CLASS II INJECTION WELL PERMIT APPLICATION
PROCEDURES FOR
FORM UIC-2
SALT WATER DISPOSAL and ENHANCED OIL RECOVERY

PERMITTING PROCESS

A. The applicant publishes a Notice of Intent to file an application.

NOTE: If applying for an Enhanced Oil Recovery (EOR) injection well, a Notice of Intent/Public Notice is not required.

B. Upon receipt of the original submittal, the Engineering Division will forward an initial application review letter to the applicant acknowledging receipt of the application and the assignment of an Application Number.

C. If needed, revisions to the applications or explanation regarding information in the application will be requested by this Division through a Notice of Deficiency as the application progresses through the review process. **Include the Application Number on the upper right corner of each page of any revision to the application.** The Application Number can be found on your receipt letter referenced in Item B (above).

D. The permitting process is a two-step procedure:

Step 1: After the application is reviewed, found to be complete, and meet the requirements of Statewide Order 29-B, a final permit shall be issued. This permit shall allow the well to be drilled, completed, and tested, or to be converted and tested as described in the approved application.

Step 2: After completing Step 1 above, the applicant shall submit a Form UIC WH-1 (Injection Well History and Work Resume Report) and mechanical integrity test results, and wireline logs run. If found adequate, a Permit-to-inject letter authorizing the start of injection will be issued. If not adequate, this Division will inform the applicant what remedial action, if any, can be taken to obtain a Permit-to-Inject.

NOTICE OF INTENT/ PUBLIC NOTICE *[§409.A]*

AT LEAST FIFTEEN DAYS PRIOR TO FINLING AN APPLICATION (BUT NO MORE THAN 6 MONTHS PRIOR), a notice of the Application shall be published one time by the applicant in the official state journal, *The Advocate* (in Baton Rouge). Acceptable wording for such notice is included in this application package as "Attachment 8". **Prior to the approval of the permit, the applicant shall submit proof of publication of such notice with this Division**.

APPLICATION GUIDELINES

- These procedures are intended to provide applicants with a checklist to ensure all information is provided. Depending on the given well, additional items may be requested.
- This list applies to new wells to be drilled and those to be converted, re-permitted, or re-drilled for injection.
- Supporting documentation is required in the form of attachments. Label each of the attachments by number in the lower right-hand corner, e.g. "Attachment 2A".
- Any Orders (including Enhanced Oil Recovery Order(s), if applying for EOR disposal) pertaining to the permitting of this well should be attached.
- Boxes 33-36 of Form UIC-2 should be certified with an *original* signature from an associate of the operating company. The associate may be an officer; manager; general partner; proprietor; operator of the well, field, or facility; or any direct employee of the operating company employed in a decision-making role. This Division will not accept a signature from an agent or consultant of the operating company to certify the application.

SUBMIT THE APPLICATION IN THE FOLLOWING ORDER:

I. Application for Permit or to Amend Permit to Drill for Minerals *[§405.A]*

☐ For a CONVERSION or RE-PERMIT, two copies of completed form MD-10-R-A-1 (Pink Card)

NOTE: Both cards must have *original* signatures, and the information provided must be consistent with Boxes 2-15 on the Form UIC-2.

II. Filing Fee

☐ Check made payable to "Office of Conservation". Refer to LAC 43:XIX.Chapter 7 for the current fee schedule or contact this Division at (225) 342-5515.

III. Application Form *[§405.A]*

☐ Form UIC-2 with an *original* signature from an officer with the operating company authorized to certify the application.

NOTE: All items must be answered or noted with "N/A" (not applicable).

IV. Attachments:

1. ATTACHMENT 1 — LOCATION PLAT *[§405.B.1]*

☐ For a NEW DRILL or RE-PERMIT, include an original certified location plat, labeled "Attachment 1". The Location Plat should include geographic coordinates in GCS-Latitude, Longitude (NAD27 and NAD83) and State Plane-X, Y (Lambert, NAD27 and NAD83) for the proposed SWD well location.

☐ For a CONVERSION or RE-DRILL, include a certified location plat. The submitted location plat may be a photocopy as long as the correct NAD27 and NAD83 geographic coordinates are available in the DNR database (SONRIS). If the geographic coordinates are missing or are incorrect in SONRIS, an original certified location plat must be submitted.

NOTE: All submitted location plats should comply with Injection and Mining Location Plat Policy (IMD-GS-10).

2. ATTACHMENT 2 — AREA OF REVIEW

A. ATTACHMENT 2A, Area of Review (AOR) Map: The AOR Map must identify, within a one-quarter mile (1,320-ft.) radius of the proposed injection well, the locations for the following:

☐ The proposed injection well
☐ All proposed wells
☐ All injection wells
☐ All shut-in wells
☐ All plugged and abandoned wells
☐ All dry holes
☐ All source water wells (for enhanced recovery)
☐ All freshwater wells

NOTE: The AOR Map may be combined with the Location Plat, but should still include a legend to identify each well and to otherwise clarify the AOR Map. Except for the freshwater wells, only information on file with the Office of Conservation and pertinent information known to the applicant is required to be included on this map.

B. ATTACHMENT 2B, Area of Review (AOR) Well List: The AOR Well List should identify all wells in the AOR except freshwater wells. Use the AOR Well List template or create your own template, as long as the following information is included:

☐ Operator (Operator Code)
☐ Well Name and Number
☐ Serial Number
☐ Well status
☐ Total Depth
☐ Perforated Interval

NOTE: If no wells are found within the AOR, indicate with "no wells found" on Attachment 2B.

C. ATTACHMENT 2C, Freshwater Well List, *[§405.B.5.c]*: The Freshwater Well List should identify all freshwater well in the AOR. Use the Freshwater Well List template or create your own template, as long as the following information is included:
   - ☐ Owner
   - ☐ Type (Use Description)
   - ☐ Status
   - ☐ Well Depth
   - ☐ Location
   - ☐ Water Well Number (if registered)

D. ATTACHMENT 2D, Freshwater Well Analysis: Include a laboratory analysis of a water sample from EACH freshwater well listed on Attachment 2C. The laboratory analysis must be a signed original from a LDEQ LELAP accredited laboratory. The Chain of Custody should be included. The analysis sheet(s) must identify the freshwater well sampled, and, at a minimum, include measurement of:
   - ☐ Chloride (mg/l)
   - ☐ Total Dissolved Solids (mg/l)

NOTE: An explanation should be provided for samples that are not obtainable. This explanation should include an *original* signature from the individual who attempted the sample collection.

3. ATTACHMENT 3 — FACILITY DIAGRAM

   ☐ A surface facility diagram that shows the following, where applicable:

   - ☐ Proposed well
   - ☐ Tank(s)
   - ☐ Pits
   - ☐ Containment levees
   - ☐ Flow lines entering and leaving the facility
   - ☐ Rig supply well
   - ☐ Pertinent buildings
   - ☐ Landmarks and other significant structures or features

4. ATTACHMENT 4 — SURFACE + SUBSURFACE (WELLBORE) EQUIPMENT AND WORK PROGNOSIS *[§405.B.3-4]*

   A. ATTACHMENT 4A/B, Surface and Subsurface (Wellbore) Schematic(s): Include a schematic diagram of the surface (wellhead) equipment and a schematic diagram of the subsurface (wellbore) as it *currently exists* (if a conversion or re-drill) and a schematic diagram of the well as it is *proposed to be completed*. The schematic diagram(s) must match items 12 to 21 on the Form UIC-2 and show the following:

      A. Surface equipment:

         - ☐ Well Head
         - ☐ Pressure gauges
         - ☐ Flow line diameters at wellhead
         - ☐ Monitoring equipment (if used)

      B. Subsurface equipment:

         - ☐ All casing strings:
            - ☐ Diameter
            - ☐ Casing grade
            - ☐ Weight (per foot)
            - ☐ Depth set (top and bottom)

         NOTE: Surface casing must extend a *minimum of 100 feet* below the lowermost USDW. If the surface casing is not set 100 feet below the USDW, contact an Engineer within this Division for guidelines pertaining to surface casing variances. *[§415.B.1]*

- ☐ Hole (drill bit) diameters
- ☐ Cement specifications:
  - ☐ Type of class
  - ☐ Number of sacks
  - ☐ Tops of cement (indicate whether calculated, logged, or to be logged)
- ☐ Proposed cement squeeze(s), if any:
  - ☐ Type of class
  - ☐ Number of sacks
  - ☐ Calculated top of cement to be logged)
- ☐ Injection tubing:
  - ☐ Diameter
  - ☐ Type or material
  - ☐ Depth
- ☐ Packer:
  - ☐ Type
  - ☐ Depth set

  NOTE: Packer must be set no higher than 150 feet above the top of proposed injection zone. *[§415.C]* Proof of isolation bonded cement) of the Top of Proposed Injection Zone must be at or above the packer.
- ☐ Proposed injection zone (see Attachment 7 for additional information):
  - ☐ Top depth
  - ☐ Bottom depth

  NOTE: If directional,
- ☐ Proposed initial perforated, open-hole, or screened interval:
  - ☐ Top depth
  - ☐ Bottom depth
- ☐ Other Depths:
  - ☐ Total Depth
  - ☐ Drilled-out depth (where applicable)
  - ☐ Plugged-back depth (where applicable)

  NOTE: If the proposed or existing well is directional (deviation over 3° inclination), the following should be included: graphic representation of the deviated wellbore; the kickoff point; and MD and TVD values for all depths.

B. ATTACHMENT 4C, Work Prognosis: Include a work prognosis describing the sequence of work to be performed. If a cement bond log (CBL) has been run prior to submission of the application, a copy should be submitted with the application. The Work Prognosis should take into account the following:

Logging Requirements: *[§419.A.2]*

Open-hole logs should include Gamma Ray, Spontaneous Potential, and a resistivity curve.

- ☐ USDW: The base of the Underground Source of Drinking Water (USDW) must be defined by a nearby well (defined by this Office as *no further than 1,320 feet* from the proposed SWD location). If there is no electric log of a nearby well that defines the USDW, then an open-hole log must be run before setting the surface casing;
- ☐ Injection Zone: An open-hole log must be run from total depth of the well through the base of the surface casing shoe before setting the long string casing. *[§419.A.2]*

Formation Pressure

- ☐ A test of the bottomhole pressure should be completed *after perforating but before injecting*. This can be completed by obtaining Static Fluid Level (SFL), BHP gauges, or a pressure transducer.

5. ATTACHMENT 5 — SOURCES OF PRODUCED WATER

☐ A list of all sources of produced water that is to be disposed of in the proposed well. Use the Source Fluid Well List template or create your own template, as long as the following information is included:

- ☐ Operator (Operator Code)
- ☐ Well Name and Number
- ☐ Serial Number
- ☐ Field Name
- ☐ Formation Name
- ☐ Total Depth
- ☐ Perforated Interval

NOTE: All source wells listed on the Source Fluid Well List must be operated by the applicant of the proposed injection well. Only wells in a status 1, 9, 10, 33, 36, or 37 should be included on Attachment 5.

6. ATTACHMENT 6 — INJECTION FLUID ANALYSIS *[§405.B.5.d]*

☐ A laboratory analysis of a representative sample of the fluid to be disposed of into the proposed well. The laboratory analysis must be a signed original from a LDEQ LELAP accredited laboratory. Chain of Custody form should be included. A list of laboratories accredited by LDEQ can be found at LDEQ Accredited Laboratories.

The analysis sheet must indicate the source of the sample, and this Division should be able to track the sample to the fluid source wells. At a minimum, the analysis should include measurement of:

- ☐ Chloride (mg/l)
- ☐ Total Dissolved Solids (mg/l)
- ☐ Specific gravity or density (g/cc or ppg)
- ☐ Temperature of sample when specific gravity was measured

NOTE: If the sample collected and analyzed was taken from a storage tank or commingling tank, a signed statement should be submitted which describes the relationship of the storage tank or commingling tank to the well(s) listed on the Source Fluid Well List.

7. ATTACHMENT 7 — ELECTRIC LOGS

☐ For a NEW DRILL, include an electric log (e-log) of the nearest well to the proposed well location which shows the Underground Source of Drinking Water (USDW) and the proposed injection zone. E-logs of more than one well may be included, if necessary, to show both the lowermost USDW and proposed injection zone. A diligent search must be made to locate at least one e-log within one mile of the proposed well. If an e-log cannot be located within one mile, a search may be extended up to two miles. If an e-log is not available, provide a statement indicating that no e-logs are available from wells within a two mile radius of the proposed well location.

☐ For a CONVERSION or RE-DRILL, include an electric log (e-log) of the well proposed for conversion. If the lowermost USDW was not logged in the well proposed for conversion, include an e-log of the nearest well to the proposed well location which shows the USDW.

The following guidelines should be applied when identifying USDW and injection zone(s) on well logs;

A. Base of the lowermost Underground Source of Drinking Water (USDW):

a. Conduct a one mile search from the proposed well location to locate the closest well with an e-log that shows the lowermost USDW. The USDW can be determined from the deep induction curve, generally the dotted curve, on the e-log. Resistivity changes with temperature and depth, therefore the guidelines below are used to approximate the lowermost USDW in sands at the following depths:

i. Ground surface to 1,000 feet: 3 ohms or higher is considered USDW;
ii. 1,000 feet to 2,000 feet: 2½ ohms or higher is considered USDW; and
iii. 2,000 feet and deeper: 2 ohms or higher is considered USDW.

Clay or shale intervals with resistivity higher than these are not considered USDW.

b. Provide an e-log from the search area that shows there is at least 100 feet of net shale between the top of the proposed injection zone and the base of the USDW.

B. Proposed Injection Zone:

a. An injection zone consisting of multiple sands may be permitted, provided that the USDW and sands capable of hydrocarbon production are isolated. Permitting a zone of multiple sand units will allow for future perforations within the permitted injection zone by applying for a work permit (Form UIC-17);

b. Cement isolation confining the top of the proposed injection zone must be confirmed by a CBL, which must show cement in the wellbore bonded to the first isolating shale formation immediately above the approved injection zone;

c. The packer must be set at or below the cement isolation confining the top of the proposed injection zone but no more than 150 feet above the top of zone.

d. Conduct a one-mile search from the proposed well location to locate any productive wells (current or formerly productive). Ensure that there is sufficient net shale (between 50-100 feet) between the proposed injection zone and any productive interval(s).

8. ATTACHMENT 8 — OFFICE OF CONSERVATION ORDER(S)

☐ Submit any relevant Conservation Order(s) related to the proposed injection application. This may include any field orders or EOR Orders.

☐ For a proposed Enhanced Oil Recovery: Submit a copy of the signed Order creating the EOR Project (including any type logs).

An order creating a Secondary Recovery or Enhanced Oil Recovery (EOR) Project, signed by the Commissioner of Conservation, must exist before a permit can be issued to have an EOR well.

Interim approval may be issued for the drilling and completion of a new EOR well, or recompletion of an existing well, if the operator of the unit has scheduled and advertised for a Public Hearing to create an EOR Project.

The operator wanting to drill / recomplete, prior to the signing of the Order, will drill / recomplete at his own risk.

In no case will the operator seeking a permit for the EOR well start injection prior to the issuance of a signed Office of Conservation Order for the EOR unit and a permit issued for the EOR well.

9. ATTACHMENT 9 — PUBLIC NOTICE *[§409.A]*

☐ An original signed copy of proof of publication in the legal notice. Check for accuracy of Operator Name and address, serial number, well name and number, and location (field, parish, Section/Township/Range). If any of these are not correct, the publication will not be acceptable. You will be billed by *The Advocate (Baton Rouge)* for publication. Legal notice attachments should be sent to: ***The Advocate,* Legal Ad Department, P.O. Box 588, Baton Rouge, LA 70821, (225)388-0128. legal.ads@theadvocate.com**

The Advocate will send you a notarized Proof of Publication, which should be included in the Application package. If the Proof of Publication is not received when the Application is sent to this Division, it may be sent later provided the Application No. is written on it.

10. ATTACHMENT 10 — WELL HISTORY AND WORK RESUME REPORT

☐ For a NEW DRILL, there is no Attachment 10;

☐ For a CONVERSION or RE-PERMIT, submit a copy of each Well History and Work Resume Report (Form WH-1) that has been filed with the Office of Conservation;

☐ For a RE-DRILL, submit a copy of the previously filed WH-1 that documents the plugging and abandonment of the well.

V. DUPLICATE COPY

☐ Provide a copy of the complete application and attachments. Both the *original* and *copy* must be included to be considered a complete Application.