**Section 730.187 Logging, Sampling, and Testing Prior to Injection Well Operation**

a) During the drilling and construction of a Class VI injection well, the owner or operator must run appropriate logs, surveys and tests to determine or verify the depth, thickness, porosity, permeability and lithology of all relevant geologic formations and the salinity of any formation fluids in those formations, to ensure conformance with the injection well construction requirements under Section 730.186 and to establish accurate baseline data against which future measurements may be compared. The owner or operator must submit to the Agency a descriptive report prepared by a knowledgeable log analyst that includes an interpretation of the results of the logs and tests. At a minimum, these logs and tests must include the following information items:

1) Deviation checks made during drilling on all holes constructed by drilling a pilot hole that is enlarged by reaming or another method. These checks must be at sufficiently frequent intervals to determine the location of the borehole and to ensure that vertical avenues for fluid movement in the form of diverging holes are not created during drilling;

2) Before and upon installation of the surface casing, the following:

A) The resistivity, spontaneous potential, and caliper logs before the casing is installed; and

B) A cement bond and variable density log, to evaluate cement quality radially, and a temperature log after the casing is set and cemented;

3) Before and upon installation of the long-string casing, the following:

A) The resistivity, spontaneous potential, porosity, caliper, gamma ray, fracture finder logs, and any other logs the Agency requires for the given geology before the casing is installed; and

B) A cement bond and variable density log and a temperature log, after the casing is set and cemented;

4) A series of tests designed to demonstrate the internal and external mechanical integrity of injection wells, which may include the following:

A) A pressure test with liquid or gas;

B) A tracer survey, such as oxygen-activation logging;

C) A temperature or noise log; and

D) A casing inspection log; and

5) Any alternative methods that provide equivalent or better information and which are required by or approved of by the Agency.

b) The owner or operator must take whole cores or sidewall cores of the injection zone and confining system and formation fluid samples from all injection zones, and the owner or operator must submit a detailed report prepared by a log analyst to the Agency that includes the following information: well log analyses (including well logs), core analyses, and formation fluid sample information. The Agency must accept information on cores from nearby wells if the Agency determines that the owner or operator has demonstrated that core retrieval is not possible and the nearby cores are representative of conditions at the well. The Agency must require the owner or operator to core other formations in the borehole if the Agency determines that coring those other formations is necessary for evaluation of the well project.

c) The owner or operator must record the fluid temperature, pH, conductivity, reservoir pressure, and static fluid level of each injection zone.

d) At a minimum, the owner or operator must determine or calculate the following information concerning the injection and confining zones:

1) The fracture pressure;

2) Other physical and chemical characteristics of the injection and confining zones; and

3) The physical and chemical characteristics of the formation fluids in each injection zone.

e) Upon completion, but prior to operation, the owner or operator must conduct the following tests to verify hydrogeologic characteristics of each injection zone:

1) A pressure fall-off test and a pump test; or

2) A pressure fall-off test and injectivity tests.

f) The owner or operator must provide the Agency with the opportunity to witness all logging and testing by this Subpart H. The owner or operator must submit a schedule of these activities to the Agency no later than 30 days prior to conducting the first test, and the owner or operator must submit any changes to the schedule to the Agency no later than 30 days prior to the next scheduled test.

BOARD NOTE: This Section corresponds with 40 CFR 146.87 (2011).

(Source: Added at 36 Ill. Reg. 1661, effective January 20, 2012)