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§ 3605.G	Certification. Any person signing a document under §605.E shall make the following certification on the application: "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."	Master Documents
§3629.A.3	Regardless of whether the State of Louisiana has primary permit and enforcement authority (primacy) for Class VI wells, owners or operators of Class VI wells, or applicants for Class VI wells must submit all required submittals, reports, and notifications under §§605, 607, 615, 617, 619, 621, 623, 625, 627, 629, 631, and §633 to the USEPA in an electronic format approved by the USEPA.	Electronic Document Certification

		Introduction

§ 3607.C.2.f.iii	source(s) of the carbon dioxide stream; and	Introduction (Project Overview)
§ 3607.C.2.f.iv	analysis of the chemical and physical characteristics of the carbon dioxide stream.	4.3.1
§ 3607.B.1-2	Administrative information: all required state application form(s); the nonrefundable application fee(s) as per LAC 43:XIX. Chapter 7 or successor document;	Introduction (Additional Permits)

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§ 3607.B.3	the name and mailing address of the applicant and the physical address of the sequestration well facility;	UIC-60
§ 3607.B.4-5	the operator's name, address, telephone number, and email address; ownership status, and status as federal, state, private, public, or other entity;	Introduction (Required Administrative Information)
§ 3607.B.6	A brief description of the nature of the business associated with the activity;	Introduction (Project Overview)
§ 3607.B.7	The activity or activities conducted by the applicant which require the applicant to obtain a permit under these regulations;	Introduction (Project Overview and Additional Permits)
§ 3607.B.8	up to four SIC Codes which best reflect the principal products or services provided by the facility;	Introduction (Required Administrative Information)
§ 3607.B.9	a listing of all permits or construction approvals that the applicant has received or applied for under any of the following programs or which specifically affect the legal or technical ability of the applicant to undertake the activity or activities to be conducted by the applicant under the permit being sought:	Introduction (Additional Permits)
§ 3607.B.9.a	the Louisiana Hazardous Waste Management;	
§ 3607.B.9.b	this or any other underground injection control program;	
§ 3607.B.9.c	NPDES program under the Clean Water Act;	
§ 3607.B.9.d	prevention of significant deterioration (PSD) program under the Clean Air Act;	
§ 3607.B.9.e	nonattainment program under the Clean Air Act;	
§ 3607.B.9.f	National Emission Standards for Hazardous Pollutants (NESHAPS) preconstruction approval under the Clean Air Act;	
§ 3607.B.9.g	ocean dumping permit under the Marine Protection Research and Sanctuaries Act;	
§ 3607.B.9.h	dredge or fill permits under section 404 of the Clean Water Act; and	
§ 3607.B.9.i	other relevant environmental permits including, but not limited to any state permits issued under the Louisiana Coastal Resources Program, the Louisiana Surface Mining Program or the Louisiana Natural and Scenic Streams System;	Introduction (Additional Permits)
§ 3607.B.10	acknowledgment as to whether the facility is located on Indian lands or other lands under the jurisdiction or protection of the federal government, or whether the facility is located on state water bottoms or other lands owned by or under the jurisdiction or protection of the state of Louisiana;	Introduction (Required Administrative Information)
§ 3607.C.2.l	proposed area of review and corrective action plan that meets the requirements under §615.B C;	Section 3

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§ 3607.C.2.s	a list of contacts, submitted to the commissioner for those states and tribes identified to be within the area of review based on information provided in §607.C.1.a i; and	8.6

:ion 1 - Site Characterization & Append

§ 3615.A	Minimum Criteria for Siting. Applicants, owners, or operators of Class VI wells must demonstrate to the satisfaction of the commissioner that the wells will be sited in areas with a suitable geologic system. The demonstration must show that the geologic system comprises:	
§ 3615.A.1	an injection zone of sufficient areal extent, thickness, porosity, and permeability to receive the total anticipated volume of the carbon dioxide stream;	1.2, 1.3.1, 1.11, 2.5.7
§ 3615.A.2	confining zone(s) free of transmissive faults or fractures and of sufficient areal extent and integrity to contain the injected carbon dioxide stream and displaced formation fluids, and allow injection at proposed maximum pressures and volumes without initiating or propagating fractures in the confining zone(s).	1.3.2, 1.5.2, 1.11
§ 3615.A.2.a	The commissioner may require owners or operators of Class VI wells to identify and characterize additional zones that will impede vertical fluid movement, are free of faults and fractures that may interfere with containment, allow for pressure dissipation, and provide additional opportunities for monitoring, mitigation, and remediation.	
§ 3607.C.1.b	information on the geologic structure and hydrogeologic properties of the proposed sequestration site and overlying formations, to include:	
§ 3607.C.2.a	data on the depth, areal extent, thickness, mineralogy, porosity, permeability, and capillary pressure of the injection and confining zone(s); including geology/facies changes based on field data which may include geologic cores, outcrop data, seismic surveys, well logs, and names and lithologic descriptions;	1.2, 1.3, 1.4.1, 1.5.1, 1.11, 2.5, 2.6
§ 3607.C.2.b	geomechanical information on fractures, stress, ductility, rock strength, and in situ fluid pressures within the confining zone(s);	1.6
§ 3607.C.2.e	baseline geochemical data on subsurface formations, including injection zones, confining zones and all USDWs in the area of review;	1.7
§ 3607.C.2.c	information on the regions seismic history including the presence and depth of seismic sources and a determination that the seismicity would not interfere with containment; and	1.10, 1.11

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§ 3607.C.1.b.i	geologic and topographic maps and cross-sections illustrating regional geology, geologic structure, and hydrology.	1.2, Appendix B
§ 3607.C.1.b.ii	maps and cross-sections to a scale needed to detail the local geology, geologic structure, and hydrology. The maps and cross-sections must extend at least two miles beyond the area of review;	1.3, Appendix B
§ 3607.C.1.b.iii	the location, orientation, and properties of known or suspected faults and fractures that may transect the confining zone(s) in the area of review and a determination that they would not interfere with containment;	1.5.2
§ 3607.C.1.b.iv	maps and stratigraphic cross-sections showing the general vertical and lateral limits of all USDWs, water wells and springs within the area of review, their position relative to the injection zone(s) and the direction of water movement, if known.	1.8, Appendix B, C
		Section 2 - Carbon Front Model
§ 3615.B.3	Area of Review Boundary Delineation. Owners or operators of Class VI wells must perform the following actions to delineate the area of review and identify all wells that require corrective action:	
§ 3615.B.3.a	predict, using existing site characterization, monitoring and operational data, and computational modeling, the projected lateral and vertical migration of the carbon dioxide plume and formation fluids in the subsurface from the commencement of injection activities until the plume movement ceases, until pressure differentials sufficient to cause the movement of injected fluids or formation fluids into a USDW are no longer present, or until the end of a fixed time period as determined by the commissioner. The model must:	2.7.2
§ 3615.B.3.a.i	be based on detailed geologic data collected to characterize the injection zone(s), confining zone(s) and any additional zones; and anticipated operating data, including injection pressures, rates, and total volumes over the proposed life of the geologic sequestration project;	2.5, 2.6
§ 3615.B.3.a.ii	take into account any geologic heterogeneities, other discontinuities, data quality, and their possible impact on model predictions; and	2.5.8
§ 3615.B.3.a.iii	consider potential migration through faults, fractures, and artificial penetrations.	2.2, 2.5.2
		Section 3 - Area of Review

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§ 3607.B.12	names and addresses of all property owners within the area of review of the Class VI well or project.	Appendix C
§ 3615.B.1	The area of review is the region surrounding the geologic sequestration project where USDWs may be endangered by the injection activity. The area of review is delineated using computational modeling that accounts for the physical and chemical properties of all phases of the injected carbon dioxide stream and is based on available site characterization, monitoring, and operational data.	Section 2
§ 3607.C.1.a	map(s) showing property boundaries of the facility, the location of the proposed Class VI well, and the applicable area of review consistent with §615.B USGS topographic maps with a scale of 1:24,000 may be used. The map boundaries must extend at least two miles beyond the area of review and include as applicable:	3.4.1, Appendix A-1, C-1, C-3 to C-5
§ 3607.C.1.a.i	the section, township and range of the area where the activity is located and any parish, city, municipality, state, and tribal boundaries.	
§ 3607.C.1.a.ii	within the area of review, the map(s) must identify all injection wells, producing wells, abandoned wells, plugged wells or dry holes, deep stratigraphic boreholes, State- or USEPA-approved subsurface cleanup sites, surface bodies of water, springs, surface and subsurface mines, quarries, water wells, other pertinent surface features including structures intended for human occupancy, and roads.	
§ 3607.C.1.a.iii	only information of public record is required to be included on the map(s), however, the applicant is required to make a diligent search to locate all wells not listed in the public record.	
§ 3607.C.1.a.iv	for water wells on the facility property and adjacent property, submit a tabulation of well depth, water level, owner, chemical analysis, and other pertinent data. If these wells do not exist, submit this information for a minimum of three other wells in the area of review or a statement why this information was not included.	
§ 3607.C.1.a.v	the protocol followed to identify, locate, and ascertain the condition of all wells within the area of review that penetrate the injection or confining zone.	3.4.1

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§ 3615.B.2	The owner or operator of a Class VI well must prepare, maintain, and comply with a plan to delineate the area of review for the proposed geologic sequestration project, periodically reevaluate the delineation, and perform corrective action that meets the requirements of these regulations and is acceptable to the commissioner. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. As a part of the permit application, the owner or operator must submit an area of review and corrective action plan that includes the following information:	Section 3
§ 3615.B.2.a	the method for delineating the area of review that meets the requirements of §615.B 3, including the model to be used, assumptions that will be made, and the site characterization data on which the model will be based;	2.3.1, 2.3.2, 2.4.5, 2.5, 2.6, 3.2, 3.3
§ 3607.C.2.d (Similar language specific to USDW)	a tabulation of all wells within the area of review that penetrate the base of the USDW. Such data must include a description of each wells type, construction, date drilled, location, depth, record of plugging and/or completion, and any other information the commissioner may require;	3.4.1
§ 3615.B.3.b	using methods approved by the commissioner, the owner or operator shall at a minimum, identify all penetrations, including active and abandoned wells and underground mines, in the area of review that penetrate the confining and injection zone(s). (See §603.H.4) Provide a description of each wells type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the commissioner may require; and	3.4.1
§ 3615.B.3.c	determine which abandoned wells in the area of review have been plugged in a manner that prevents the movement of carbon dioxide or other fluids that may endanger USDWs, including use of materials compatible with the carbon dioxide stream.	3.4.2
§ 3615.B.2.b	A description of:	
§ 3615.B.2.b.i	the minimum fixed frequency-not to exceed five years-at which the owner or operator proposes to reevaluate the area of review;	3.5.1
§ 3615.B.2.b.ii	the monitoring and operational conditions that would warrant a reevaluation of the area of review prior to the next scheduled reevaluation as determined by the minimum fixed frequency established in §615.B.2.b.i	3.5.3

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§ 3615.B.2.b.iii	how monitoring and operational data (e.g., injection rate and pressure) will be used to inform an area of review reevaluation; and	3.5.3
§ 3615.B.2.b.iv	how corrective action will be conducted to meet the requirements of §615 C, including what corrective action will be performed prior to injection and what, if any, portions of the area of review the operator proposes to have corrective action addressed on a phased basis and how the phasing will be determined; how corrective action will be adjusted if there are changes in the area of review; and how site access will be guaranteed for future corrective action.	3.4.2, 3.4.5, 3.5
§ 3615.C.1	Owners or operators of Class VI wells must perform corrective action on all wells in the area of review that are determined to need corrective action, using methods designed to prevent the movement of fluid into or between USDWs, including use of materials compatible with the carbon dioxide stream, where appropriate.	3.4.2
§ 3615.C.2	At the minimum fixed frequency-not to exceed five years-as specified in the area of review and corrective action plan, or when monitoring and operational conditions warrant, owners or operators must:	
§ 3615.C.2.a	reevaluate the area of review in the same manner specified in §615.B.3 a;	3.5
§ 3615.C.2.b	identify all wells in the reevaluated area of review that require corrective action in the same manner specified in §615.B 3;	3.5
§ 3615.C.2.c	perform corrective action on wells requiring corrective action in the reevaluated area of review in the same manner specified in §615.C 1; and	3.5
§ 3615.C.2.d	submit an amended area of review and corrective action plan or demonstrate to the commissioner through monitoring data and modeling results that no amendment to the area of review and corrective action plan is needed. Any amendments to the area of review and corrective action plan must be approved by the commissioner, must be incorporated into the permit, and are subject to the permit modification requirements at §613, as appropriate.	3.5
§ 3615.C.4	All modeling inputs and data used to support area of review reevaluations under §615.C.2 shall be retained for at least 10 years.	3.2

Section 4 - Construction & Appendix D

§3617	**Well Construction and Completion**	

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§3617.A.1	General. All phases of Class VI well construction shall be supervised by a person knowledgeable and experienced in practical drilling engineering and is familiar with the special conditions and requirements of injection well construction. All materials and equipment used in the construction of the well and related appurtenances shall be designed and manufactured to exceed the operating requirements of the specific project, including flow induced vibrations. The owner or operator must ensure that all wells are constructed and completed to:	Section 4
§3617.A.1.a	prevent the movement of fluids into or between USDWs or into any unauthorized zones;	4.1
§3617.A.1.b	allow the use of appropriate testing devices and workover tools; and	4.1
§3617.A.1.c	allow for continuous monitoring of the annulus space between the injection tubing and long string casing.	4.1
§3617.A.2	**Casing and Cementing of Class VI Wells**	.
§3617.A.2.a	Casing and cement or other materials used in the construction of each Class VI well must have sufficient structural strength and be designed for the life of the geologic sequestration project. All well materials must be compatible with fluids that the materials may be expected to come into contact and must meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the commissioner. The casing and cementing program must be designed to prevent the movement of fluids into or between USDWs. In order to allow the commissioner to evaluate casing and cementing requirements, the owner or operator must provide the following information:	
§3617.A.2.a.i	depth to the injection zone(s);	Appendix D
§3617.A.2.a.ii	injection pressure, external pressure, internal pressure, and axial loading;	4.4.2, 4.4.3,4.5.1, 4.8.2
§3617.A.2.a.iii	hole size;	4.4.2, 4.4.3, Appendix D
§3617.A.2.a.iv	size and grade of all casing strings (wall thickness, external diameter, nominal weight, length, joint specification, and construction material);	4.4
§3617.A.2.a.v	corrosiveness of the carbon dioxide stream and formation fluids;	4.3.1
§3617.A.2.a.vi	down-hole temperatures;	4.3.1
§3617.A.2.a.vii	lithology of injection and confining zone(s);	4.7.1

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§3617.A.2.a.viii	type or grade of cement and cement additives including slurry weight (lb/gal) and yield (cu. ft./sack); and	4.6.1
§3617.A.2.a.ix	quantity, chemical composition, and temperature of the carbon dioxide stream.	4.3.1, 4.8.2
§3617.A.2.b	The surface casing of any Class VI well must extend into a confining bed-such as a shale-below the base of the deepest formation containing a USDW. The casing shall be cemented with a sufficient volume of cement to circulate cement from the casing shoe to the surface. The commissioner will not grant an exception or variance to the surface casing setting depth.	4.4.2
§3617.A.2.c	At least one long string casing, using a sufficient number of centralizers, shall be utilized in the well. If the casing is to be perforated for injection, then the approved casing shall extend through the base of the injection zone. If an approved alternate construction method is used, such as the setting of a screen, the casing shall be set to the top of the injection interval. Regardless of the construction method utilized, the casings shall be cemented by circulating cement from the casing shoe to the surface in one or more stages.	4.4.3
§3617.A.2.d	Circulation of cement may be accomplished by staging. Circulated to the surface shall mean that actual cement returns to the surface were observed during the primary cementing operation. A copy of the cementing companys job summary or cementing tickets indicating returns to the surface shall be submitted as part of the pre-operating requirements.	
§3617.A.2.e	Cement and cement additives must be compatible with the carbon dioxide stream and formation fluids and of sufficient quality and quantity to maintain integrity over the design life of the geologic sequestration project. The integrity and location of the cement shall be verified using technology capable of evaluating cement quality radially and identifying the location of channels to ensure that USDWs are not endangered.	4.4.3, 4.7.2
§3617.A.4	**Tubing and Packer**	
§3617.A.4.a	Tubing and packer materials used in the construction of each Class VI well must be compatible with fluids that the materials may be expected to come into contact and must meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the commissioner.	4.5.1, 4.5.3

Confidential Business Information

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§3617.A.4.b	Injection into a Class VI well must be through tubing with a packer set at a depth opposite an interval of cemented casing at a location approved by the commissioner.	4.6.1
§3617.A.4.c	In order for the commissioner to determine and specify requirements for tubing and packer, the owner or operator must submit the following information:	
§3617.A.4.c.i	depth of setting;	4.5.1, Appendix D
§3617.A.4.c.ii	characteristics of the carbon dioxide stream (chemical content, corrosiveness, temperature, and density) and formation fluids;	4.3.1, 4.7.3, 4.7.4
§3617.A.4.c.iii	maximum proposed injection pressure;	4.8.2
§3617.A.4.c.iv	maximum proposed annular pressure;	4.8.3
§3617.A.4.c.v	proposed injection rate (intermittent or continuous) and volume and/or mass of the carbon dioxide stream;	4.8.2
§3617.A.4.c.vi	size of tubing and casing; and	4.4.3, 4.5.1
§3617.A.4.c.vii	tubing tensile, burst, and collapse strengths.	4.5.1
§ 3607.C.2.f	**proposed operating data:**	
§ 3607.C.2.f.i	average and maximum daily rate and volume and/or mass and total anticipated volume and/or mass of the carbon dioxide stream;	Intro, 4.8.2
§ 3607.C.2.f.ii	average and maximum injection pressure;	2.8.1
§ 3607.C.2.g	proposed pre-operational formation testing program to obtain an analysis of the chemical and physical characteristics of the injection zone(s) and confining zone(s) and that meets the requirements at §617 B;	4.7
§ 3607.C.2.h	proposed stimulation program, a description of stimulation fluids to be used and a determination that stimulation will not interfere with containment;	4.8.4
§ 3607.C.2.i	proposed injection operation procedures;	4.8
§ 3607.C.2.j	schematics or other appropriate drawings of the surface (wellhead and related appurtenances) and subsurface construction details of the well;	4.5.4, Appendix D
§ 3607.C.2.k	injection well construction procedures that meet the requirements of §617 A;	4.4, Appendix D

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§3617.A.3	Casing and Casing Seat Tests. The owner or operator shall monitor and record the tests using a surface readout pressure gauge and a chart or digital recorder. All instruments shall be calibrated properly and in good working order. If there is a failure of the required tests, the owner or operator shall take necessary corrective action to obtain a passing test.	Appendix D
§3617.A.3.a	Casing. After cementing each casing, but before drilling out the respective casing shoe, all casings shall be hydrostatically pressure tested to verify casing integrity and the absence of leaks. For surface casing, the stablized test pressure applied at the surface shall be aminimum of 500 pounds per square inch gauge (psig). The stabalized test pressure applied at the surface for all other casings shall be a minimum of 1,000 psig. All casing test pressures shall be maintained for one hour after stabilization. Allowable pressure loss is limited to five percent of the test pressure over the stabalized test duration.	Appendix D
§3617.A.3.a.i	Casing test pressures shall never exceed the rated burst or collapse pressures of the respective casings.	
§3617.A.3.b	Casing seat. The casing seat and cement of any intermediate and injection casings shall be hydrostatically pressure tested after drilling out the casing shoe. At least 10 feet of formation below the respective casing shoes shall be drilled before the test. The test pressure applied at the surface shall be a minimum of 1,000 psig. The test pressure shall be maintained for one hour after pressure stabilization. Allowable pressure loss is limited to five percent of the test pressure over the stabilized test duration.	Appendix D
§3617.A.3.b.i	Casing seat test pressures shall never exceed the rated burst or collapse pressures of the respective casings.	
§3617.B	**Logging, Sampling, and Testing Prior to Injection Well Operation**	

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§3617.B.1	During the drilling and construction of a Class VI well, appropriate logs, surveys and tests must be run to determine or verify the depth, thickness, porosity, permeability, and lithology of, and the salinity of formation fluids in all relevant geologic formations to ensure conformance with the injection well construction requirements of §617 and to establish accurate baseline data against which future measurements may be compared. The well operator must submit to the commissioner a descriptive report prepared by a knowledgeable log analyst that includes an interpretation of the results of such logs and tests. At a minimum, such logs and tests must include:	4.7
§3617.B.1.a	deviation checks during drilling of all boreholes constructed by drilling a pilot hole, which is enlarged by reaming or another method. Such 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;	
§3617.B.1.b	before and upon installation of the surface casing:	
§3617.B.1.b.i	resistivity, gamma-ray, spontaneous potential, and caliper logs before the casing is installed; and	4.7.2
§3617.B.1.b.ii	a cement bond and variable density log to evaluate cement quality radially, and a temperature log after the casing is set and cemented.	4.7.2
§3617.B.1.c	before and upon installation of intermediate and long string casing:	
§3617.B.1.c.i	resistivity, gamma-ray, spontaneous potential, porosity, caliper, fracture finder logs, and any other logs the commissioner requires for the given geology before the casing is installed; and	4.7.2
§3617.B.1.c.ii	a cement bond and variable density log, and a temperature log after the casing is set and cemented.	4.7.2
§3617.B.1.d	a series of tests designed to demonstrate the internal and external mechanical integrity of injection wells, which may include:	
§3617.B.1.d.i	a pressure test with liquid or gas;	5.4.2
§3617.B.1.d.ii	a tracer-type survey to detect fluid movement behind casing such as a radioactive tracer or oxygen-activation logging, or similar tool;	4.7.2
§3617.B.1.d.iii	a temperature or noise log;	4.7.2
§3617.B.1.d.iv	a casing inspection log.	4.7.2
§3617.B.1.e	any alternative methods that provide equivalent or better information and that are required by and approved by the commissioner.	

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§3617.B.2	The owner or operator must take whole cores or sidewall cores of the injection zone and confining system and formation fluid samples from the injection zone(s), and must submit to the commissioner a detailed report prepared by a log analyst that includes: well log analyses (including well logs), core analyses, and formation fluid sample information. The commissioner may accept information on cores from nearby wells if the owner or operator can demonstrate that core retrieval is not possible and that such cores are representative of conditions at the well. The commissioner may require the owner or operator to core other formations in the borehole.	4.7.1, 4.7.4
§3617.B.3	The owner or operator must record the fluid temperature, pH, conductivity, reservoir pressure, and static fluid level of the injection zone(s).	4.7.3
§3617.B.4	At a minimum, the owner or operator must determine or calculate the following information concerning the injection and confining zone(s):	
§3617.B.4.a	fracture pressure;	4.8.3
§3617.B.4.b	other physical and chemical characteristics of the injection and confining zone(s); and	4.7.1
§3617.B.4.c	physical and chemical characteristics of the formation fluids in the injection zone(s).	4.7.4
§3617.B.5	Upon completion, but before operating, the owner or operator must conduct the following tests to verify hydrogeologic characteristics of the injection zone(s):	
§3617.B.6	The owner or operator must notify the Office of Conservation at least 72 hours before conducting any wireline logs, well tests, or reservoir tests.	Appendix D
§3621.A	**Injection well operating requirements**	

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§3621.A.1	Injection Pressure. Except during stimulation, the injection well shall be operated so that the injection-induced pressure in the injection zone(s) does not exceed 90 percent of the fracture pressure of the injection zone(s). This shall ensure that the injection does not initiate new fractures or propagate existing fractures in the injection zone. In no case may injection pressure initiate fractures in the confining zone(s) or cause the movement of injection or formation fluids that endangers a USDW. Pursuant to requirements at §607.C.2 h, all stimulation programs must be approved by the commissioner as part of the permit application and incorporated into the permit.	4.8.2
§3621.A.2	Injection between the outermost casing protecting USDWs and the wellbore is prohibited.	
§3621.A.3	The owner or operator must fill the annulus between the tubing and the long string casing with a non-corrosive fluid approved by the commissioner or a fluid containing a corrosion inhibitor approved by the commissioner.	4.5.3
§3621.A.4	The owner or operator shall maintain a tubing-casing annulus pressure that exceeds the operating injection pressure, unless the commissioner determines that such requirement might harm the integrity of the well or endanger a USDW. A request to operate the well at a reduced annulus pressure must be in writing and approved by the commissioner.	4.8.3
§3621.A.5	The owner or operator must maintain mechanical integrity of the injection well at all times, except when doing well workovers, well maintenance, or well remedial work approved by the commissioner.	
§3621.A.6	Continuous recording devices shall be installed, used, and maintained in proper working order for each well.	5.5.1
§3621.A.6.a	continuous recording devices shall monitor:	
§3621.A.6.a.i	surface injection or bottom-hole pressure;	5.5.1
§3621.A.6.a.ii	flow rate, volume and/or mass, and temperature of the carbon dioxide stream;	5.5.1
§3621.A.6.a.iii	tubing-casing annulus pressure and annulus fluid volume; and	5.5.1

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§3621.A.6.a.iv.	any other data specified by the commissioner.	
§3621.A.7.a.i	for onshore wells, alarms and automatic surface shut-off valves or—at the discretion of the commissioner—down-hole shut-off systems (e.g., automatic shut-off, check valves) or, other mechanical devices that provide equivalent protection; and	5.2 , 5.5.1
§3621.A.7.a.ii	for offshore wells, alarms and automatic down-hole shut-off systems designed to alert the operator and shut-in the well when operating parameters such as annulus pressure, injection rate, or other parameters diverge beyond permitted ranges or gradients specified in the permit.	
§3621.A.7.a.iii	all alarms must be integrated with any automatic shutdown system.	5.2, 5.5.1
§3621.A.7.b	If a shutdown (i.e., down-hole or at the surface) is triggered or a loss of mechanical integrity is discovered, the owner or operator must immediately investigate and identify as expeditiously as possible the cause of the shutoff. If, upon such investigation, the well is lacking mechanical integrity, or if monitored well parameters indicate that the well may be lacking mechanical integrity, the owner or operator must:	
§3621.A.7.b.i	immediately cease injection;	8.2
§3621.A.7.b.ii	take all steps reasonably necessary to determine whether there may have been a release of the injected carbon dioxide stream or formation fluids into any unauthorized zone;	8.2
§3621.A.7.b.iii	notify the commissioner within 24 hours;	8.2
§3621.A.7.b.iv	restore and demonstrate mechanical integrity to the satisfaction of the commissioner prior to resuming injection; and	8.5.1
§3621.A.7.b.v	notify the commissioner when injection can be expected to resume.	8.5.1

on 5 - Testing and Monitoring & Apper

§3617.B.5	Upon completion, but before operating, the owner or operator must conduct the following tests to verify hydrogeologic characteristics of the injection zone(s):	4.7.5
§3617.B.5.a	a pressure fall-off test; and,	
§3617.B.5.b	a pump test; or	
§3617.B.5.c	injectivity tests.	

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§3625.A	**Testing and Monitoring Requirements.** The owner or operator of a Class VI well must prepare, maintain, and comply with a testing and monitoring plan to verify that the geologic sequestration project is operating as permitted and is not endangering USDWs. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. The testing and monitoring plan must be included with the permit application and must include a description of how the owner or operator will meet these requirements- including accessing sites for all necessary monitoring and testing during the life of the project. Testing and monitoring associated with geologic sequestration projects must include, at a minimum:	Section 5
§3625.A.1	analysis of the carbon dioxide stream with sufficient frequency to yield data representative of its chemical and physical characteristics;	5.5.1
§3625.A.2	installation and use of continuous recording devices to monitor injection pressure, rate, and volume; the pressure on the tubing-casing annulus; and the annulus fluid volume added. Continuous monitoring is not required during well workovers as defined in §621.A 5;	5.5.1
§3625.A.3	corrosion monitoring of the well materials for loss of mass, thickness, cracking, pitting, and other signs of corrosion, which must be performed on a quarterly basis to ensure that the well components meet the minimum standards for material strength and performance set forth in §617.A 2, by:	5.5.2
§3625.A.3.a	analyzing coupons of the well construction materials placed in contact with the carbon dioxide stream; or	5.5.2
§3625.A.3.b	routing the carbon dioxide stream through a loop constructed with the material used in the well and inspecting the materials in the loop; or	
§3625.A.3.c	using an alternative method approved by the commissioner;	
§3629.A	**Reporting Requirements.** The owner or operator must provide, at a minimum, the following reports to the commissioner, and the USEPA as specified in §629.A 3, for each permitted Class VI well:	
§3629.A.1	**semi-annual reports containing:**	
§3629.A.1.a.i	any changes to the physical, chemical, and other relevant characteristics of the carbon dioxide stream from the proposed operating data;	5.2
§3629.A.1.a.ii	monthly average, maximum, and minimum values for injection pressure, flow rate and volume, and annular pressure;	5.2

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§3629.A.1.a.iii	a description of any event that exceeds operating parameters for annulus pressure or injection pressure specified in the permit;	5.2
§3629.A.1.a.iv	a description of any event which triggers a shut-off device required by §621 and the response taken;	5.2
§3629.A.1.a.v	the monthly volume and/or mass of the carbon dioxide stream injected over the reporting period and the volume injected cumulatively over the life of the project;	5.2
§3629.A.1.a.vi	monthly annulus fluid volume added;	5.2
§3629.A.1.a.vii	the results of monitoring prescribed under §625; and	5.2
§3629.A.1.a.viii	the raw operating data from the continuous recording devices prescribed by §3621.A.6 submitted in digital format;	5.2
§3629.A.1.b	**report, within 30 days or as specified by permit, the results of:**	
§3629.A.1.b.i	periodic tests of mechanical integrity;	5.2
§3629.A.1.b.ii	any well workover; and	5.2
§3629.A.1.b.iii	any other test of the injection well conducted by the permittee if required by the commissioner;	5.2
§3629.A.1.c	**report, within 24 hours:**	
§3629.A.1.c.i	any evidence that the injected carbon dioxide stream or associated pressure front may cause an endangerment to a USDW;	5.2
§3629.A.1.c.ii	any noncompliance with a permit condition, or malfunction of the injection system, which may cause fluid migration into or between USDWs;	5.2
§3629.A.1.c.iii	any triggering of a shut-off system (i.e., down-hole or at the surface);	5.2
§3629.A.1.c.iv	any failure to maintain mechanical integrity; or	5.2
§3629.A.1.c.v	any release of carbon dioxide to the atmosphere or biosphere pursuant to compliance with the requirement at §625.A.8 for surface air/soil gas monitoring or other monitoring technologies, if required by the commissioner;	
§3629.A.2	Owners or operators must notify the commissioner in writing in advance of doing any well work or formation testing as required in §621.A.9	5.2
§3629.A.4	**Records shall be retained by the owner or operator as follows:**	

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§3629.A.4.a	all data collected for Class VI permit applications in §607 shall be retained throughout the life of the geologic sequestration project and at least 10 years following site closure.	5.2
§3629.A.4.b	data on the nature and composition of all injected fluids collected under §625.A.1.a shall be retained at least 10 years after site closure. The commissioner may require the owner or operator to deliver the records to the commissioner at the conclusion of the retention period.	5.2
§3629.A.4.c	monitoring data collected under §625.A.2 shall be retained at least 10 years after it is collected.	5.2
§3629.A.4.d	well plugging reports, post-injection site care data, including, if appropriate, data and information used to develop the demonstration of the alternative post-injection site care timeframe, and the site closure report collected pursuant to requirements at §633.A.6 shall be retained at least 10 years following site closure.	5.2
§3629.A.4.e	The commissioner may require the owner or operator to retain any records required under these regulations for longer than 10 years after site closure.	
§3625.A.5	a demonstration of external mechanical integrity pursuant to §627.A.3 at least once every 12 months until the injection well is permanently plugged and abandoned; and, if required by the commissioner, a casing inspection log pursuant to requirements at §627.A.4 at a frequency established in the testing and monitoring plan;	5.4.2
§3625.A.6	a pressure fall-off test at least once every five years unless more frequent testing is required by the commissioner based on site-specific information;	5.4.3
§3627.A.1	A Class VI well has mechanical integrity if:	
§3627.A.1.a	there is no significant leak in the casing, tubing, or packer; and	
§3627.A.1.b	there is no significant fluid movement into a USDW through channels adjacent to the injection wellbore.	
§3627.A.2.b	To evaluate the absence of significant leaks, owners or operators must: continuously monitor injection pressure, rate, injected volumes; pressure on the annulus between tubing and long-string casing; and annulus fluid volume as specified in §621.A.6	5.5.1
§3627.A.3	At least once every 12 months, use one of the following methods to determine the absence of significant fluid movement:	

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§3627.A.3.a	an approved tracer-type survey such as a radioactive tracer, oxygen-activation log, or similar tool; or	
§3627.A.3.b	a temperature or noise log.	5.3
§3627.A.4	If required by the commissioner, run a casing inspection log at a frequency specified in the testing and monitoring plan at §625 to determine the presence or absence of corrosion in the long-string casing.	5.3
§3627.A.5.a	The commissioner may allow the use of a test to demonstrate mechanical integrity other than those listed above with written approval of the USEPA. To obtain approval for the use of a new mechanical integrity test, the owner or operator must submit a written request to the commissioner with details of the proposed test and all technical data supporting its use, and the commissioner will submit a written request to the USEPA.	
§3627.A.6	In conducting and evaluating the tests enumerated in this section to be allowed by the commissioner, the owner or operator and the commissioner must apply methods and standards generally accepted in the industry. When the owner or operator reports the results of mechanical integrity tests to the commissioner, a description of the test(s) and the method(s) used must be included. In making the evaluation, the commissioner must review monitoring and other test data submitted since the previous evaluation.	
§3627.A.7	The commissioner may require additional or alternative tests if the mechanical integrity test results presented are not satisfactory to the commissioner to demonstrate that there is no significant leak in the casing, tubing, or packer, or to demonstrate that there is no significant movement of fluid into a USDW resulting from the injection activity.	

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§3625.A.9	Any additional monitoring, as required by the commissioner, necessary to support, upgrade, and improve computational modeling of the area of review evaluation required under §615.B.3 and to determine compliance with standards under §619;	
§3625.A.4	periodic monitoring of the ground water quality and geochemical changes above the confining zone(s) that may be a result of carbon dioxide movement through the confining zone(s) or additional identified zones including:	5.5.3
§3625.A.4.a	the location and number of monitoring wells based on specific information about the geologic sequestration project, including injection rate and volume, geology, the presence of artificial penetrations, and other factors; and	5.5.3, Appendix C
§3625.A.4.b	the monitoring frequency and spatial distribution of monitoring wells based on baseline geochemical data that has been collected under §607.C.2.e and on any modeling results in the area of review evaluation required by §615.B.3	5.5.3
§3625.A.7	testing and monitoring to track the extent of the carbon dioxide plume and the presence or absence of elevated pressure (e.g., the pressure front) by using:	
§3625.A.7.a	direct methods in the injection zone(s); and	5.5.5
§3625.A.7.b	indirect methods (e.g., seismic, electrical, gravity, or electromagnetic surveys and/or down-hole carbon dioxide detection tools), unless the commissioner determines that such methods are not appropriate, based on site-specific geology;	5.5.5
§3625.A.8	The commissioner may require surface air monitoring and/or soil gas monitoring to detect movement of carbon dioxide that could endanger a USDW.	
§3625.A.8.a	Design of Class VI surface air and/or soil gas monitoring must be based on potential risks to USDWs within the area of review;	
§3625.A.8.b	The monitoring frequency and spatial distribution of surface air monitoring and/or soil gas monitoring must be decided using baseline data, and the monitoring plan must describe how the proposed monitoring will yield useful information on the area of review delineation and/or compliance with standards under §603 D;	

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§3625.A.8.c	If an owner or operator demonstrates that monitoring employed under 40 CFR 98.440 to 98.449 accomplishes the goals of §625.A.8.a and b., and meets the requirements pursuant to §629.A.1 v, a regulatory agency that requires surface air/soil gas monitoring must approve the use of monitoring employed under 40 CFR 98.440 to 98.449. Compliance with 40 CFR 98.440 to 98.449 pursuant to this provision is considered a condition of the Class VI permit;	
§3625.A.10	The owner or operator shall periodically review the testing and monitoring plan to incorporate monitoring data collected under §625, operational data collected under §621, and the most recent area of review reevaluation performed under §615.C.2 In no case shall the owner or operator review the testing and monitoring plan less often than once every five years. Based on this review, the owner or operator shall submit an amended testing and monitoring plan or demonstrate to the commissioner that no amendment to the testing and monitoring plan is needed. Any amendments to the testing and monitoring plan must be approved by the commissioner, must be incorporated into the permit, and are subject to the permit modification requirements at §613, as appropriate. Amended plans or demonstrations shall be submitted to the commissioner as follows:	5.3
§3625.A.10.a	within 12 months of an area of review reevaluation;	5.3
§3625.A.10.b	following any significant changes to the facility, such as addition of monitoring wells or newly permitted injection wells within the area of review, on a schedule determined by the commissioner; or	5.3
§3625.A.10.c	when required by the commissioner.	5.3
§3625.A.11	a quality assurance and surveillance plan for all testing and monitoring requirements.	5.4.3, 5.5.3
		Section 6 - Plugging Plan & Appendix H
§ 3607.C.2.o	proposed injection well plugging plan required by §631;	Section 6
§3631	**Plugging and Abandonment**	
§3631.A.2	Before well plugging, the owner or operator must flush each Class VI well with a buffer fluid, determine bottomhole reservoir pressure, and perform a final external mechanical integrity test.	6.3.1, Appendix F

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§3631.A.3	Well Plugging Plan. The owner or operator of a Class VI well must prepare, maintain, and comply with a plan acceptable to the commissioner. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. The well plugging plan must be submitted as part of the permit application, must be designed in a way that will prevent the movement of fluids into or between USDWs or outside the injection zone, and must include the following minimum information:	Section 6
§3631.A.3.a	appropriate tests or measures for determining bottomhole reservoir pressure;	6.3.3
§3631.A.3.b	appropriate testing methods to ensure external mechanical integrity as specified in §627;	6.3.4
§3631.A.3.c	a description of the size and amount of casing, tubing, or any other well construction materials to be removed from the well before well closure;	
§3631.A.3.d	that prior to the placement of plugs, the well 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;	6.3.3
§3631.A.3.e	the type and number of plugs to be used;	6.4.2
§3631.A.3.f	the placement of each plug, including the elevation of the top and bottom of each plug;	6.4.2
§3631.A.3.g	the type, grade, yield, and quantity of material, such as cement, to be used in plugging. The material must be compatible with the carbon dioxide stream;	6.4.2
§3631.A.3.h	the method of placement of the plugs;	6.4.2
§3631.A.3.i	pre-closure and proposed post-closure well schematics;	6.4.2.1, UIC-17
§3631.A.3.j	that each plug shall be appropriately tagged and tested for seal and stability	6.4.2, UIC-17
§3631.A.3.k	that the well casings shall be cut at least five feet below ground surface for land-based wells, and at least 15 feet below the mud line for wells at a water location.	6.4.2, UIC-17
§3631.A.3.l	that upon successful completion of well closure of a land-based well, a one-half (½) inch steel plate shall be welded across all casings and inscribed with the well's state serial number and date plugged and abandoned, and	6.4.2, UIC-17
§3631.A.3.m	any addition information that the commissioner may require.	

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§3631.A.4	Notice of Intent to Plug. The owner or operator must submit the Form UIC-17, or successor form, to the commissioner and receive written approval from the commissioner before beginning actual well plugging operations. The form must contain information on the procedures to be used in the field to plug and abandon the well.	6.1
§3631.A.5	Well Closure Report. The owner or operator shall submit a closure report to the commissioner within 30 days after well plug and abandonment. The report shall be certified as accurate by the owner or operator and by the person charged with overseeing the closure operation (if other than the owner or operator). The owner or operator shall retain the well closure report at least 10 years following site closure. The report shall contain the following information:	6.5

n 7 - Post Injection Site Care and Closu

§3633	**Closure and Post-Closure**	
§ 3607.C.2.p	proposed post-injection site care and site closure plan required by §633.A 3;	Section 7
§ 3607.C.2.q	at the commissioners discretion, a demonstration of an alternative post-injection site care timeframe required by §633.A 3;	
§3633.A.1	The owner or operator of a Class VI well must prepare, maintain, and comply with a plan for post-injection site care and site closure that meets the requirements of §633.A.1.b and is acceptable to the commissioner. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit.	Section 7
§3633.A.1.a	The owner or operator must submit the post-injection site care and site closure plan as a part of the permit application.	Section 7
§3633.A.1.b	The post-injection site care and site closure plan must include the following information:	
§3633.A.1.b.i	the pressure differential between pre-injection and predicted post-injection pressures in the injection zone(s);	7.3

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§3633.A.1.b.ii	the predicted position of the carbon dioxide plume and associated pressure front at site closure as demonstrated in the area of review evaluation required under §615.B.3 a;	7.4
§3633.A.1.b.iii	a description of post-injection monitoring location, methods, and proposed frequency;	7.4, 7.5
§3633.A.1.b.iv	a proposed schedule for submitting post-injection site care monitoring results to the commissioner and to the USEPA pursuant to §629.A 3; and,	7.5.4
§3633.A.1.b.v	the duration of the post-injection site care timeframe and, if approved by the commissioner, the demonstration of the alternative post-injection site care timeframe that ensures non-endangerment of USDWs.	7.5
§3633.A.1.c	Upon cessation of injection, owners or operators of Class VI wells must either submit an amended post-injection site care and site closure plan or demonstrate to the commissioner through monitoring data and modeling results that no amendment to the plan is needed. Any amendments to the post-injection site care and site closure plan must be approved by the commissioner, be incorporated into the permit, and are subject to the permit modification requirements at §613, as appropriate.	7.5.1
§3633.A.1.d	At any time during the life of the geologic sequestration project, the owner or operator may modify and resubmit the post-injection site care and site closure plan for the commissioners approval within 30 days of such change.	7.5.1
§3633.A.2	The owner or operator shall monitor the site following the cessation of injection to show the position of the carbon dioxide plume and pressure front and demonstrate that USDWs are not being endangered.	7.2
§3633.A.2.a	Following the cessation of injection, the owner or operator shall continue to conduct monitoring as specified in the commissioner-approved post-injection site care and site closure plan for at least 50 years or for the duration of the alternative timeframe approved by the commissioner pursuant to requirements in §633.A 3, unless the owner or operator makes a demonstration under §633.A.2.b The monitoring must continue until the geologic sequestration project no longer poses an endangerment to USDWs and the demonstration under §633.A.2.b is submitted and approved by the commissioner.	7.2

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§3633.A.2.b	If the owner or operator can demonstrate to the satisfaction of the commissioner before 50 years or prior to the end of the approved alternative timeframe based on monitoring and other site-specific data, that the geologic sequestration project no longer poses an endangerment to USDWs, the commissioner may approve an amendment to the post-injection site care and site closure plan to reduce the frequency of monitoring or may authorize site closure before the end of the 50-year period or prior to the end of the approved alternative timeframe, where the owner or operator has substantial evidence that the geologic sequestration project no longer poses a risk of endangerment to USDWs.	7.2
§3633.A.2.c	Prior to authorization for site closure, the owner or operator must submit to the commissioner for review and approval a demonstration, based on monitoring and other site-specific data, that no additional monitoring is needed to ensure that the geologic sequestration project does not pose an endangerment to USDWs.	7.1
§3633.A.2.d	If the demonstration in §633.A.2.c cannot be made (i.e., additional monitoring is needed to ensure that the geologic sequestration project does not pose an endangerment to USDWs) at the end of the 50-year period or at the end of the approved alternative timeframe, or if the commissioner does not approve the demonstration, the owner or operator must submit to the commissioner a plan to continue post-injection site care until a demonstration can be made and approved by the commissioner.	
§3633.A.3	Demonstration of Alternative Post-Injection Site Care Timeframe. The commissioner may approve, in consultation with the USEPA, an alternative post-injection site care timeframe other than the 50-year default, if an owner or operator can demonstrate during the permitting process that an alternative post-injection site care timeframe is appropriate and ensures non-endangerment of USDWs. The demonstration must be based on significant, site-specific data and information including all data and information collected pursuant to §607 and §615, and must contain substantial evidence that the geologic sequestration project will no longer pose a risk of endangerment to USDWs at the end of the alternative post-injection site care timeframe.	
§3633.A.3.a	A demonstration of an alternative post-injection site care timeframe must include consideration and documentation of:	

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§3633.A.3.a.i	the results of computational modeling performed pursuant to delineation of the area of review under §615.B and §615 C;	
§3633.A.3.a.ii	the predicted timeframe for pressure decline within the injection zone, and any other zones, such that formation fluids may not be forced into any USDWs; and/or the timeframe for pressure decline to pre-injection pressures;	
§3633.A.3.a.iii	the predicted rate of carbon dioxide plume migration within the injection zone, and the predicted timeframe for the cessation of migration;	
§3633.A.3.a.iv	a description of the site-specific processes that will result in carbon dioxide trapping including immobilization by capillary trapping, dissolution, and mineralization at the site;	
§3633.A.3.a.v	the predicted rate of carbon dioxide trapping in the immobile capillary phase, dissolved phase, and/or mineral phase;	
§3633.A.3.a.vi	the results of laboratory analyses, research studies, and/or field or site-specific studies to verify the information required in clauses iv. and v. above;	
§3633.A.3.a.vii	a characterization of the confining zone(s) including a demonstration that it is free of transmissive faults, fractures, and micro-fractures and of appropriate thickness, permeability, and integrity to impede fluid (e.g., carbon dioxide, formation fluids) movement;	
§3633.A.3.a.viii	the presence of potential conduits for fluid movement including planned injection wells and project monitoring wells associated with the proposed geologic sequestration project or any other projects in proximity to the predicted/modeled, final extent of the carbon dioxide plume and area of elevated pressure;	
§3633.A.3.a.ix	a description of the well construction and an assessment of the quality of plugs of all abandoned wells within the area of review;	
§3633.A.3.a.x	the distance between the injection zone and the nearest USDW above the injection zone; and	
§3633.A.3.a.x	any additional site-specific factors required by the commissioner.	
§3633.A.3.b	Information submitted to support the demonstration in §633.A.3.a must meet the following criteria:	
§3633.A.3.b.i	all analyses and tests performed to support the demonstration must be accurate, reproducible, and performed in accordance with the established quality assurance standards;	
§3633.A.3.b.ii	estimation techniques must be appropriate and USEPA-certified test protocols must be used where available;	

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§3633.A.3.b.iii	predictive models must be appropriate and tailored to the site conditions, composition of the carbon dioxide stream and injection and site conditions over the life of the geologic sequestration project;	
§3633.A.3.b.iv	predictive models must be calibrated using existing information (e.g., at Class I, Class II, or Class V experimental technology well sites) where sufficient data are available;	
§3633.A.3.b.v	reasonably conservative values and modeling assumptions must be used and disclosed to the commissioner whenever values are estimated on the basis of known, historical information instead of site-specific measurements;	
§3633.A.3.b.vi	an analysis must be performed to identify and assess aspects of the alternative post-injection site care timeframe demonstration that contribute significantly to uncertainty. The owner or operator must conduct sensitivity analyses to determine the effect that significant uncertainty may contribute to the modeling demonstration.	
§3633.A.3.b.vii	an approved quality assurance and quality control plan must address all aspects of the demonstration; and	
§3633.A.3.b.viii	any additional criteria required by the commissioner.	
§3633.A.4	Notice of Intent for Site Closure. The owner or operator must notify the commissioner in writing at least 120 days before site closure. At this time, if any changes have been made to the original post-injection site care and site closure plan, the owner or operator must also provide the revised plan. The commissioner may allow for a shorter notice period.	7.7
§3633.A.5	After the commissioner has authorized site closure, the owner or operator must plug all monitoring wells in a manner which will not allow movement of injection or formation fluids that endangers a USDW.	6.6, 7.7.2, Appendix F
§3633.A.6	The owner or operator must submit a site closure report to the commissioner within 90 days after site closure, which must also be retained by the owner or operator for at least 10 years. The report must include:	7.7.4

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§3633.A.6.a	documentation of appropriate injection and monitoring well plugging as specified in §631 and §633.A.5 The owner or operator must provide a copy of a survey plat which has been submitted to the local zoning authority designated by the commissioner. The plat must indicate the location of the injection well relative to permanently surveyed benchmarks. The owner or operator must also submit a copy of the plat to the USEPA as in §629.A 3;	7.7.4
§3633.A.6.b	documentation of appropriate notification and information to such State, local and Tribal authorities that have authority over drilling activities to enable such State, local, and Tribal authorities to impose appropriate conditions on subsequent drilling activities that may penetrate the injection and confining zone(s); and	7.7.4
§3633.A.6.c	records reflecting the nature, composition, and volume of the carbon dioxide stream.	7.7.4
§3633.A.7	Each owner or operator of a Class VI injection well must record a notation on the deed to the facility property or any other document that is normally examined during title search that will in perpetuity provide any potential purchaser of the property the following information:	
§3633.A.7.a	the fact that land has been used to sequester carbon dioxide;	7.7.4
§3633.A.7.b	the name of the State agency, local authority, and/or Tribe with which the survey plat was filed, as well as the address of the USEPA Regional Office to which it was submitted; and	7.7.4
§3633.A.7.c	the volume of fluid injected, the injection zone or zones into which it was injected, and the period over which injection occurred.	7.7.4
§3633.A.8	The owner or operator must retain for at least 10 years following site closure, records collected during the post-injection site care period. The owner or operator must deliver the records to the commissioner at the conclusion of the retention period, and the records must thereafter be retained in a form and manner and at a location designated by the commissioner.	7.7.4
		n 8 - Emergency and Remedial Respons
§ 3607.C.2.r	proposed emergency and remedial response plan required (contingency plans for well failures or breaches) by §623;	Section 8

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§ 3615.C.3	The emergency and remedial response plan (as required by §623) and the demonstration of financial responsibility (as described by §609.C must account for the area of review delineated as specified in §615.B.3.a or the most recently evaluated area of review delineated under §615.C 2, regardless of whether or not corrective action in the area of review is phased.	8.2
§3623	**Emergency Response**	
§3623.A.1	As part of the permit application, the owner or operator must provide the commissioner with an emergency and remedial response plan that describes actions the owner or operator must take to address movement of the injection or formation fluids that may cause an endangerment to a USDW during construction, operation, and post-injection site care periods. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit.	Section 8
§3623.A.2	If the owner or operator obtains evidence that the injected carbon dioxide stream and associated pressure front may cause an endangerment to a USDW, the owner or operator must:	
§3623.A.2.a	immediately cease injection;	8.2
§3623.A.2.b	take all steps reasonably necessary to identify and characterize any release;	8.2
§3623.A.2.c	notify the commissioner within 24 hours; and	8.2
§3623.A.2.d	implement the emergency and remedial response plan approved by the commissioner.	8.2
§3623.A.3	The commissioner may allow the operator to resume injection prior to remediation if the owner or operator demonstrates that the injection operation will not endanger USDWs.	8.2

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§3623.A.4	The owner or operator shall review the emergency and remedial response plan developed under §623.A.1 at least once every five years. Based on this review, the owner or operator shall submit an amended emergency and remedial response plan or demonstrate to the commissioner that no amendment to the emergency and remedial response plan is needed. Any amendments to the emergency and remedial response plan must be approved by the commissioner, must be incorporated into the permit, and are subject to the permit modification requirements at §613, as appropriate. Amended plans or demonstrations shall be submitted to the commissioner as follows:	8.8
§3623.A.4.a	within one year of an area of review reevaluation;	8.8
§3623.A.4.b	following any significant changes to the facility, such as addition of injection or monitoring wells, on a schedule determined by the commissioner; or	8.8
§3623.A.4.c	when required by the commissioner.	8.8
		Section 9 - Financial Assurance
§ 3607.B.11	documentation of financial responsibility or documentation of the method by which proof of financial responsibility will be provided as required in §609.C Before making a final permit decision, final (official) documentation of financial responsibility must be submitted to and approved by the Office of Conservation;	
§ 3607.C.2.m	demonstration, satisfactory to the commissioner, that the applicant has met the financial responsibility requirements under §609 C;	
§ 3615.C.3	The emergency and remedial response plan (as required by §623) and the demonstration of financial responsibility (as described by §609.C must account for the area of review delineated as specified in §615.B.3.a or the most recently evaluated area of review delineated under §615.C 2, regardless of whether or not corrective action in the area of review is phased.	9.2
§ 3609.C	**Financial Responsibility**	

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§ 3609.C.1	The permit shall require the permittee to maintain financial responsibility and resources to close, plug, and abandon the underground injection wells and, where necessary, related surface facility, and for post-injection site care and site closure in a manner prescribed by the commissioner. Class VI well operators must also comply with §609.C.4 The permittee must show evidence of financial responsibility to the commissioner by the submission of:	Section 9
§ 3609.C.1.a-e	a. a certificate of deposit issued in sole favor of the Office of Conservation in a form prescribed by the commissioner. A certificate of deposit may not be withdrawn, canceled, rolled over or amended in any manner without the approval of the commissioner; b. a performance bond (surety bond) in sole favor of the Office of Conservation in a form prescribed by the commissioner; c. a letter-of-credit in sole favor of the Office of Conservation in a form prescribed by the commissioner; d. site-specific trust account, or e. any other instrument of financial assurance acceptable to the commissioner.	9.3
§ 3609.C.2	The amount of funds available in the financial instrument shall be no less than the amount identified in the cost estimate of the closure plan and any required post-injection site care and site closure, and must be approved by the commissioner.	9.4
§ 3609.C.3	Any financial instrument filed in satisfaction of the financial responsibility requirements shall be issued by and drawn on a bank or other financial institution authorized under state or federal law to operate in the State of Louisiana.	
§ 3609.C.4	Class VI well owners, operators, or applicants shall comply with these additional requirements of financial responsibility	
§3609.C.4.a.i	Qualifying financial responsibility instruments must be sufficient to cover the cost of meeting the requirements of:	
§3609.C.4.a.i(a)	corrective action of §615 C;	9.4
§3609.C.4.a.i.(b)	injection well plugging of §631;	9.4
§3609.C.4.a.i.(c)	post-injection site care and site closure of §633; and	9.4
§3609.C.4.a.i.(d)	emergency and remedial response of §623	9.4

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§3609.C.4.a.ii	The owner/operator shall maintain third party insurance at a sufficient level to respond to any emergency or to perform any remedial action that meets the requirements of §3623.	9.4
§3609.C.4.b	Financial responsibility instruments must be sufficient to address endangerment of underground sources of drinking water.	9.4, 9.6.2
§3609.C.4.c	Qualifying financial responsibility instruments must comprise protective conditions of coverage.	
§3609.C.4.c	Protective conditions of coverage must include at a minimum cancellation, renewal, and continuation provisions, specifications on when the provider becomes liable following a notice of cancellation if there is a failure to renew with a new qualifying financial instrument, and requirements for the provider to meet a minimum rating, minimum capitalization, and ability to pass the bond rating when applicable:	
§3609.C.4.c.i	cancellation: an owner or operator must provide that their financial mechanism may not cancel, terminate or fail to renew except for failure to pay such financial instrument. If there is a failure to pay the financial instrument, the financial institution may elect to cancel, terminate, or fail to renew the instrument by sending notice by certified mail to the owner or operator and the commissioner. The cancellation must not be final for 120 days after receipt of the cancellation notice. The owner or operator must provide an alternate financial responsibility demonstration within 60 days of notice of cancellation, and if an alternate financial responsibility demonstration is not acceptable or possible, any funds from the instrument being cancelled must be released within 60 days of notification by the commissioner;	
§3609.C.4.c.ii	renewal: owners or operators must renew all financial instruments, if an instrument expires, for the entire term of the geologic sequestration project. The instrument may be automatically renewed as long as the owner or operator has the option of renewal at the face amount of the expiring instrument. The automatic renewal of the instrument must, at a minimum, provide the holder with the option of renewal at the face amount of the expiring financial instrument;	

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§3609.C.4.c.iii	cancellation, termination, or failure to renew may not occur and the financial instrument will remain in full force and effect in the event that on or before the date of expiration the commissioner deems the facility abandoned; or the permit is terminated or revoked or a new permit is denied; or closure is ordered by the commissioner or a court of competent jurisdiction; or the owner or operator is named as debtor in a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code; or the amount due is paid.	
§3609.C.4.d	Qualifying financial responsibility instruments must be approved by the commissioner:	
§3609.C.4.d.i	the commissioner shall consider and approve the financial responsibility demonstration for all the phases of the geologic sequestration project before issuing any authorization to begin geologic sequestration of carbon dioxide in a Class VI well;	
§3609.C.4.d.ii	the owner or operator must provide any updated information related to their financial responsibility instrument(s) annually and if there are any changes, the commissioner must evaluate the financial responsibility demonstration to confirm that the instrument(s) used remain adequate. The owner or operator must maintain financial responsibility requirements regardless of the status of the commissioner's review of the financial responsibility demonstration;	9.5
§3609.C.4.d.iii	the commissioner may disapprove the use of a financial instrument if he determines it is not sufficient to meet the financial responsibility requirements.	
§3609.C.4.e	The owner or operator may demonstrate financial responsibility by using one or multiple qualifying financial instruments for specific phases of the geologic sequestration project:	
§3609.C.4.e.i	in the event that the owner or operator combines more than one instrument for a specific geologic sequestration phase (e.g., well plugging), such combination must be limited to instruments that are not based on financial strength or performance, for example trust funds, certificates of deposit, surety bonds guaranteeing payment into a trust fund, and letters of credit. In this case, it is the combination of mechanisms, rather than the single mechanism, which must provide financial responsibility for an amount at least equal to the current cost estimate.	

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§3609.C.4.f	The requirement to maintain adequate financial responsibility and resources is directly enforceable NATURAL RESOURCES Louisiana Administrative Code May 2024 158 regardless of whether the requirement is a condition of the permit. The owner or operator must maintain financial responsibility and resources until:	
§3609.C.4.f.i	the commissioner receives and approves the completed post-injection site care and site closure plan; and	
§3609.C.4.f.ii	the commissioner approves site closure.	
§3609.C.4.g	The owner or operator may be released from a financial instrument in the following circumstances:	
§3609.C.4.g.i	the owner or operator has completed the phase of the geologic sequestration project for which the financial instrument was required and has fulfilled all its financial obligations as determined by the commissioner, including obtaining financial responsibility for the next phase of the geologic sequestration project, if required; or	
§3609.C.4.g.ii	the owner or operator has submitted a replacement financial instrument and received written approval from the commissioner accepting the new financial instrument and releasing the owner or operator from the previous financial instrument.	
§3609.C.4.h	The owner or operator must have a detailed written estimate, in current dollars, of the cost of performing corrective action on wells in the area of review, plugging the injection well(s), post-injection site care and site closure, and emergency and remedial response:	9.4
§3609.C.4.h.i	the cost estimate must be performed for each phase separately and must be based on the costs to the Office of Conservation of contracting a third party to perform the required activities. A third party is a party who is not within the corporate structure of the owner or operator;	9.4

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§3609.C.4.h.ii	during the active life of the geologic sequestration project, the owner or operator must adjust the cost estimate for inflation within 60 days before the anniversary date of the establishment of the financial instrument(s) and provide this adjustment to the commissioner. The owner or operator must also provide the commissioner written updates of adjustments to the cost estimate within 60 days of any amendments to the area of review and corrective action plan, the injection well plugging plan, the post-injection site care and site closure plan, and the emergency and remedial response plan;	9.4
§3609.C.4.h.iii	the commissioner must approve any decrease or increase to the initial cost estimate. During the active life of the geologic sequestration project, the owner or operator must revise the cost estimate no later than 60 days after the commissioner has approved the request to modify the area of review and corrective action plan, the injection well plugging plan, the post-injection site care and site closure plan, and the emergency and response plan, if the change in the plan increases the cost. If the change to the plans decreases the cost, any withdrawal of funds must be approved by the commissioner. Any decrease to the value of the financial assurance instrument must first be approved by the commissioner. The revised cost estimate must be adjusted for inflation as specified at §609.C.4.h ii. above;	9.4
§3609.C.4.h.iv	whenever the current cost estimate increases to an amount greater than the face amount of a financial instrument currently in use, 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 cost estimate and submit evidence of such increase to the commissioner, or obtain other financial responsibility instruments to cover the increase. Whenever the current cost estimate decreases, the face amount of the financial assurance instrument may be reduced to the amount of the current cost estimate only after the owner or operator has received written approval from the commissioner.	9.4
§3609.C.4.i	The owner or operator must notify the commissioner by certified mail of adverse financial conditions such as bankruptcy that may affect the ability to carry out injection well plugging and post-injection site care and site closure:	

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§3609.C.4.i.i	in the event that the owner or operator or the third party provider of a financial responsibility instrument is going through a bankruptcy, the owner or operator must notify the commissioner 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 days after commencement of the proceeding.	
§3609.C.4.i.ii	An owner or operator who fulfills the financial responsibility requirements by obtaining an approved instrument of financial assurance will be deemed to be without the required financial assurance in the event of bankruptcy of the trustee or issuing institution, or a suspension or revocation of the authority of the trustee institution to act as trustee of the institution issuing the financial assurance instrument. The owner or operator must establish other financial assurance within 60 days after such an event.	
§3609.C.4.j	The owner or operator must provide the commissioner with an adjustment of the cost estimate within 60 days of notification by the commissioner, if the commissioner determines during the annual evaluation of the qualifying financial responsibility instrument(s) that the most recent demonstration is no longer adequate to cover the cost of corrective action, injection well plugging, post-injection site care and site closure, and emergency and remedial response.	
§3609.C.4.k	The commissioner must approve the use and length of pay-in-periods for trust funds or escrow accounts.	