A description of the geology and hydrology of the area;

(f) The construction characteristics of the well;

(g) The corrective action proposed as well as that performed;

(h) The type and results of all mechanical integrity tests reported to the Director; and

(i) Any reporting to the Director under §144.51(l)(6).

[146.15(i) amended by 48 FR 14153, April 1, 1983]

## Subpart C—Criteria and Standards Applicable to Class II Wells

**§ 146.21 Applicability.**

This subpart establishes criteria and standards for underground injection control programs to regulate Class II wells.

**§ 146.22 Construction requirements.**

(a) All new Class II wells shall be sited in such a fashion that they inject into a formation which is separated from any USDW by a confining zone that is free

of known open faults or fractures within the area of review.

[146.22(a) amended by 46 FR 43160, August 27, 1981]

[Former 146.22(b) redesignated as (b)(1) by 47 FR 4998, February 3, 1982]

(b) (1) All Class II injection wells shall be cased and cemented to prevent movement of fluids into or between underground sources of drinking water. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements, the following factors shall be considered.

[Former 146.22(b)(1)—(3) redesignated as (b)(1)(i)—(iii) by 47 FR 4998, February 3, 1982]

(i) Depth to the injection zone:

(ii) Depth to the bottom of all USDWs; and

(iii) Estimated maximum and average injection pressures;

(b)(2) In addition the Director may consider information on:

(i) Nature of formation fluids:

(ii) Lithology of injection and confining zones:

(iii) External pressure, internal pressure, and axial loading:

(iv) Hole size:

(v) Size and grade of all casing strings; and

(vi) Class of cement.

[New 146.22(b)(2) added by 47 FR 4998, February 3, 1982]

(c) The requirements in paragraph (b) of this section need not apply to existing or newly converted Class II wells located in existing fields if:

(1) Regulatory controls for casing and cementing existed for those wells at the time of drilling and those wells are in compliance with those controls; and

(2) Well injection will not result in the movement of fluids into an underground source of drinking water so as to create a significant risk to the health of persons.

(d) The requirements in paragraph (b) of this section need not apply to newly drilled wells in existing fields if:

(1) They meet the requirements of the State for casing and cementing applicable to that field at the time of submission of the State program to the Administrator; and

(2) Well injection will not result in the movement of fluids into an underground source of drinking water so as to create a significant risk to the health of persons.

(e) Where a State did not have regulatory controls for casing and cementing prior to the time of the submission of the State program to the Administrator, the Director need not apply the casing and cementing requirements in paragraph (b) of this section if he submits as a part of his application for primacy, an appropriate plan for casing and cementing of existing, newly converted, and newly drilled wells in existing fields, and the Administrator approves the plan.

(f) Appropriate logs and other tests shall be conducted during the drilling and construction of new Class II wells. A descriptive report interpreting the results of that portion of those logs and tests which specifically relate to (1) an USDW and the confining zone adjacent to it, and (2) the injection and adjacent formations shall be prepared by a knowledgeable log analyst and submitted to the Director. At a minimum, these logs and tests shall include:

[146.22(f) amended by 46 FR 43160, August 27, 1981]

(1) Deviation checks on all holes constructed by first drilling a pilot hole and then enlarging the pilot hole, by reaming or another method. Such checks shall be at sufficiently frequent intervals to assure that vertical avenues for fluid movement in the form of diverging holes are not created during drilling.

(2) Such other logs and tests as may be needed after taking into account the availability of similar data in the area of the drilling site, the construction plan, and the need for additional information that may arise from time to time as the construction of the well progresses. In determining which logs and tests shall be required the following shall be considered by the Director in setting logging and testing requirements:

[146.22(f)(2)(i) and (i)(A) revised by 47 FR 4998, February 3, 1982]

(i) For surface casing intended to protect underground sources of drinking water in areas where the lithology has not been determined:

(A) Electric and caliper logs before casing is installed; and

(B) A cement bond, temperature, or density log after the casing is set and cemented.

(ii) For intermediate and long strings of casing intended to facilitate injection:

(A) Electric, porosity and gamma ray logs before the casing is installed;

[146.22 (f)(2)(ii)(A) revised by 47 FR 4998, February 3, 1982]

(B) Fracture finder logs; and

(C) A cement bond, temperature, or density log after the casing is set and cemented.

(g) At a minimum, the following information concerning the injection formation shall be determined or calculated for new Class II wells or projects:

(1) Fluid pressure:

(2) Estimated fracture pressure:

(3) Physical and chemical characteristics of the injection zone.

[146.22(g) revised by 47 FR 4998, February 3, 1982]

**§ 146.23 Operating, monitoring, and reporting requirements.**

[Editor's note: EPA July 26, 1982 (47 FR 32129) amended §146.23 to add OMB control No. 2000–0456.]

(a) *Operating Requirements.* Operating requirements shall, at a minimum, specify that:

(1) Injection pressure at the wellhead shall not exceed a maximum which shall be calculated so as to assure that the pressure during injection does not initiate new fractures or propagate existing fractures in the confining zone adjacent to the USDWs. In no case shall injection pressure cause the movement of injection or formation fluids into an underground source of drinking water.

[146.23(a)(1) amended by 46 FR 43160, August 27, 1981]

(2) Injection between the outermost casing protecting underground sources of drinking water and the well bore shall be prohibited.

(b) *Monitoring Requirements.* Monitoring requirements shall, at a minimum, include:

(1) Monitoring of the nature of injected fluids at time intervals sufficiently frequent to yield data representative of their characteristics;

(2) Observation of injection pressure, flow rate, and cumulative volume at least with the following frequencies:

(i) Weekly for produced fluid disposal operations;

(ii) Monthly for enhanced recovery operations;

(iii) Daily during the injection of liquid hydrocarbons and injection for withdrawal of stored hydrocarbons; and

(iv) Daily during the injection phase of cyclic steam operations;

And recording of one observation of injection pressure, flow rate and cumulative volume at reasonable intervals no greater than 30 days.

[146.23(b)(2) revised by 47 FR 4998, February 3, 1982]

(3) A demonstration of mechanical integrity pursuant to § 146.08 at least once every five years during the life of the injection well;

(4) Maintenance of the results of all monitoring until the next permit review (see 40 CFR 144.52(a)(5); and

[146.23(b)(4) amended by 48 FR 14153, April 1, 1983]

(5) Hydrocarbon storage and enhanced recovery may be monitored on a field or project basis rather than on an individual well basis by manifold monitoring. Manifold monitoring may be used in cases of facilities consisting of more than one injection well, operating with a common manifold. Separate monitoring systems for each well are not

required provided the owner/operator demonstrates that manifold monitoring is comparable to individual well monitoring.

(c) *Reporting Requirements.*

(1) Reporting requirements shall at a minimum include an annual report to the Director summarizing the results of monitoring required under paragraph (b) of this section. Such summary shall include monthly records of injected fluids, and any major changes in characteristics or sources of injected fluid. Previously submitted information may be included by reference.

(2) Owners or operators of hydrocarbon storage and enhanced recovery projects may report on a field or project basis rather than an individual well basis where manifold monitoring is used.

(Approved by the Office of Management and Budget under control number 2000-0456).

[146.23 amended by 48 FR 31404, July 8, 1983]

**§ 146.24 Information to be considered by the director.**

This section sets forth the information which must be considered by the Director in authorizing Class II wells. Certain maps, cross-sections, tabulations of wells within the area of review, and other data may be included in the application by reference provided they are current, readily available to the Director (for example, in the permitting agency's files) and sufficiently identified to be retrieved. In cases where EPA issues the permit, all the information in this Section is to be submitted to the Administrator.

(a) Prior to the issuance of a permit for an existing Class II wall to operate or the construction or conversion of a new Class II well the Director shall consider the following:

(1) Information required in 40 CFR 144.31 and 144.31(g);

[146.24(a)(1) amended by 48 FR 14153, April 1, 1983]

(2) A map showing the injection well or project area for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number or name and location of all existing producing wells, injection wells, abandoned wells, dry holes, and water wells. The map may also show surface bodies of waters, mines (surface and subsurface), quarries and other pertinent surface features including residences and roads, and faults if known or suspended. Only information of public record and pertinent information known to the applicant is required to be included on this map. This requirement does not apply to existing Class II wells; and

(3) A tabulation of data reasonably available from public records or otherwise known to the applicant on all wells within the area of review included on the map required under paragraph (a)(2) of this section which penetrate the proposed injection zone or, in the case of Class II wells operating over the fracture pressure of the injection formation, all known wells within the area of review which penetrate formations affected by the increase in pressure. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and completion, and any additional information the Director may require. In cases where the information would be repetitive and the wells are of similar age, type, and construction the Director may elect to only require data on a representative number of wells. This requirement does not apply to existing Class II wells.

(4) Proposed operating data:

(i) Average and maximum daily rate and volume of fluids to be injected;

(ii) Average and maximum injection pressure; and

[146.24(a)(4)(iii)—(6) amended by 47 FR 4998, February 3, 1982]

(iii) Source and an appropriate analysis of the chemical and physical characteristics of the injection fluid.

(5) Appropriate geological data on the injection zone and confining zone including lithologic description, geological name, thickness and depth;

(6) Geologic name and depth to bottom of all underground sources of drinking water which may be affected by the injection;

(7) Schematic or other appropriate drawings of the surface and subsurface construction details of the well;

[146.24(a)(8)—(12) removed and (13) and (14) redesignated as (8) and (9) by 47 FR 4998, February 3, 1982; amended by 48 FR 14153, April 1, 1983]

(8) In the case of new injection wells the corrective action proposed to be taken by the applicant under 40 CFR 144.55;

(9) A certificate that the applicant has assured through a performance bond or other appropriate means, the resources necessary to close, plug or abandon the well as required by 40 CFR 144.52(a)(7);

(b) In addition the Director may consider the following:

(1) Proposed formation testing program to obtain the information required by §146.22 (g);

(2) Proposed stimulation program;

(3) Proposed injection procedure;

(4) Proposed contingency plans, if any, to cope with well failures so as to prevent migration of contaminating fluids into a underground source of drinking water.

(5) Plans for meeting the monitoring requirements of § 146.23(b).

[New 146.24(b) added and former (b) redesignated as (c) by 47 FR 499 February 3, 1982]

(c) Prior to granting approval for the operation of a Class II well the Director shall consider the following information:

(1) All available logging and testing program data on the well;

(2) A demonstration of mechanical integrity pursuant to § 146.08;

(3) The anticipated maximum pressure and flow rate at which the permittee will operate.

(4) The results of the formation testing program;

(5) The actual injection procedure; and

(6) For new wells the status of corrective action on defective wells in the area of review.

[146.24(c) redesignated as (d) by FR 4998, February 3, 1982]

(d) Prior to granting approval for the plugging and abandonment of a Class I well the Director shall consider the following information:

(1) The type, and number of plugs to be used;

(2) The placement of each plug including the elevation of top and bottom;

(3) The type, grade, and quantity of cement to be used;

(4) The method of placement of the plugs; and

(5) The procedure to be used to mee the requirements of § 146.10(c).

**§ 146.25 Mid-course evaluation requirements.**

(a) In compliance with 40 CFR 144.9(b)(2) the data to be submitted o each new Class II permit at six months intervals during the first two years of operation of the State program shall at a minimum include t following:

[146.25(a) introductory paragra amended by 48 FR 14153, April 1, 198

(1) The data required in § 146.24(a)(

(2) The data required in § 146.24(a)( including, under location, the distanc and direction from the injection well;

(3) The depth to the top and bottom any USDW;

(4) The distance to the nearest dow gradient water supply well;

(5) A description of the geology and hydrology of the area;

(6) The construction characteristics the well;

(7) The corrective action proposed well as that performed; and

[Sec. 146.25(a)(7)]

(8) Any reporting to the Director under §144.51(l)(6)

[146.25(a)(8) amended by 48 FR 14153, April 1, 1983]

(b) The Director shall also submit the type and results of all Mechanical Integrity tests reported on existing wells and new (conversion only) wells during the first two years of operation.

(c) The Director shall require a temperature log or noise log, on a sample of Class II wells in cases where operators submitted cementing records to meet the requirement of § 146.08(c). The wells to be tested shall be chosen by a formal random selection procedure. The sampling shall be done on a field or pool basis and be statistically representative of the wells in that field or pool. At a minimum, the sample size for each State shall be 100 wells or 5 percent of the number of Class II injection wells in the State whichever is smaller. At least half of the wells tested must be existing wells.

## Subpart D—Criteria and Standards Applicable to Class III Wells

### § 146.31 Applicability.

This subpart establishes criteria and standards for underground injection control programs to regulate Class III wells.

### § 146.32 Construction requirements.

(a) All new Class III wells shall be cased and cemented to prevent the migration of fluids into or between underground sources of drinking water. The Director may waive the cementing requirement for new wells in existing projects or portions of existing projects where he has substantial evidence that no contamination of underground sources of drinking water would result. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements, the following factors shall be considered:

[146.32(a) revised by 47 FR 4998, February 3, 1982]

(1) Depth to the injection zone;

(2) Injection pressure, external pressure, internal pressure, axial loading, etc.;

(3) Hole size;

(4) Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, and construction material);

(5) Corrosiveness of injected fluids and formation fluids;

(6) Lithology of injection and confining zones; and

(7) Type and grade of cement.

(b) Appropriate logs and other tests shall be conducted during the drilling and construction of new Class III wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a knowledgeable log analyst and submitted to the Director. The logs and tests appropriate to each type of Class III well shall be determined based on the intended function, depth, construction and other characteristics of the well, availability of similar data in the area of the drilling site and the need for additional information that may arise from time to time as the construction of the well progresses. Deviation checks shall be conducted on all holes where pilot holes and reaming are used, unless the hole will be cased and cemented by circulating cement to the surface. Where deviation checks are necessary they shall be conducted at sufficiently frequent intervals to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling.

[146.32(b) amended by 46 FR 43160, August 27, 1981; 47 FR 4998, February 3, 1982]

(c) Where the injection zone is a formation which is naturally water-bearing the following information concerning the injection zone shall be determined or calculated for new Class III wells or projects:

(1) Fluid pressure;

(2) Fracture pressure; and

(3) Physical and chemical characteristics of the formation fluids.

[146.32(c) amended by 47 FR 4998, February 3, 1982]

(d) Where the injection formation is not a water-bearing formation, the information in paragraph (c)(2) of this section must be submitted.

[146.32(d) amended by 47 FR 4998, February 3, 1982]

(e) Where injection is into a formation which contains water with less than 10,000 mg/l TDS monitoring wells shall be completed into the injection zone and into any underground sources of drinking water above the injection zone which could be affected by the mining operation. These wells shall be located in such a fashion as to detect any excursion of injection fluids, process by-products, or formation fluids outside the mining area or zone. If the operation may be affected by subsidence or catastrophic collapse the monitoring wells shall be located so that they will not be physically affected.

(f) Where injection is into a formation which does not contain water with less than 10,000 mg/l TDS, no monitoring wells are necessary in the injection stratum.

(g) Where the injection wells penetrate an USDW in an area subject to subsidence or catastrophic collapse an adequate number of monitoring wells shall be completed into the USDW to detect any movement of injected fluids, process by-products or formation fluids into the USDW. The monitoring wells shall be located outside the physical influence of the subsidence or catastrophic collapse.

(h) In determining the number, location, construction and frequency of monitoring of the monitoring wells the following criteria shall be considered:

(1) The population relying on the USDW affected or potentially affected by the injection operation;

(2) The proximity of the injection operation to points of withdrawal of drinking water;

(3) The local geology and hydrology;

(4) The operating pressures and whether a negative pressure gradient is being maintained;

(5) The nature and volume of the injected fluid, the formation water, and the process by-products; and

[146.32(h)(5) revised by 46 FR 43160, August 27, 1981]

(6) The injection well density.

### § 146.33 Operating, monitoring, and reporting requirements.

[*Editor's note:* EPA July 26, 1982 (47 FR 32129) amended §146.33 to add OMB control No. 2000–0456.]

(a) *Operating Requirements.* Operating requirements prescribed shall, at a minimum, specify that:

(1) Except during well stimulation injection pressure at the wellhead shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone. In no case, shall injection pressure initiate fractures in the confining zone or cause the migration of injection or formation fluids into an underground source of drinking water.

(2) Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited.

(b) *Monitoring Requirements.* Monitoring requirements shall, at a minimum, specify:

[146.33(b)(1)—(4) amended by 47 FR 4998, February 3, 1982]

(1) Monitoring of the nature of injected fluids with sufficient frequency to yield representative data on its characteristics. Whenever the injection fluid is modified to the extent that the analysis required by §146.34(a)(7)(iii) is incorrect or incomplete, a new analysis as required by §146.34(a)(7)(iii) shall be provided to the Director.

(2) Monitoring of injection pressure and either flow rate or volume semi-monthly,

or metering and daily recording of injected and produced fluid volumes as appropriate.

(3) Demonstration of mechanical integrity pursuant to § 146.08 at least once every five years during the life of the well for salt solution mining.

(4) Monitoring of the fluid level in the injection zone semi-monthly, where appropriate and monitoring of the parameters chosen to measure water quality in the monitoring wells required by § 146.32(e), semi-monthly.

(5) Quarterly monitoring of wells required by 146.32(g).

(6) All Class III wells may be monitored on a field or project basis rather than an individual well basis by manifold monitoring. Manifold monitoring may be used in cases of facilities consisting of more than one injection well, operating with a common manifold. Separate monitoring systems for each well are not required provided the owner/operator demonstrates that manifold monitoring is comparable to individual well monitoring.

(c) *Reporting Requirements.* Reporting requirements shall, at a minimum, include:

(1) Quarterly reporting to the Director on required monitoring;

(2) Results of mechanical integrity and any other periodic test required by the Director reported with the first regular quarterly report after the completion of the test; and

(3) Monitoring may be reported on a project or field basis rather than individual well basis where manifold monitoring is used.

(Approved by the Office of Management and Budget under control number 2000-0456).

[146.33 amended by 48 FR 31404, July 8, 1983]

**§ 146.34 Information to be considered by the Director.**

This section sets forth the information which must be considered by the Director in authorizing Class III wells. Certain maps, cross sections, tabulations of wells within the area of review, and other data may be included in the application by reference provided they are current, readily available to the Director (for example, in the permitting agency's files) and sufficiently identified to be retrieved. In cases where EPA issues the permit, all the information in

(a) Prior to the issuance of a permit for an existing Class III well or area to operate or the construction of a new Class III well the Director shall consider the following:

(1) Information required in 40 CFR 144.31 and 144.31(g).

[146.34(a)(1) amended by 48 FR 14153, April 1, 1983]

(2) A map showing the injection well or project area for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number or name and location of all existing producing wells, injection wells, abandoned wells, dry holes, public water systems and water wells. The map may also show surface bodies of waters, mines (surface an subsurface) quarries and other pertinent surface features including residences and roads, and faults if known or suspected. Only information of public record and pertinent information known to the applicant is required to be included on this map.

(3) A tabulation of data reasonably available from public records or otherwise known to the applicant on wells within the area of review included on the map required under paragraph (a)(2) of this section which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and completion, and any additional information the Director may require. In cases where the information would be repetitive and the wells are of similar age, type, and construction the Director may elect to only require data on a representative number of wells.

(4) Maps and cross sections indicating the vertical limits of all underground sources of drinking water within the area of review, their position relative to the injection formation, and the direction of water movement, where known, in every underground source of drinking water which may be affected by the proposed injection;

[146.34(a)(4) amended by 47 FR 4998, February 3, 1982]

(5) Maps and cross sections detailing the geologic structure of the local area;

(6) Generalized map and cross sections illustrating the regional geologic setting;

(7) Proposed operating data;

(i) Average and maximum daily rate and volume of fluid to be injected;

(ii) Average and maximum injection pressure; and

(iii) Qualitative analysis and ranges in concentrations of all constitutents of injected fluids. The applicant may request Federal confidentiality as specified in 40 CFR Part 2. If the information is proprietary an applicant may, in lieu of the ranges in concentrations, choose to submit maximum concentrations which shall not be exceeded. In such a case the applicant shall retain records of the undisclosed concentrations and provide them upon request to the Director as part of any enforcement investigation.

[146.34 (a)(7)(iii) revised by 47 FR 4998, February 3, 1982]

(8) Proposed formation testing program to obtain the information required by § 146.32(c).

[146.34(a)(8) revised by 47 FR 499 February 3, 1982]

(9) Proposed stimulation program;

(10) Proposed injection procedure;

(11) Schematic or other appropriate drawings of the surface and subsurface construction details of the well;

(12) Plans (including maps) for meeting the monitoring requirements of § 146.33(b);

(13) Expected changes in pressure, native fluid displacement, direction of movement of injection fluid;

(14) Contingency plans to cope with all shut-ins or well failures so as to prevent the migration of contaminating fluids into underground sources of drinking water;

(15) A certificate that the applicant has assured, through a performance bond, or other appropriate means, the resources necessary to close, plug, or abandon the well as required by 40 CFR 144.52(a)(7) and

[146.34(a)(15) amended by 46 FR 43160 August 27, 1981; 48 FR 14153, April 1983]

(16) The corrective action proposed to be taken under 40 CFR 144.55.

[146.34(a)(16) amended by 48 FR 14153 April 1, 1983]

(b) Prior to granting approval for the operation of a Class III well the Director shall consider the following information:

(1) All available logging and testing data on the well;

(2) A satisfactory demonstration of mechanical integrity for all new wells and for all existing salt solution wells pursuant §146.08;

[146.34(b)(2) amended by 47 FR 499 February 3, 1982]

(3) The anticipated maximum pressure and flow rate at which the permittee will operate;

(4) The results of the formation testing program;

(5) The actual injection procedures; and

(6) The status of corrective action on defective wells in the area of review.

(c) Prior to granting approval for the plugging and abandonment of a Class well the Director shall consider the following information:

(1) The type and number of plugs to be used;

[Sec. 146.34(c)(1)]

(2) The placement of each plug including the elevation of the top and bottom;

(3) The type, grade and quantity of cement to be used;

(4) The method of placement of the plugs, and

(5) The procedure to be used to meet the requirements of § 146.10(c).

**§ 146.35 Mid-course evaluation requirements.**

In compliance with 40 CFR 144.9(b)(2) the data to be submitted on each Class III permit at six month intervals during the first two years of operation of the State program shall at a minimum include the following:

[146.35 introductory paragraph amended by 48 FR 14153, April 1, 1983]

(a) The data required in § 146.14(a)(i);

(b) The data required in § 146.34(a)(3) including, under location, the distance and direction from the injection well;

(c) The depth to the top and bottom of any USDW;

(d) The distance to the nearest down-gradient water supply well;

(e) A description of the geology and hydrology of the area;

(f) The construction characteristics of the well;

(g) The type and results of all mechanical integrity tests reported to the Director during the first two years of the program; and

(h) Any reporting to the Director under §144.51(l)(6)

[146.35(h) amended by 48 FR 14153, April 1, 1983]

## Subpart E—Criteria and Standards Applicable to Class IV Injection Wells [Reserved]

## Subpart F—Criteria and Standards Applicable to Class V Injection Wells

**§ 146.51 Applicability.**

This subpart sets forth Criteria and Standards for underground injection control programs to regulate all injection not regulated in Subparts B, C, D, and E.

(a) Generally, wells covered by this Subpart inject non-hazardous fluids into or above formations that contain underground sources of drinking water. It includes all wells listed in § 146.05(e) but is not limited to those types of injection wells.

(b) It also includes wells not covered in Class IV that inject radioactive material listed in 10 CFR Part 20, Appendix B, Table II, Column 2.

[146.51(b) revised by 47 FR 4998, February 3, 1982]

**§ 146.52 Inventory and Assessment.**

(a) The owner or operator of any Class V well shall, within one year of the effective date of an underground injection control program, notify the Director of the existence of any well meeting the definitions of Class V under his control, and submit the inventory information required in 40 CFR 144.26(a).

[146.52(a) amended by 48 FR 14153, April 1, 1983]

(b) Within three (3) years of approval of the State program the Director shall complete and submit to EPA a report containing:

(1) The information on the construction features of Class V wells, and the nature and volume of the injected fluids;

(2) An assessment of the contamination potential of the Class V wells using hydrogeological data available to the State;

(3) An assessment of the available corrective alternatives where appropriate and their environmental and economic consequences; and

(4) Recommendations both for the most appropriate regulatory approaches and for remedial actions where appropriate.

STATE OF ARKANSAS

DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY

# ARKANSAS UNDERGROUND INJECTION CONTROL CODE

OCTOBER 1982

STATE OF ARKANSAS

DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY

# ARKANSAS UNDERGROUND INJECTION CONTROL CODE

## Section 1. TITLE AND PURPOSE

(a) The following rules and regulations of the Department of Pollution Control and Ecology of the State of Arkansas, adopted pursuant to the provisions of the Arkansas Water and Air Pollution Control Act (Act 472 of 1949, as amended; Ark.Stat.Ann. §82-1901 et seq.), shall be known as the ARKANSAS UNDERGROUND INJECTION CONTROL CODE, hereinafter called the UIC.

(b) It is the purpose of this Code to adopt underground injection control regulations necessary to qualify the State of Arkansas to receive authorization for its Underground Injection Control Program pursuant to the Safe Drinking Water Act of 1974, as amended (PL 93-523 as amended by PL 95-190 and PL 96-63; 42 USC 300f et seq.). In order to receive such authorization, it is necessary for the Department of Pollution Control and Ecology to have regulations as stringent as the federal program administered by the United States Environmental Protection Agency.

## Section 2. DEFINITIONS

When used in this Code:

(a) Abandoned well means a well whose use has been permanently discontinued or which is in a state of disrepair such that it cannot be used for its intended purpose or for observation purposes.

(b) Administrator means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

(c) Application means the EPA standard national forms for applying for a permit, including any additions, revisions or modifications to the forms; or forms approved by EPA for use in approved States, including any approved modifications or revisions. For RCRA, application also includes the information required by the Director under §122.25 (contents of Part B of RCRA application).

(d) Aquifer means a geological formation,group of formations, or part of a formation that is capable of yielding a significant amount of water to a well or spring.

(e) Area of review means the area surrounding an "injection well" described according to the criteria set forth in s146.06.

(f) Casing means a pipe or tubing of varying diameter and weight, lowered into a borehole during or after drilling in order to support the sides of the hole and thus prevent the walls from caving, to prevent loss of drilling mud into porous ground, or to prevent water, gas, or other fluid from entering or leaving the hole. (Amended by 46 FR 43150, August 27, 1981.)

(g) Catastrophic collapse means the sudden and utter failure of overlying "strata" caused by removal of underlying materials.

(h) Cementing means the operation whereby a cement slurry is pumped into a drilled hole and/or forced behind the casing.

(i) CFR means Code of Federal Regulations.

(j) Confining bed means a body of impermeable or distinctly less permeable material stratigraphically adjacent to one or more aquifers.

(k) Confining zone means a geological formation, group of formation, or part of a formation that is capable of limiting fluid movement above and below the injection zone.

(l) Contaminant means any physical, chemical, biological, or radiological substance or matter in water.

(m) Department means the Arkansas Department of Pollution Control and Ecology.

(n) Director means the Director of the Arkansas Department of Pollution Control and Ecology.

(o) Disposal well means a well used for the disposal of waste into a subsurface stratum.

(p) Effective date of a UIC program means the date that a State UIC program is approved or established by the Administrator.

(q) EPA means the United States Environmental Protection Agency.

(r) Exempted aquifer means an aquifer or its portion that meets the criteria in the definition of "underground source of drinking water" but which has been exempted according to the procedures of s122.35(b).

(s) Existing injection well means an "injection well" other than a "new injection well."

(t) Facility or activity means any "HWM facility," UIC "injection well," NPDES "point source," or State 404 dredge and fill activity, or any other facility or activity (including land or appurtenances thereto) that is subject to regulation under RCRA, UIC, NPDES, or 404 programs.

(u) Fault means a surface or zone of rock fracture along which there has been displacement.

(v) Flow rate means the volume per time unit given to the flow of gases or other fluid substance which emerges from an orifice, pump, turbine, or passes along a conduit or channel.

(w) Fluid means material or substance which flows or moves whether in a semisolid, liquid, sludge, gas, or any other form or state.

(x) Formation means a body of rock characterized by a degree of lithologic homogeneity which is prevailingly, but not necessarily, tabular and is mappable on the earth's surface or traceable in the subsurface.

(y) Formation fluid means "fluid" present in a "formation" under natural conditions as opposed to introduced fluids, such as drilling mud.

(z) Generator means any person, by site location, whose act or process produces hazardous waste identified or listed in 40 CFR Part 261.

(zz) Groundwater means water below the land surface in a zone of saturation.

(aa) Hazardous waste means a hazardous waste as defined in 40 CFR 261.3.

(bb) Hazardous Waste Management facility ("HWM facility") means all contiguous land, and structures, other appurtenances, and improvements on the land used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (for example, one or more landfills, surface impoundments, or combination of them).

(cc) Industrial waste means any liquid, gaseous or solid waste substance resulting from any process of industry, mining, manufacturing, trade or business or from the development of any natural resources.

(dd) Injection well means a "well" into which "fluids" are being injected.

(ee) Injection zone means a geological "formation", group of formations, or part of a formation receiving fluids through a well.

(ff) Lithology means the description of rocks on the basis of their physical and chemical characteristic.

(gg) Major facility means any RCRA, UIC, NPDES, or 404 "facility or activity" classified as such by the Regional Administrator, or, in the case of "approved State programs," the Regional Administrator in conjunction with the State Director.

(hh) Other wastes means garbage, municipal refuse, decayed wood, sawdust, shavings, bark, lime, sand, ashes, offal, oil tar chemicals, and all other substances organic or inorganic not sewage or industrial waste which may be discharged into the waters of the State. Any wastes and "pollutants" includes sewage, industrial waste, or other wastes.

(ii) Owner or operator means the owner or operator of any facility or activity subject to regulation under the RCRA, UIC, NPDES, or 404 program.

(jj) Packer means a device lowered into a well which can be expanded to produce a fluid-tight seal.

(kk) Permit means an authorization, license, or equivalent control document issued to implement the requirements of Parts 122, 123, 124 and 146 of the 40 CFR. "Permit" does not include RCRA interim status (§122.23), UIC authorization by rule (§122.37), or any permit which has not yet been the subject of final agency action, such as a "draft permit" or a "proposed permit."

(ll) Person means the State agency, any municipality, governmental subdivision of the State or the United States, public or private corporation, individual, partnership, association or other entity.

(mm) Plugging means the act or process of stopping the flow of water, oil, or gas in "formations" penetrated by a borehole or "well."

(nn) Plugging record means a systematic listing of permanent or temporary abandonment of water, oil, gas, test, exploration and waste injection wells, and may contain a well log, description of amounts and types of plugging material used, the method employed for plugging, a description of formations which are sealed and a graphic log of the well showing formation location, formation thickness, and location of plugging structures.

(oo) Pollution means such contamination, or other alteration of the physical, chemical, or biological properties, of any waters of the State, or such discharge of any liquid, gaseous or solid substance in any waters of the State as will or is likely to create a nuisance or render such waters harmful or detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses, or to livestock, wild animals, birds, fish or other aquatic life.

(pp) Pressure means the total load or force per unit area acting on a surface.

(qq) Radioactive Waste means any waste which contains radioactive material in concentrations which exceed those listed in 10 CFR Part 20, Appendix B. Table II, Column 2, or exceed the "Criteria for Identifying and Applying Characteristics of Hazardous Waste and for Listing Hazardous Waste" in 40 CFR Part 261, whichever is applicable.

(rr) RCRA means the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976 (Pub. L. 94-580, as amended by Pub. L. 95-609, 42 U.S.C. 300 (f) et seq.

(ss) Site means the land or water area where any facility or activity is physically located or conducted, including adjacent land used in connection with the facility or activity.

(tt) Sole or principal source aquifer means an aquifer which has been designated by the Administrator pursuant to sections 1424(a) or (e) of the SDWA.

(uu) State Director means the chief administrative officer of any State or interstate agency operating an approved program, or the delegated representative of the State Director. If responsibility is divided among two or more State or interstate agencies, "State Director" means the chief administrative officer of the State or interstate agency authorized to perform the particular procedure or function to which reference is made.

(vv) Stratum (plural strata) means a single sedimentary bed or layer, regardless of thickness, that consists of generally the same kind of rock material.

(ww) Subsidence means the lowering of the natural land surface in response to Earth movements; lowering of fluid pressure; removal of underlying supporting material by mining or solution of solids, either artificially or from natural causes; compaction due to wetting (Hydrocompaction); oxidation of organic matter in soils; or added load on the land surface.

(xx) Surface casing means the first string of well casing to be installed in the well.

(yy) Total dissolved solids ("TDS") means the total dissolved (filterable) solids as determined by use of the method specified in 40 CFR Part 136.

(zz) UIC means the Underground Injection Control program under part C of the Safe Drinking Water Act., including an "approved program."

(zzz) Underground injection means a "well injection."

(aaa) Underground source of drinking water (USDW, RCRA and UIC) means an aquifer or its portion:

(1) (i) Which supplies any public water system; or
(ii) Which contains a sufficient quantity of ground water to supply a public water system; and
(A) Currently supplies drinking water for human consumption; or
(B) Contains fewer than 10,000 mg/l total dissolved solids; and
(2) Which is not an "exempted aquifer."

(bbb) USDW means "underground source of drinking water."

(ccc) Well means a bored, drilled or driven shaft, or a dug hole whose depth is greater than the largest surface dimension.

(ddd) Well injection means the subsurface emplacement of fluids through a bored, drilled, or driven well; or dug well, where the depth of the dug well is greater than the largest surface dimensions.

(eee) Well plug means a watertight and gastight seal installed in a borehole or well to prevent movement of fluids.

(fff) Well stimulation means several processes used to clean the well bore, enlarge channels, and increase pore space in the interval to be injected thus making it possible for wastewater to move more readily into the formation and includes (1) surging, (2) jetting, (3) blasting, (4) acidizing, (5) hydraulic fracturing.

(ggg) Well monitoring means the measurement, by on-site instruments or laboratory methods, of the quality of water in a well.

(hhh) New injection well (UIC) means a well which began injection after a UIC program for the State applicable to the well is approved.

Section 3. ADOPTION OF FEDERAL REGULATIONS

(a) Except where manifestly inconsistent with the provisions of the Safe Drinking Water Act, as amended, or with federal regulations adopted pursuant thereto, or with the provisions of this Code,

the Department shall have the responsibilities and that authority, with reference to the State of Arkansas, and granted to the Administrator of the United States Environmental Protection Agency under the provisions of the following regulations, which regulations are hereby adopted and made part of this Code as though set forth herein word for word, and which shall also apply to all persons subject to regulations under the provisions of the Safe Drinking Water Act and/or the Arkansas Water and Air Pollution Control Act relating to underground injection control, within the State of Arkansas:

40 CFR Part 144; dated April 1, 1983; as amended to the date hereof; and

40 CFR Part 145; dated April 1, 1983; as amended to the date hereof; and

40 CFR Part 124, Subpart A, 45 FR 3345, et seq. May 19, 1980; as amended April 8, 1982; and as amended to the date hereof; and

40 CFR Part 146, Subparts A, B, D, E, and F. 45 FR 42500, et seq., June 24, 1980; as amended 46 FR 43161, et seq., August 27, 1981; as amended February 3, 1982; and as amended to the date hereof.

Whenever the effect of any of the aforecited regulations is modified by a formal action of the United States Environmental Protection Agency, as evidenced by publication in the Federal Register, the effect of such action, upon its effective date, shall be extended in full force and effect as Interim Provisions of this Code and shall be enforceable as such, provided that the effect of said action does not conflict with the provisions of the Arkansas Water and Air Pollution Control Act. No Interim Provision of this Code shall remain in effect for more than six months, unless the Commission grants an extension after opportunity for public comment as provided in subsection (e) below.

(b) (Reserved for future federal regulation reference.)

(c) (Reserved for future federal regulation reference.)

(d) In all instances wherein the federal regulations of 40 CFR 144, 145, 124 and 146 refer to the administrator of the United States Environmental Protection Agency, the reference, for purposes of this Code, shall be deemed to mean the Department, unless the context plainly dictates otherwise. Nothing herein contained shall be construed as eliminating any approval required from the EPA Administrator under the SDWA for Department action such as aquifer exemption and alternative testing of mechanical integrity.

(e) The Director, within a reasonable time after the effective date of the Interim Provisions of this Code, shall cause a public notice to be published in a newspaper of statewide circulation stating the existence of such Interim Provisions and giving notice of the public's opportunity to comment on the Interim Provisions. Whenever the Director finds that a public hearing should be held to consider the continued application of Interim Provisions or proposed modifications to such Provisions, a notice of public hearing and formal action of the Commission shall follow in the manner described in subsection (f) below.

(f) Whenever the federal regulations referenced in subsection (a) of this section are amended, modified, revoked, expanded, supplemented, or otherwise changes, such revocation, expansion, supplement or other change shall become part of this Code when:

(1) a 30 day notice of public hearing upon the proposed change is published by the Department, and

(2) such amendment, modification, revocation, expansion, supplement or other change is adopted by the Commission after public hearing; where a time exceeding 35 days exists between the promulgation of the federal regulation and the next regularly scheduled Commission meeting, the Director, finding sufficient cause for earlier consideration may request the chairman of the Commission to call a special meeting of the Commission to consider the matter.

(3) such amendement, modification, revocation, expansion, supplement or other change shall become effective upon adoption by the Commission unless otherwise set out in the resolution adopting such change.

## Section 4. VIOLATIONS

(a) No person shall construct, install, alter, modify, or operate any underground injection facility without a permit from the Department or, as to Class II and Class V bromine related brine disposal wells, from the Arkansas Oil and Gas Commission.

(b) No person shall construct, install, or operate a Class IV well as defined in Section 5(d) hereof, and no permit for a Class IV well shall be issued by the Department.

(c) No person shall construct, install, alter, modify or operate any underground injection facility contrary to the terms and conditions of a permit or of any provision of this Code or the Arkansas Water and Air Pollution Control Act, as amended (the Act).

(d) No person shall violate any other provision of this Code or of the Act.

(e) Any person who violates any provision of this Code or the Act shall be subject to the penalities as provided in Section 9 (a), (b), and (c), Part I, of this Act (Sec. 82-1909 (a), (b), and (c), Ark. Stats. Ann.)

Section 5. CLASSIFICATION OF INJECTION WELLS

(a) Class I.

(1) Wells used by generators of hazardous wastes or owners or operators of hazardous waste management facilities to inject hazardous waste, beneath the lowermost formation containing, within one-quarter mile of the well bore, an underground source of drinking water.

(2) Other industrial and municipal disposal wells which inject fluids beneath the lowermost formation containing, within one-quarter mile of the well bore, an underground source of drinking water.

(b) Class II. Wells which inject fluids:

(1) Which are brought to the surface in connection with conventional oil or natural gas production and may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection.

(2) For enhanced recovery of oil or natural gas; and

(3) For storage of hydrocarbons which are liquid at standard temperature and pressure.

(c) Class III. Wells which inject for extraction of minerals including:

(1) Mining of sulfur by the Frasch process:

(2) In situ production of uranium or other metals. This category includes only in-situ production from ore bodies which have not been conventionally mined. Solution mining of conventional mines such as stopes leaching is included in Class V. (146.05 (c)(2) revised by 46 FR 43160, August 27, 1981)

(3) Solution mining of salts or potash.

(New 146.05(c)(3) added and former (3), (4) redsignated as (4), (5) by 46 FR 43160, August 27, 1981)

(4) In situ combustion of fossil fuel.

Note. - Fossil fuels includes coal, tar sands, oil shale and any other fossil fuel which can be mined by this process.

(5) Recovery of geothermal energy to produce electric power.

Note. - Class III wells include the recovery of geothermal energy to produce electric power but do not include wells used in heating or aquaculture which fall under Class V.

(d) Class IV. Wells used by generators of hazardous wastes or of radioactive wastes, by owners or operators of hazardous waste management facilities, or by owner or operators of radioactive waste disposal sites to dispose of hazardous wastes or radioactive into or above a formation which within one quarter mile of the well contains an underground source of drinking water.

(e) Class V. Injection wells not included in Class I, II, III, or IV.

Note. - Class V wells includes:

(1) Air conditioning return flow wells used to return to the supply aquifer the water used for heating or cooling in a heat pump;

(2) Cesspools or other devices that receive wastes, which have an open bottom and sometimes have perforated sides. The UIC requirements do not apply to single family residential cesspools;

(3) Cooling water return flow wells used to inject water previously used for cooling;

(4) Drainage wells used to drain surface fluid, primarily storm runoff, into a subsurface formation;

(5) Dry wells used for the injection of wastes into a subsurface formation;

(6) Recharge wells used to replenish the water in an aquifer;

(7) Salt water intrusion barrier wells used to inject water into a fresh water aquifer to prevent the intrusion of salt water into the fresh water;

(8) Sand backfill and other backfill wells used to inject a mixture of water and sand, mill tailings or other solids into mined out portions of subsurface mines whether what is injected is a radioactive waste or not. ( 146.05(e)(8) amended by 46 FR 43160, August, 27, 1981)

(9) Septic system wells used:

(i) To inject the waste or effluent from a multiple dwelling, business establishment, community or regional business establishment septic tank; or

(ii) For a multiple dwelling, community or regional cesspool. The UIC requirements do not apply to single family residential waste disposal systems;

(10) Subsidence control wells (not used for the purpose of oil or natural gas production) used to inject fluids into a non-oil or gas producing zone to reduce or eleminate subsidence associated with the overdraft of fresh water.

(11) Radioactive waste disposal wells other than Class IV: (146.05(e)(11) revised by 46 FR 43160, August 27, 1981);

(12) Geothermal wells used in the heating and aquaculture;

(13) Wells used for solution mining of conventional mines such as stopes leaching; (146.05(e)(14) and (15) added by 46 FR 43160 August 27, 1981)

(14) Wells used to inject spent brine into the same formation from which it was withdrawn after extraction of halogens or their salts;

(15) Injection wells used in experimental technologies.

(f) Well classes currently operating in Arkansas include Class I wells used by owners of industrial facilities to inject hazardous/ non-hazardous waste in disposal wells which inject beneath the lowermost formation containing, within one quarter mile of the well bore, an USDW.

Class II wells which inject fluids: which are brought to the surface in connection with conventional oil or natural gas production; for enhanced recovery of oil or natural gas.

Class V wells that are used to inject spent brine into the same formation from which it was withdrawn after extraction of halogens or their salts.

Section 6. SEVERABILITY

If any provision of this Code or the application thereof to any person or circumstance is held valid, such invalidity shall not affect other provisions or applications of this Code which can be given effect without the invalid provision or application, and to this end provisions of this Code are declared to be severable.

Section 7. EFFECTIVE DATE

This Code shall be in full force and effect as of the date of its promulgation.

Promulgated the 22 day of January, 1982.
By ORDER OF THE COMMISSION ON POLLUTION CONTROL AND ECOLOGY

John P. Sanders
Chairman

Attest:

Director

Approved:

Frank White
Frank White, Governor
State of Arkansas

# AMENDMENTS TO
# ARKANSAS UNDERGROUND INJECTION CODE

AMENDMENTS TO
ARKANSAS UNDERGROUND INJECTION CODE

The Arkansas Underground Injection Code as promulgated on the 22nd day of January, 1982 is hereby amended as follows:

1. The enumeration of Federal regulations adopted by reference in Subsection (a) of Section 3 of the Code, entitled "Adoption of Federal Regulations", is hereby amended to read as follows:

40 CFR Part 122, Subparts A, and C (except Section 122.36); 45 FR 33418 et seq., May 19, 1980; as amended 46 FR 43610 et seq., August 27, 1981; as amended April 8, 1982; and as amended to the date hereof;

40 CFR Part 123, Subparts A and C, 45 FR 33377 et seq. May 19, 1980; as amended April 8, 1982; and as amended to the date hereof; and

40 CFR Part 124, Subpart A, 45 FR 3345, et seq. May 19, 1980; as amended April 8, 1982; and as amended to the date hereof; and

40 CFR Part 146, Subparts A, B, D, E, and F. 45 FR 42500, et seq., June 24, 1980; as amended 46 FR 43161, et seq., August 27, 1981; as amended February 3, 1982; and as amended to the date hereof.

2. Section 4 of the Code, entitled "Violations", is hereby amended by redesignating the present Subsections (b), (c), and (d) as (c), (d), and (e) and adding a new Subsection (b) to read as follows:

"(b) No person shall construct, install, or operate a Class IV well as defined in Section 5(d) hereof, and no permit for a Class IV well shall be issued by the Department."

Promulgated this 15th day of October, 1982.

BY ORDER OF THE COMMISSION ON POLLUTION CONTROL AND ECOLOGY.

John P. Sayton
Chairman

Attest:
Jarrell E. Southard
Director

APPROVED:
Frank White
FRANK WHITE, Governor
State of Arkansas

AMENDMENTS TO
ARKANSAS UNDERGROUND INJECTION CONTROL CODE

The Arkansas Underground Injection Control Code as promulgated on the 22nd day of January, 1982 is hereby amended as follows:

The enumeration of Federal regulations adopted by reference in Subsection (a) Section 3 of the Code, entitled "Adoption of Federal Regulations", is hereby amended as follows.

Delete reference to 40 CFR, Part 122 Subparts A and C (except Section 122.36); and change to read Part 144; dated April 1, 1983.

Delete reference to 40 CFR Part 123 Subparts A and C and change to read 40 CFR Part 145; dated April 1, 1983.

Promulgated this 6th day of October, 1983.

BY ORDER OF THE COMMISSION ON POLLUTION CONTROL AND ECOLOGY

Chairman

Attest:

Director

Approved:

BILL CLINTON, Governor
State of Arkansas

# ATTACHMENT 2
# WASTE STREAM ANALYSIS
# AND
# SURFACE FACILITIES

## 2.2 SOUTH PLANT

The South Plant originated with the formation of a joint venture between Michigan Chemical and Murphy Oil Corporation with Michigan Chemical being responsible for plant design, construction and continued operation. It was the first bromine plant in Arkansas. Ground was broken for construction in March 1956, with the first bromine being produced a year later in March 1957. Brine for plant use was byproduct production from Murphy's oil wells in the immediate vicinity.

In the spring of 1969, Michigan Chemical purchased Murphy's interest in the bromine plant and assumed full ownership. Brine production lost its byproduct status with the continuing program of larger and more numerous brine wells without oil production. In late summer of 1973, the commencement of the Tris plant operation doubled and redoubled the number of personnel required for the expanded operation.

On January 1, 1977, Michigan Chemical Corporation merged with another subsidiary of Northwest Industries, Inc., Velsicol Chemical Corporation. In September of 1977, Velsicol voluntary ceased the production of Tris upon its discovery as a carcinogen. A new Firemaster 680 Plant was completed in late 1976 and started up in November 1976. In mid 1977 a Semi-Works Plant was completed and started up, producing a new halo-organic intermediate then later a new fire-retardant. The old Tris production unit was renovated and converted to a new Firemaster PHT-4 Plant which started up November 1979.

*In 1981 Great Lakes Chemical Corporation took over all operations including the waste disposal wells. Recently a Halon Plant was started up in September, 1983. A plot plant for the South Plant is provided in Figure 2.0-2.*

*Six wastestreams are identified at the South Plant which are injected down waste disposal wells 3X, 4 and 5 (shut-in). The wastewater is generated from (1) the semi-works plant, (2) the Firemaster PHT-4 plant, (3) the Firemaster 680 plant, (4) Bromine plant, (5) Halon Plant and (6) wastewater from the El Dorado Plant. Figure 2.0-1A provides a typical analysis of the wastewater from the individual plants. Figure 2.0-3 is a schematic of the wastewater flows. A report on the priority pollutants generated by these plants is included as Appendix 2.0-A. A brief discussion of each of the individual plants follows.*

*2.2.1 Semi-Works Plant* - *This plant produces a brominated-organic flame retardant. The various wastestreams are routed to and collected in a process sump. The individual wastestreams which are separated for the waste disposal wells are listed below:*

- *pollution scrubbers*
- *floor washings*
- *cooling tower blowdown*
- *direct contact condenser blowdown*

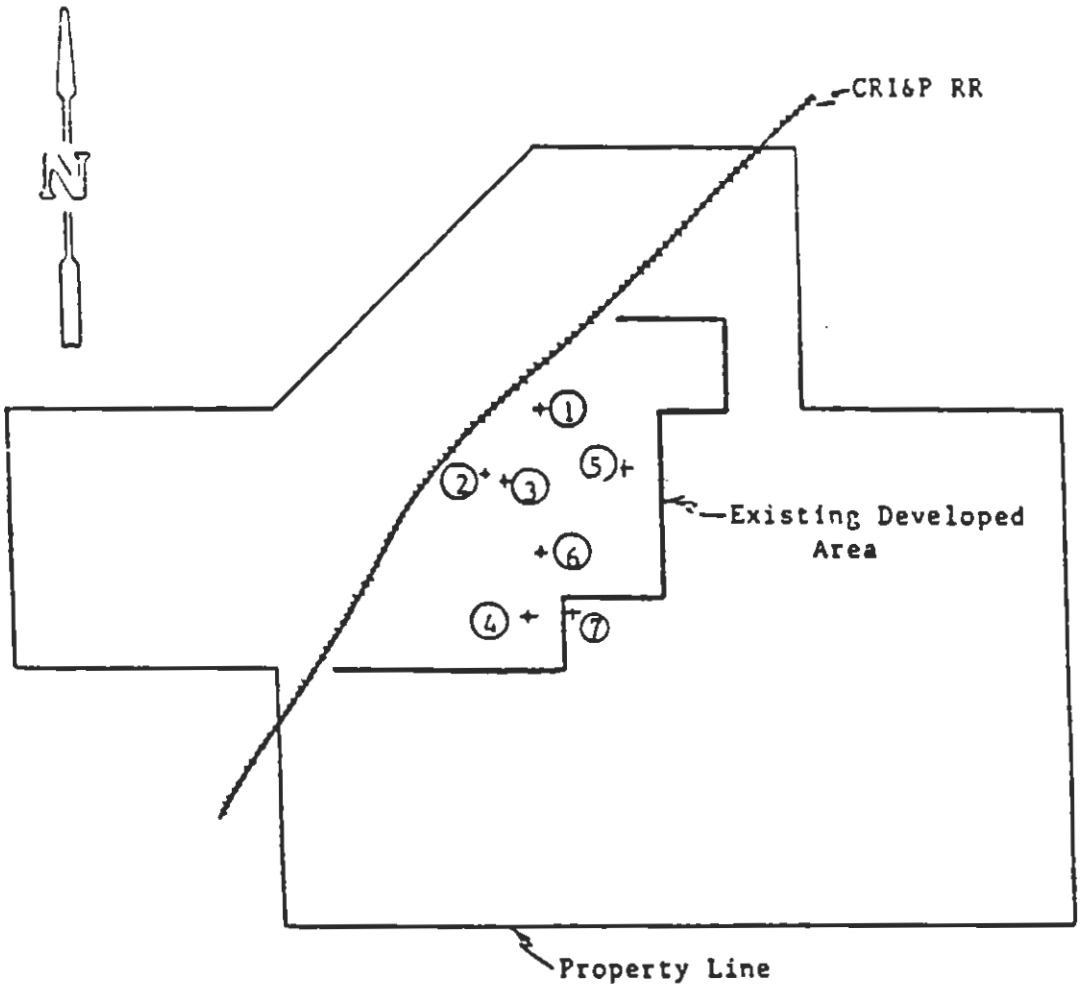
TABLE 2.0-1A
TYPICAL ANALYSIS
SOUTH PLANT WASTEWATER

| Parameters | Semi-Works Plant | FM-PHT 4 Plant | FM-680 Plant | Bromine Plant | Halon Plant |
|---|---|---|---|---|---|
| pH | 8.0 | 8.6 | 8.8 | 6.2 | 8.9 |
| TDS, ppm | 500 | 25768 | 1416 | 63412 | 1010 |
| TSS, ppm | 1 | 214 | 37 | 55 | 4 |
| Specific Gravity | 1.000 | 1.010 | 1.000 | 1.030 | 1.000 |
| Specific Conductance, umhos | 690 | 20,000 | 2000 | 40,000 | 1780 |

FIGURE 2.0-2

GREAT LAKES CHEMICAL CORP.

SOUTH PLANT




(Scale: 1" = 1000')

① Centerline Sec. 32, T18S, R15W

② Bromine Plant (SN 138-141)

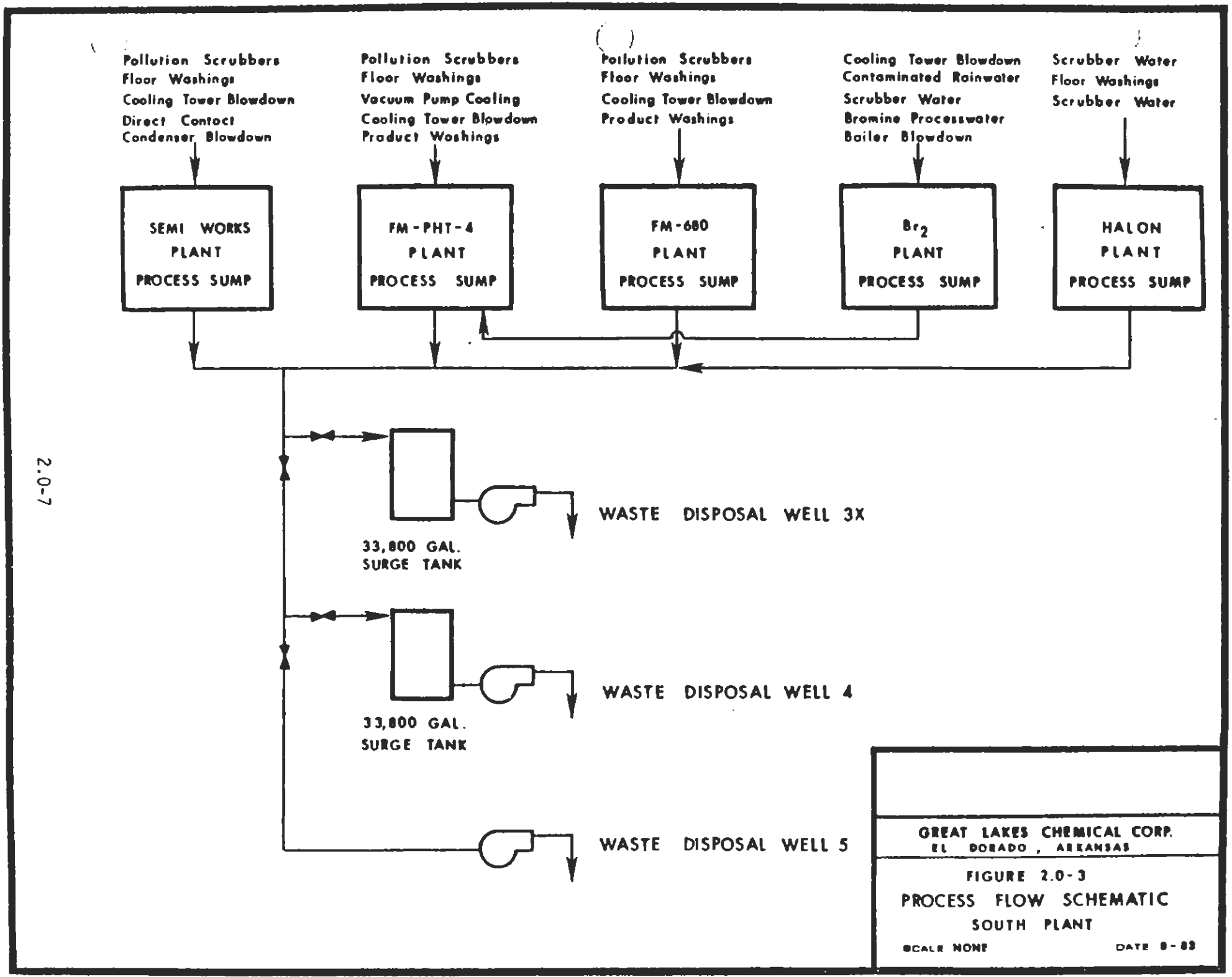
③ Boiler House (SN 036,037)

④ fireMaster$^{R}$, 680 Plant (SN 401-426)

⑤ Semi-Works Plant (SN 501-504)

⑥ (Proposed) fireMaster$^{R}$ PHT-4 Plant (SN 601-605)

⑦ Halon Plant


Pollution Scrubbers
Floor Washings
Cooling Tower Blowdown
Direct Contact
Condenser Blowdown
Pollution Scrubbers
Floor Washings
Vacuum Pump Cooling
Cooling Tower Blowdown
Product Washings
Pollution Scrubbers
Floor Washings
Cooling Tower Blowdown
Product Washings
Cooling Tower Blowdown
Contaminated Rainwater
Scrubber Water
Bromine Processwater
Boiler Blowdown
Scrubber Water
Floor Washings
Scrubber Water
SEMI WORKS PLANT PROCESS SUMP
FM-PHT-4 PLANT PROCESS SUMP
FM-680 PLANT PROCESS SUMP
$Br_2$ PLANT PROCESS SUMP
HALON PLANT PROCESS SUMP
33,800 GAL. SURGE TANK
WASTE DISPOSAL WELL 3X
33,800 GAL. SURGE TANK
WASTE DISPOSAL WELL 4
WASTE DISPOSAL WELL 5
GREAT LAKES CHEMICAL CORP.
EL DORADO, ARKANSAS
FIGURE 2.0-3
PROCESS FLOW SCHEMATIC
SOUTH PLANT
SCALE NONE
DATE 8-83

*The semi-works plant has one 1889 gallon wastewater sump which is divided into three sections. The first section is for caustic neutralization, followed by one for solids separation and a final transfer section. The wastewater is transfered to the storage tanks at the waste disposal wells through level controlled sump pumps.*

*2.2.2 Firemaster PHT-4 Plant* - *The FM-PHT-4 plant produces a brominated - organic flame retardant. The various wastestreams are routed to and collected in a process water sump. The individual wastestreams which are separated for the waste disposal wells are listed below.*

- *pollution scrubbers*
- *floor washings*
- *vacuum pump cooling*
- *cooling tower blowdown*
- *product washing*

*The FM-PHT-4 plant has two wastewater sumps. Both primary and secondary sumps are the same size, holding approximately 19,825 gallons each. The sumps have a pH control system using 50% caustic to neutralize any acidic waste entering the sump. The wastewater is transferred to the storage tanks at the waste disposal wells through level controlled sump pumps.*

*2.2.3 Firemaster 680 Plant* - *The FM 680 Plant produces a brominated - organic flame - retardant. The various wastestreams are routed to and collected in a process water sump. The individual wastestreams which are separated for disposal to the waste disposal wells are listed below.*

* *pollution scrubbers*
* *cooling tower blowdown*
* *floor washings*
* *product washings*

*The FM 680 plant has one waste water sump. It has a volume of approximately 1114 gallons. The pH can be controlled manually by the addition of 50% caustic. The accumulated wastewater is transferred to the waste disposal well storage tanks through a level controlled sump pumps.*

*2.2.4 Bromine Plant* - *Bromine is produced from natural brines obtained from underground formations. The brine is pumped from the producing wells to a central location for processing. Chlorine is added to the brine to displace the bromide ion from the natural salts and form elemental bromine which is stripped from the solution with steam, condensed, and purified for futher use or sale. The spent brine which has been diluted about 5% in the steaming process is neutralized and stored in large pits to cool and clarify before being returned to the producing formation.*

*A process sump at the bromine plant collects the following wastestream for injection:*

* *cooling tower blowdown*
* *contaminated rainwater*
* *scrubber water*
* *bromine process water*
* *boiler blowdown*

*2.2.5 Halon Plant - In 1983, a new flame retardant, Halon, was brought on line. This plant produces a wastestream from a number of sources as given below.*

* *scrubber water*
* *floor washings*

*2.2.6 Wastewater from El Dorado Plant - Two wastestreams are transported via tank truck from the El Dorado Plant to the South Plant for injection down the waste disposal wells. The wastewater is generated from the CCMP process and includes the following two streams:*

* *$MPB_2$ wastewater*
* *DSP wastewater*

*A typical analysis is given in Table 2.0-2.*

TABLE 2.0-2
TYPICAL ANALYSIS
EL DORADO PLANT WASTEWATER

| Parameter | $MPB_2$ Wastewater | DSP Wastewater |
|---|---|---|
| Flow, gpm | 4.1 | 4.1 |
| pH | 9.1 | 5.46 |
| TOC, mg/L | 1890 | 1940 |
| TOX, mg/L | 110 | 16 |
| Total Solids, mg/L | 114,050 | 31,860 |

2.2.7. Composite Analysis - A composite analysis of the wastewater injection into wells No. 3X and 4 is given in Tables 2.0-3 and 2.0-4 respectively. The analysis represent typical values and were taken from the surge tanks at the individual wells. Waste disposal well No. 5 is shut-in and is not injecting wastewater at this time.

## 2.3 SURFACE FACILITIES EL DORADO PLANT

The preinjection surface facilities for PDW-2 consist of two 6300 gallon storage tanks located near the wellsite. Waste acid is collected in these tanks prior to injection. A transfer pump for handling the spent acid at the surface facilities is provided.

## 2.4 SURFACE FACILITIES SOUTH PLANT

Waste disposal wells 3X and 4 have fiberglass surge tanks adjacent to the well location. The surge tanks are both the same size; 12' diameter x 40' height. The approximate volume is calculated to be 33,800 gallons for each tank. In addition to the FRP surge tank a 30,000 gallon carbon steel open top tank has been added to well 3X to increase surge capacity. Wastewater is pumped from the individual process sumps to the surge tanks prior to injection.

*TABLE 2.0-3*

*COMPOSITE WASTEWATER ANALYSIS*

*SOUTH PLANT*

*WASTE DISPOSAL WELL NO. 3X*

| | |
|---|---|
| *Total Chromium* | |
| *Iron* | *0.2 - 6.0 ppm* |
| *Sodium* | *600 ppm* |
| *Calcium* | *10 ppm* |
| *Potassium* | *3.0 ppm* |
| *Sulfate* | *0.02%* |
| *Bromide Ion* | *0.11%* |
| *Phenols* | *0 - 50 ppm* |
| *pH* | *6 - 8* |
| *Average Flowrate, gpm* | *100* |

*NOTE: See Appendix 2.0-A for organic screening and analysis.*

*TABLE 2.0-4*

*COMPOSITE WASTEWATER ANALYSIS*

*SOUTH PLANT*

*WASTE DISPOSAL WELL NO. 4*

| | |
|---|---|
| *Total Chromium* | *0.2 - 6.0 ppm* |
| *Phenols* | *0 - 50 ppm* |
| *TSS* | *10 - 50 ppm* |
| *TOC* | *10 - 20 ppm* |
| *Bromide* | *0 - 500 ppm* |
| *pH* | *6 - 8* |
| *Average Flowrate, gpm* | *100* |

*NOTE: See Appendix 2.0-A for organic screening and analysis*

*Both injection wells 3X and 4 use positive displacement pumps to inject the wastewater. Discharges from the fiberglass surge tanks are located approximately 8' above ground level so that suspended solids can settle in the bottom of the tank. They are periodically removed and disposed of in an acceptable manner.*

*Waste disposal well No. 5 does not have a surge tank. This well is not currently in service; however, wastewater can be pumped from the surge tank located at well No. 3X to well No. 5. Table 2.0-5 is a summary of the pre-injection surface facilities for the South Plant.*

## *2.5 COMPATBILITY AND CORROSION*

*Characteristics of the wastestreams to injection wells PDW-2 at the El Dorado Plant and 3X, 4, and 5 at the South Plant are given in Tables 2.0-1 through 2.0-4. Although no specific corrosion tests have been conducted using the wastewater, carbon steel equipment has successfully been used at Great Lakes Chemical Corporation Plant's to store, pump, and pipe these materials for many years. Although no corrosion problems are anticipated, should modification become necessary they will be implemented immediately.*

*No laboratory testing for formation compatibility has been performed. However, the wastestreams have been successfully injected in the Meakin/Graves Sandstone for many years with only minor formation damage. No compatibility problems are expected; however, a compatible buffer fluid may be required should compatibility problems arise in the future.*

TABLE 2.0-5
SOUTH PLANT SURFACE FACILITIES

| Well No. | Type of Pump | Pump Rating |
|---|---|---|
| 3X | Plunger pump | 15,480 gph/258 gpm |
| 4 | Plunger pump | 16,560 gph/276 gpm |
| 5 | Centrifugal | (24,600 gph/410 gpm) Est. (act 12,000/ 200 gpm) |
| 3X & 4 | Motor = 3 phase, 460X, 200 hp, 1180 rpm Pump = Frank Wheatley Industries, (FWI - 250 hp) 3 piston plunger pump | |
| 5 | Allis - Chalmers No. V76 - 72634 Type 12 ELM, 410 gpm - 27 stage, head 1571', 1770 rpm at 0.4335 psi/ft (681 psi) | |
| 3X & 4 | Surge tanks, 40' x 12'Ø 33,000 gal. capacity, FRP | |
| 5 | Uses No. 3x surge tank | |

* Pumps are controlled by level switches with surge tanks.
on level = 27.0'
off level = 11.5' - 12.0' 12,902 gal

# ATTACHMENT 3

# WELL DESCRIPTION

## 8.0 WELL CONSTRUCTION AND COMPLETION

### 8.1 DISPOSAL WELL NO. 2, EL DORADO PLANT, MAIN PLANT

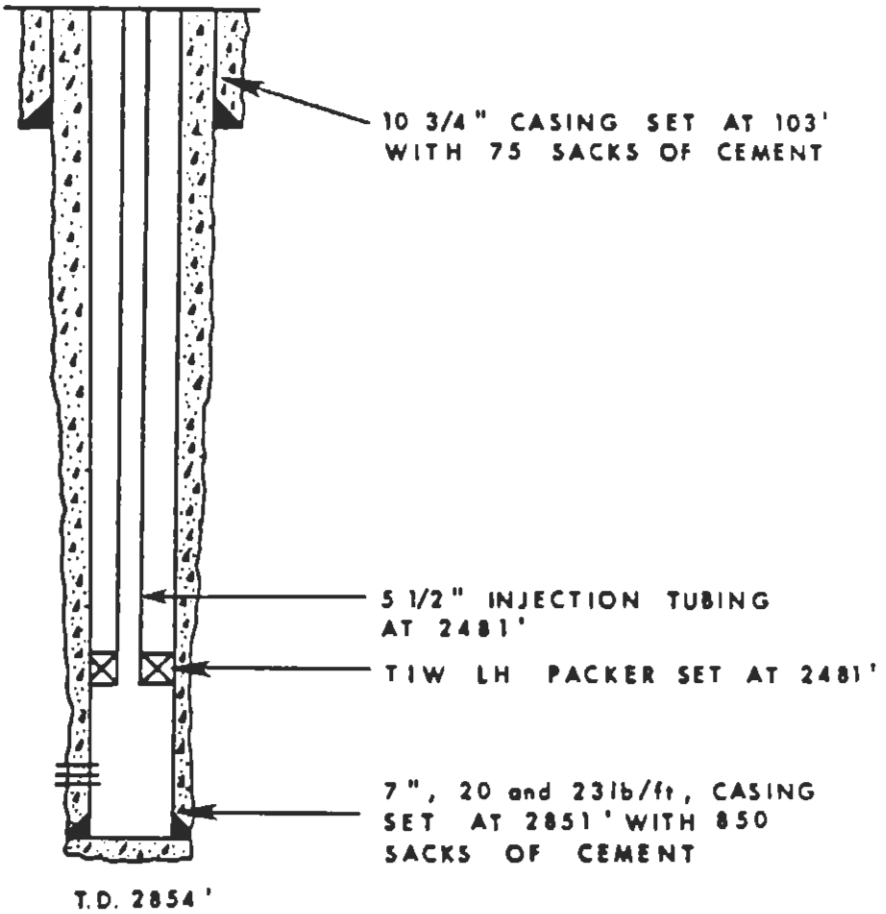
Disposal well No. 2 was drilled to a total depth of 3003'. 10 3/4" casing was set at 1005' with 630 sacks of cement. 7" casing was set at 2996' with 550 sacks of cement. The 7" casing was perforated from 2686' to 2722'. 2 3/8" injection tubing was hung off at 2667'. Pertinent construction details are illustrated in Figure 8.0-1 and listed in Table 8.0-1.

### 8.2 DISPOSAL WELL NO. 3X, SOUTH PLANT

Disposal well No. 3X was drilled to a total depth of 2854'. 10 3/4" casing was set at 103' with 75 sacks of cement. 7" casing was set at 2851' with 850 sacks of cement. The 7" casing was perforated from 2544' - 2568', 2571' - 2578', 2650' - 2686', and 2722' - 2742'. 5 1/2" injection tubing was set with a TIW LH packer at 2481'. Pertinent construction details are illustrated in Figure 8.0-2 and listed in Table 8.0-2.

### 8.3 DISPOSAL WELL NO. 4, SOUTH PLANT

Disposal well No. 4 was drilled to a total depth of 2860'. 10 3/4" casing was set at 107' with 75 sacks of cement. 7" casing was set at 2854' with 300 sacks of cement. The 7" casing was perforated from 2660' - 2693' and 2730' - 2746'. The 5 1/2" injection tubing was set with a TIW packer at




GREAT LAKES CHEMICAL CORP.
EL DORADO, ARKANSAS

FIGURE 8.0-2
DISPOSAL WELL NO. 3X
SOUTH PLANT
SCALE NONE DATE JULY 83

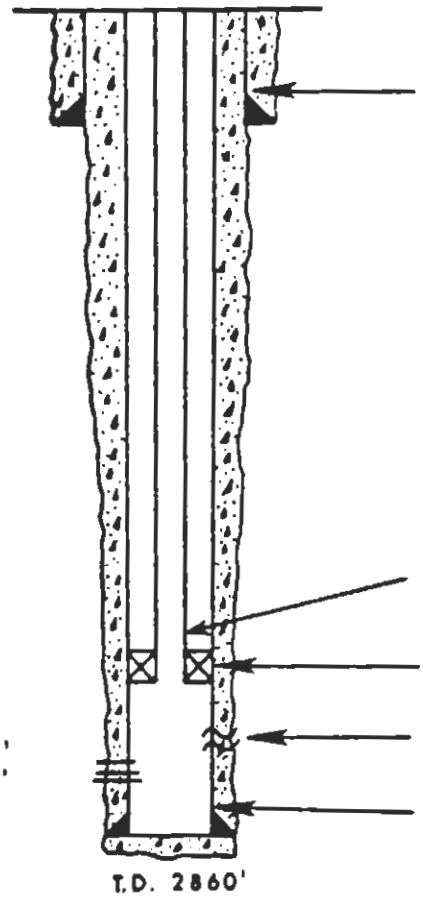
*TABLE 8.0-2*
*CONSTRUCTION DETAILS DISPOSAL WELL NO. 3X*

| | | |
|---|---|---|
| *Total Depth* | *2854'* | |
| *Completion* | *Perforated* | |
| *Injection Interval(s)* | *2544' - 2568'*<br>*2571' - 2578'*<br>*2650' - 2686'*<br>*2722' - 2742'* | |
| *Tubing* | | |
| *Size, type and depth* | *5 1/2" at 2481'* | |
| *Packer* | | |
| *Size, type and depth* | *TIW LH set at 2481'* | |
| *Tubulars* | | |
| *Size* | *10 3/4"* | *7"* |
| *Weight* | | *20 and 23 lb/ft.* |
| *Grade* | | |
| *Depth* | *103'* | *2851'* |
| *Centralizers* | *Unknown* | *Unknown* |
| *Cement* | | |
| *Type* | | |
| *Volume* | *75 sacks* | *850 sacks* |
| *Cement Equipment* | *Unknown* | *Unknown* |

2489'. During a routine workover the 7" long string casing was damaged. Apparently a hole was drilled through the casing adjacent to the Meakin sand. It is assumed that some waste is being injected into the Meakin; however, it is impossible to know the percentage of total flow split between the Meakin and Graves. Pertinent construction details are illustrated in Figure 8.0-3 and listed in Table 8.0-3.

## 8.4 DISPOSAL WELL NO. 5

Disposal well No. 5 was drilled to a total depth of 2915'. 9 5/8" casing was set at 907' with 300 sacks of cement. 7" casing was set at 2915' with 520 sacks of cement. The 7" casing was perforated from 2735' to 2756'. 5 1/2" injection tubing was set with at TIW packer at ~~2677~~ 2467'. Pertinent construction details are illustrated in Figure 8.0-4 and listed in Table 8.0-4. Disposal well No. 5 has been shut in and used once since January, 1980.



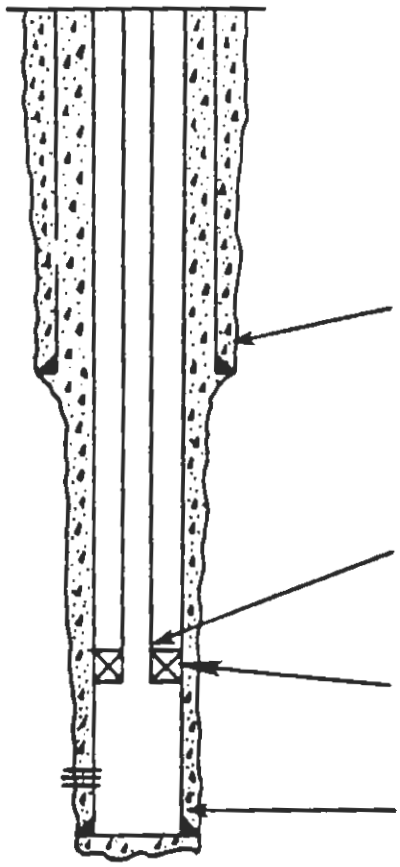

GREAT LAKES CHEMICAL CORP.
EL DORADO, ARKANSAS

FIGURE 8.0-3
DISPOSAL WELL NO. 4
SOUTH PLANT

SCALE NONE DATE JULY 83

TABLE 8.0-3
CONSTRUCTION DETAILS DISPOSAL WELL NO. 4

| | | |
|---|---|---|
| Total Depth | 2860' | |
| Completion | Perforated | |
| Injection Interval(s) | 2660' - 2693'<br>2730' - 2746' | |
| Tubing | | |
| Size, type and depth | 5 1/2", 14 lb/ft., at 2489' | |
| Packer | | |
| Size, type and depth | 7" x 5 1/2", TIW, set at 2489' | |
| Tubulars | | |
| Size | 10 3/4" | 7" |
| Weight | | 20 lb/ft. |
| Grade | | |
| Depth | 107' | 2854' |
| Centralizers | Unknown | Unknown |
| Cement | | |
| Type | Unknown | Unknown |
| Volume | 75 sacks | 300 sacks |
| Cement Equipment | Unknown | Unknown |



9 5/8", 36lb/ft CASING SET AT 907' WITH 300 SACKS OF CEMENT

5 1/2", 17lb/ft INJECTION TUBING AT ~~2077~~ 2467'

T1W, 5 1/2"X7" PACKER SET AT ~~2077~~ 2467'

PERFORATIONS 2735' - 2756'

7", 23lb/ft CASING SET AT 2915' WITH 520 SACKS OF CEMENT

T.D. 2915'

GREAT LAKES CHEMICAL CORP.
EL DORADO, ARKANSAS

FIGURE 8.0-4
DISPOSAL WELL NO. 5
SOUTH PLANT

SCALE NONE DATE JULY 83

*TABLE 8.0-4*
*CONSTRUCTION DETAILS DISPOSAL WELL NO. 5*

| | | |
|---|---|---|
| *Total Depth* | *2915'* | |
| *Completion* | *Perforated* | |
| *Injection Interval(s)* | *2735' - 2756'* | |
| *Tubing* | | |
| *Size, type and depth* | *5 1/2", 17 lb/ft. at* ~~*2677'*~~ 2467' | |
| *Packer* | | |
| *Size, type and depth* | *5 1/2" x 7", TIW set at* ~~*2677'*~~ 2467' | |
| *Tubulars* | | |
| *Size* | *9 5/8"* | *7"* |
| *Weight* | *36 lb/ft.* | *23 lb/ft.* |
| *Grade* | | |
| *Depth* | *907'* | *2915'* |
| *Centralizers* | *Unknown* | *Unknown* |
| *Cement* | | |
| *Type* | | |
| *Volume* | *300 sacks* | *520 sacks* |
| *Cement Equipment* | *Unknown* | *Unknown* |

# ATTACHMENT 4

# PLUGGING AND ABANDONMENT

## 10.0 PLUGGING AND ABANDONMENT PLAN

### 10.1 PLUGGING PROCEDURES

In the event that a major well failure or upon reaching the effective end of the wells useful life, the disposal well will be plugged in accordance with the prevailing Arkansas Department of Pollution Control and Ecology injection well closure guidelines. The following proposed steps for plugging operations are designed to permanently seal the injection wellbore and thus prevent communication between the disposal reservoir and upper strata containing fresh water.

The injection tubing will be removed from the wellbore, properly decontaminated and disposed of in an acceptable manner. The long string protection casing will be filled with cement from bottom to surface. The cement used for plugging will be selected to provide maximum resistance to the wastewater disposed in the well. Cement will be placed in the injection zone using a cement retainer and the remaining casing filled in multiple stages using a displacement method. The casings will be cut 3' below grade level and a steel plate welded across the top. Pertinent well indentification information will be included on the plate.

After the plugging has been completed a detailed report and plug and abandon form will be submitted to the Arkansas Department of Pollution Control and Ecology UIC Division. Table 10.0-1 lists a general step by step procedure to properly close a disposal well.

*TABLE 10-1*

*CLOSURE PLAN*

*PLUG AND ABANDONMENT PROCEDURE FOR WASTE DISPOSAL WELLS*

1. *Move in and rig up.*
2. *Pump 100 bbls of 10 lb/gal. brine.*
3. *Dismantle wellhead and mount blowout preventors.*
4. *Remove the injection tubing. If packer will not unseat, cut the tubing with a tubing charge immediately above the packer. Remove and decontaminate the tubing as required.*
5. *Set cement retainer at top of injection zone.*
6. *Squeeze cement with Class "H" from top of injection zone to total depth. Cement volume to be open hole volume plus 25% excess.*
7. *Wait on cement four hours.*
8. *Pressure test retainer and cement to 500 psi for 30 minutes and tag top of retainer to verify depth.*
9. *Balance Class "H" in two stages from top of injection zone to surface.*
10. *Rig down and move out.*
11. *Wait on cement eight hours.*
12. *Cut off wellhead and casings 3' below ground level and weld steel plate on top of the casing. Steel plate should be inscribed with Serial No. and date of plugging. State representative will witness the plugging and will sign the plug and abandonment form.*

# ATTACHMENT 5
# CASING TESTING PROCEDURES

ARKANSAS DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY

MEMORANDUM

TO: Bob Blanz, Deputy Director, Program Operations
A. L. Sparks, UIC Coordinator, Water Division

FROM: Lynnette Gandl, Geologist, Permits Branch

DATE: March 15, 1984

SUBJECT: Update - Pressure test requirements on Class I injection wells

The following guidelines represent slight modifications of those proposed in a March 1 memo as the policy of the ADPC&E regarding casing pressure testing for mechanical integrity of Class I injection wells. The modifications are partially the result of an E.P.A. Region 6 UIC program meeting on April 7 & 8, 1984.

1. If a well is pressured up to greater than 1000 psi, then the pressure must hold for a minimum of 30 minutes.

2. If a well is pressured up to more than 500 psi but less than or equal to 1000 psi, the pressure must hold for a minimum of 1 hour.

3. If a well is pressured up to 500 psi or less, the pressure must hold for 3 hours.

4. A well must be pressured up to at least 100 psi over maximum expected injection pressures.

5. If more than one pressure gage is used for any reason, as when removing the pressure truck and installing an in-line pressure gage, the pressure reading for the lowest reading gage will be utilized in applying guidelines 1 to 4 above.

6. Pressure during the test may not be allowed to exceed 75% of calculated fracture pressure.

7. Maximum pump capacity must not exceed 75% of calculated fracture pressure.

It is suggested that these criteria become a part of the UIC permit guidelines for Class I wells. Slightly different standards may apply when wells are retested at five year intervals since re-tests will generally be performed with injection tubing in place.

These guidelines are subject to change and additional criteria may be developed.

LAG:cjh

cc: Phyllis Garnett, Director
Jim Shell, Chief, Water Division
Mark Witherspoon, Supervisor - Land Disposal Section
Gary Eddy, ADPC&E District Field Inspector