UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
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JAN 17 2017

REPLY TO THE ATTENTION OF:
WU-16J

Harold R. Fitch
Chief, Office of Oil, Gas, and Minerals
Michigan Department of Environmental Quality
P.O. Box 30256
Lansing, MI 48909-7756

Dear Mr. Fitch:

The U.S. Environmental Protection Agency appreciates the opportunity to review Michigan's August 24, 2015 draft application for an Underground Injection Control (UIC) Class II program. The Michigan Department of Environmental Quality (MDEQ) has stated that the draft is a step toward making a formal application for federal authorization of a State program under Section 1425 of the Safe Drinking Water Act (SDWA). This Section allows a state to demonstrate that its Class II program is effective in preventing endangerment to underground sources of drinking water (USDWs) in lieu of adopting regulations equivalent to federal regulations. EPA has evaluated the draft application and is enclosing comments for consideration by MDEQ. EPA has not yet completed review of the Michigan statute and understands from discussions with MDEQ that the State may revise the rules. EPA will complete review of the statute together with any revised rules.

EPA's review does not constitute formal approval or disapproval of Michigan's draft application or of a Michigan UIC Class II program.

The August, 2015 draft application responded to some of the comments EPA provided on an earlier draft that MDEQ sent to EPA in December of 2014. However, additional changes are needed to ensure MDEQ's Class II program prevents endangerment of USDWs. EPA has identified two fundamental concerns that potentially undermine the proposed program's effectiveness.

EPA's first concern is that certain Michigan regulatory provisions limit effective protection of USDWs. Of particular concern is Michigan's definition of "fresh water." It is narrower in scope than the federal definition of USDWs, and certain requirements in the draft application are tied to "fresh water" rather than USDWs. In other instances, Michigan rules do not contain some of the provisions described elsewhere in the draft application. EPA expects an application to include key technical provisions – those that are necessary to prevent endangerment to USDWs – in statute or rule so that the

program's requirements are uniform, predictable, enforceable, and not subject to changes in guidance or practice. Michigan would need to change some rule language to address these concerns.

EPA is also concerned about a number of inconsistencies and unclear descriptions in the draft application which prevent a clear understanding of the proposed program and introduce legal or technical ambiguity. Inconsistent elements include several technical requirements, processes, operator reporting requirements, and enforceable standards. Michigan would need to revise the draft application throughout to make it clearer and internally consistent.

EPA is providing two enclosures. The first explains the overarching concerns highlighted above in greater detail. The second provides specific comments. We look forward to working with MDEQ on these and any further comments that EPA may have on the statute or subsequent draft applications.

Thank you for coming to our office in December of 2016 to discuss the draft application. Review and discussion of the draft application is an invaluable part of the process of developing and submitting a UIC Class II program application to EPA. Since August 2015, EPA and MDEQ staff have been communicating about the draft application via phone and email in addition to the meeting identified above. EPA has found these communications to be very helpful, and we thank MDEQ for engaging in a collaborative process. If you have questions about EPA's comments, please do not hesitate to contact Anna Miller at (312) 886-7060 or miller.anna@epa.gov.

Sincerely,

Christopher Korleski
Director, Water Division

Enclosures

Enclosure 1: EPA General Concerns about Michigan's August 2015 UIC Class II Draft Application

Concerns

1. Regulatory Provisions Limit USDW Protection.

EPA reviews state statutory and regulatory structure to determine if the program presented in the Program Description and other elements of the draft application is fully supported by legal authorities. EPA found that Michigan's existing regulatory structure limits Michigan's authority to protect USDWs. (EPA has not yet completed review of the Michigan statute.)

a. Key Michigan rule requirements are linked to the protection of "fresh water" rather than USDWs

Michigan's definition of "fresh water"[1] does not encompass all USDWs as defined in applicable federal regulations[2]. That is, an aquifer could meet USDW criteria by having fewer than 10,000 milligrams per liter total dissolved solids, but not meet MDEQ's definition of fresh water, which must be "free from contamination and safe for human consumption in its present state." The difference in definitions is problematic because Michigan's rules provide certain protections only to fresh water, thus protecting only a subset of the water sources considered to be USDWs under the SDWA. Examples of provisions in the Michigan rules linking protection to the location of fresh water or "fresh water strata" (as used in the draft application and some rules) include the following:

- Construction requirements for surface casing depth are established relative to fresh water strata (Rule 324.408). Thus, the surface casing requirements would not protect the potentially larger universe of sources that meet the definition of USDWs under EPA's regulations.
- Rules for well plugging specify that the cement plug must be "a minimum of 100 feet below… the deepest fresh water stratum" (Rule 324.902(8), page 111). Thus, plugging requirements are not placed relative to the USDW and would not protect the potentially larger universe of sources that meet the definition of USDWs under EPA's regulations.

Although the Program Description states that "the primary purpose of this program is to protect aquifers used as Underground Sources of Drinking Water," (page 7), it fails to explain how Michigan's regulatory requirements tied to "fresh water" are sufficient to protect all sources that fit the USDW definition. Michigan will need to modify its rules to protect all aquifers that meet the definition of a USDW.

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[1] Michigan Rule 324.102 Definitions (s): "Fresh water" means water that is free of contamination in concentrations that may cause disease or harmful physiological effects and is safe for human consumption.

[2] 40 CFR 144.3 Underground source of drinking water (USDW) means an aquifer or its portion:
(a)(1) Which supplies any public water system; or
(2) Which contains a sufficient quantity of ground water to supply a public water system; and
(i) Currently supplies drinking water for human consumption; or
(ii) Contains fewer than 10,000 mg/l total dissolved solids; and
(b) Which is not an exempted aquifer.

b. Rules limit Michigan authority by creating a two-part test for enforcement and limiting suspension orders.

EPA is concerned that Rule 324.1014 (1) establishes a two-part test for the exercise of enforcement authority by giving the Supervisor of Wells authority to take corrective actions "… if the oil and gas operations have been determined by the Supervisor to be in violation of the provisions of the act, these rules, permit conditions, instructions, or orders of the supervisor and threatens the public health and safety." First, there must be a violation and second, there must be a threat. A two-part test for the exercise of enforcement authority limits Michigan's authority to require corrective action and assess a penalty for all violations.

Michigan's authority to suspend well operations is also limited by rule. Michigan Rule 324.1014(2) limits orders to suspend operations at a well to five days or, if the original order is suspended by an emergency order, not more than 21 days. Part 615 Section 324.61516 of the Michigan Compiled Laws supports extending suspensions by providing for emergency orders; however, this section also limits emergency orders to 21 days. The Program Description states that "operations cannot resume until completion of a hearing and compliance with the resulting order is achieved and mechanical integrity is demonstrated," (page 9) but does not point to a supporting rule that links completion of a hearing to the suspension or to compliance. In EPA's experience, returning to compliance can take more than 21 days, and EPA is concerned that the time limit is not sufficiently protective of USDWs.

Rule 324.1014 (2) is also internally inconsistent, because it states that a suspension is in effect "until operation is in compliance and protection of the public health and safety is ensured," but also states that "the total duration of the suspension may not be more than 21 days."

In conversations concerning the draft application, the MDEQ and the Attorney General's Office staff explained that MDEQ can extend suspension orders. However, such actions are not described in the draft, and it is not clear how these actions can legally overcome the regulatory limit to suspensions and emergency orders. Furthermore, EPA is concerned that the process as described in conversations with MDEQ and the Attorney General's representative may constrain the program's effectiveness by placing a burden on MDEQ to continually extend suspension orders on a case-by-case basis. EPA expects the Attorney General to explain how suspension orders would not be limited by rule. Otherwise, EPA expects that any limits to Michigan's authority to take suspension action against operators will need to be modified to present an enforceable program that protects USDWs.

c. Key technical requirements proposed for protecting USDWs are not included in rules

Although Michigan's regulations appear to include many technical requirements necessary for an effective program, some key technical provisions are not found in the regulations. Rather, they are found in the Program Description or Instruction. As EPA understands it, the Instruction elements are not enforceable regulatory requirements – but rather, policy or interpretive statements clarifying how the Supervisor would exercise his/her broad, discretionary authority under the regulations. In conversations about the draft application, MDEQ and Attorney General staff stated that MDEQ implements Instructions consistent with

regulatory authorities and that regulated entities may view such Instructions as binding. However, EPA remains concerned that unless the key technical requirements are codified in regulation, Instruction elements will not be federally enforceable, could change over time without a formal rulemaking process, and may be subject to challenge. EPA expects all key technical provisions – i.e., those that are necessary to prevent endangerment to USDWs -- described in the Program Description and Instructions to be legally-binding requirements. EPA expects the Attorney General to explain the legal link between statute, rule, and instructions. Michigan will need to modify rules to incorporate key technical provisions that appear only in the Program Description and Instructions or otherwise demonstrate that they are legally binding.

Some examples of technical requirements on operators that are not in rules include:

- The Instruction to operators includes requirements for commercial well operators to supply chemical analyses for new brine sources as they are added (page 55), which is crucial to preventing USDW endangerment by allowing only Class II eligible fluids. However, Michigan rules do not require the submittal of new source chemical analysis.
- The Program Description and Instruction include minimum casing cement conditions for injection casings, which helps ensure the protection of USDWs from endangerment by isolating the injection zone. However, the conditions are not embodied in rules. Furthermore, injection zone casing is not explicitly required by construction rules (Rule 324.410, Rule 324.801).
- The Program Description says surface casings are required for newly constructed Class II wells (page 20), but Michigan injection well rules in R 324 Part 8 do not expressly require surface casings in its injection wells (though Rule 324.408 includes surface casings standards). A surface casing is crucial in protecting USDWs from endangerment by injection operations.

d. <u>Michigan's proposed program does not account for permitting of diesel fuels hydraulic fracturing</u>

Michigan's definition of Class II wells (page 6) does not include wells used for hydraulic fracturing activities where diesel fuels are used. Under the SDWA, owners or operators who inject diesel fuels for hydraulic fracturing related to oil and gas operations must obtain a Class II UIC permit before injection begins.[3] Thus, all Class II UIC programs must include the ability to issue permits for hydraulic fracturing with diesel fuels and must prohibit hydraulic fracturing with diesel unless authorized by permit – or demonstrate that such permitting authority is not necessary because the activity is legally banned in the state. In order to receive primary enforcement responsibility for the Class II UIC program, a state must account for the full extent of that authority. The draft application states that Michigan will not issue Class II permits for wells using hydraulic fracturing with diesel fuels; however, Michigan has not pointed to any State statutes or rules that bans this activity. Indeed, the draft application

[3] SDWA section 1421(d)(1)(B)(ii). For a description of EPA's interpretation of the legal requirements and technical recommendations for permitting this activity, see EPA Memorandum: Implementation of the Safe Drinking Water Act's Existing Underground Injection Control Program Requirements for Oil and Gas Hydraulic Fracturing Activities Using Diesel Fuels (2/5/2014) https://www.epa.gov/sites/production/files/2015-05/documents/signedmemohfactivitiesusingdieselfuels_0.pdf

includes regulatory provisions that allow for high-volume hydraulic fracturing overall (see pages 139, 140, 141). Michigan's next draft should either provide demonstration of a complete regulatory ban on hydraulic fracturing with diesel or describe how its program, including permit and enforcement elements, will apply to these types of Class II wells.

2. Draft Application Inconsistencies and Unclear Statements Prevent a Complete Understanding of the Proposed Program.

The draft application lacks clarity in several areas, which hinders a complete understanding of proposed program's applicable legal authorities, operations, requirements, and enforceability. In several instances, the draft application's language is inexact or internally inconsistent. In particular, the terms and language used to describe the execution of the program are not defined or are interchanged throughout the document.

Given the unclear description of program elements, EPA is unable to determine which requirements the State will impose as permit terms and conditions. Given the uncertain nature of the draft application, EPA is unable to determine how the proposed state program will operate. EPA requests that Michigan review their application documents to clarify and make consistent the language and the terms contained within them.

a. Inconsistent requirements among the Program Description, Instruction, and Rules

The description of requirements and conditions for the application, permitting, construction, operation, reporting, and closure of Class II injection wells in the Program Description and in the Instruction in some cases appear to be inconsistent with the actual requirements and conditions in Michigan's regulations. Such discrepancies raise uncertainty about which set of conditions apply to applicants and operators and how MDEQ intends to exercise its discretionary authority under the Michigan rules and therefore muddies the overall clarity of the proposed program. Examples of discrepancies include:

- The Program Description indicates that applicants would need to provide the geological name and thickness of confining zones (page 20); the Instruction requests the same, plus the true vertical depth(s) (page 50). The rule on the applicant's schematic (Rule 324.201) does not include confining zone information.
- The Program Description and Instruction use "USDW," even when the cited or comparable rule uses "fresh water." For example, the Program Description provides that a cement plug is set "at least 100 feet below the lowest *USDW*" (page 28, emphasis added); Rule 324.902(8) states that the cement plug must be "a minimum of 100 feet below… the deepest *fresh water* stratum" (page 112, emphasis added).

In assessing the State program requirements, EPA will view as controlling the actual requirements in the rules as opposed to the characterization of such requirements in the Program Description. MDEQ will need to resolve the issue of inconsistencies among the Program Description, Instructions, and regulations, and reflect such resolution in the program description and other sections of the program application.

b. Inconsistencies in Key Terms and Technical Language

The draft application uses inconsistent terms and unclear language in support of a number of key concepts. Some terms are not defined in any of the application documents, and some terms are defined differently in regulations than in the Program Description and/or the Instruction. Further, some terms used in the Program Description and/or the Instruction are not found in the regulations at all. In addition, the draft application uses several terms interchangeably, when do not have same meanings. The uncertainty fostered by inconsistent terms leaves fundamental aspects of the proposed program open to interpretation and prevents EPA from understanding how the proposed program will prevent the endangerment of USDWs. Examples include:

- The Program Description refers to "injection zones" in numerous instances to denote the zone into which fluids would be injected, whereas Michigan rule 324.703 uses "disposal zone" and Rule 324.801 uses "strata approved by the supervisor or authorized representative of the supervisor." The term "injection zone" does not appear in rule, and none of the terms are defined in the draft application or in rules. EPA is concerned that the multiplicity of terms may introduce legal ambiguity into the proposed program. Furthermore, the term "disposal zone" excludes zones used for enhanced recovery.
- The Program Description appears to use *fracture gradient* and *fracture pressure* interchangeably, although they are different physical parameters. Furthermore, using the parameters interchangeably leaves the proposed program's technical requirements uncertain.
- The language describing mechanical integrity in the draft application is unclear. It is introduced across different sections of the Program Description, with references to the "parts" of mechanical integrity which are difficult to follow (pages 24-27).

c. Inconsistent operation and reporting requirements

The draft application does not consistently or clearly identify operator requirements and reporting measures. These elements are central to EPA's review of the effectiveness of Michigan's enforcement program, and would be equally important to future federal oversight of an authorized state program. A clear description of measures that will be included in a Michigan Class II injection permit will aid EPA's review. Examples of unclear operations and reporting requirements include:

- Form 7609 (page 371) appears to require that operators report annulus pressure; however, this requirement is not found in the Program Description, Instruction, or rules.
- Form 7606 (page 369) appears to require a mechanical integrity test on a temporarily abandoned well every two years. This obligation is not mentioned in the Program Description, Instruction, or rules. In contrast, the Instruction states that a test is necessary prior to resuming injection if the well has been abandoned for more than two years (page 55).

EPA asks MDEQ, as part of a future draft application, to prepare and submit an example permit or otherwise describe in a single place the terms and conditions they intend to impose in a permit. EPA expects that all key technical operator requirements and reporting measures will be included in rules and will be consistent throughout all parts of an application wherever they are mentioned.

d. Unclear public participation processes

As described in the draft application, there are many uncertainties associated with the public notification and participation process. The draft application presents a process that is open to interpretation by a reader and could lead to highly variable implementation that is subject to changes in policy or practice. EPA is also concerned that some Michigan rules may strongly limit input or place a high documentation burden on people in order to petition for a hearing. Rule 324.1202 in particular places a very high burden of evidence on those requesting a hearing; however, it is not clear how this rule would apply to Class II permit process. Among these uncertainties are the following issues:

- The public participation processes described in the Program Description (on page 23) includes steps for resolving public comments, involving additional information from interested parties (possibly commenters) that are not captured in the flowchart (page 41).
- The draft application does not explain the appeal processes or who may appeal a permit decision.
- It is not clear how the Supervisor determines the need to hold a hearing, in part because language suggests that hearings could be restricted to undefined "relevant" comments/commenters.
- The draft application does not identify which, if any, of the rules in the appendix apply to public input for state Class II permit actions.

In any subsequent application submittal, EPA requests that MDEQ provide a uniform, consistent public input process description that identifies relevant rules and distinguishes between rule-required public input provisions and non-regulatory, that is, guidance- or policy-based public input provisions, if there are any. The description should include a description of all appeal rights and the appeals process. Insofar as public input and hearings have been an area of public interest on Michigan wells during the last 5 years, the description should address who may comment, how MDEQ approaches evaluating the need for a hearing, and how the hearing affects or extends public comment period.

Enclosure 2: Table of Comments on Michigan's August 2015 UIC Class II Draft Application

Common abbreviations:

AoR	area of review
CFR	Code of Federal Regulations
MCL	Michigan Combined Law
MDEQ	Michigan Department of Environmental Quality
MI	mechanical integrity
MIT	mechanical integrity test
MAIP	maximum allowable injection pressure (operating condition as determined by regulation/guidance)
NREPA:	Michigan's atural Resources and Environmental Protection Act, Act 451 of 1994
Pm	Pressure (max) as described in State Rule 324.408
psi	pounds per square inch
SAPT	standard annulus pressure test
SDWA	Safe Drinking Water Act
SOP	standard operating procedure
UIC	underground injection control
USDW	underground source of drinking water, as defined by EPA regulation 40 CRF 144.3

Section A. Letter from the Honorable Governor Rick Snyder, State of Michigan
Not included in draft application.
Section B. Statement of Legal Authority from Attorney General Bill Shuette, State of Michigan
Not included in draft application.

pg.	Heading/Topic	Draft Application Language	Comment	#
Section C. Program Description				
6	**I. Structure, Coverage and Scope**	The Michigan Department of Environmental Quality, Office of Oil and Gas, and Minerals (OOGM) is seeking primacy….	Only the Governor can seek federal authorization. The Governor may name an agency or department charged with administering the program. The draft application needs to be clear and consistent throughout about the requestor and the named implementer. Michigan, in its Statement of Legal Authority, should inform EPA of the state governmental organization that is legally authorized to seek primacy approval, as a matter of state law.	1

pg.	Heading/Topic	Draft Application Language	Comment	#
6	**I. Structure, Coverage and Scope**	This Program Description applies to only Class II wells for which this primacy application is being made. A "Class II well" means a well utilized for the disposal of fluids and/or gas (hereafter "fluids") associated with the production of oil and natural gas, or utilized for the injection of fluids (including carbon dioxide) for the purpose of secondary recovery operations, or utilized for injection for the storage of hydrocarbons which are liquid at standard temperature and pressure.	A state's Class II program must include all wells covered under the federal Class II program in order to be effective. Therefore, in its application for Class II primacy, a state cannot limit the types of Class II wells for which they are seeking authority to a more limited subset than covered under federal regulations. The Class II well definition in the draft application does not include wells that are hydraulically fractured using diesel fuels. Under SDWA, owners or operators who inject diesel fuels for hydraulic fracturing related to oil and gas operations must obtain a Class II UIC permit before injection begins (SDWA section 1421(d)(1)(B)(ii)). Thus, all Class II UIC programs must include the ability to issue permits for diesel fuels hydraulic fracturing – or demonstrate that such permitting authority is not necessary because the activity is legally banned in the state. Michigan should either demonstrate that this activity is legally banned under state law, or describe how its program, including permit and enforcement elements, will apply to all Class II wells, including wells hydraulic fracturing with diesel fuels. EPA further notes that Class II wells are defined only in the Program Description and Instruction. Michigan should consider defining Class II wells in its statutes or rules for implementation to avoid misinterpretation about the universe of covered wells.	2
6	**I. Structure, Coverage and Scope**	Part 615, Supervisor of Wells, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), and the rules, orders, and instructions promulgated thereunder govern…	The Instruction, regulations, and Program Description each list inconsistent requirements for Class II wells, well operators, and applications. Comments in this table identify the areas where EPA finds discrepancies among regulations and other sections of the draft application.	3
6	**I. Structure, Coverage and Scope**	That authority has been delegated to the Chief <u>and staff of the MDEQ OOGM.</u> Michigan Compiled Laws (MCL) 324.61506(a) gives authority to the Supervisor *To promulgate and*	The Program Description or Statement of Legal Authority should include or cite how authority is delegated from the MDEQ Director to the OOGM Chief and/or the Supervisor of Wells. The draft application should explain how delegation includes staff of MDEQ OOGM in addition to the Supervisor of Wells.	4

pg.	Heading/Topic	Draft Application Language	Comment	#
		enforce rules, issue orders and instructions necessary to enforce the rules, and do whatever may be necessary with respect to the subject matter stated in this part to implement this part, whether or not indicated, specified, or enumerated in this or any other section of this part'. Section D of Michigan's application for UIC Primacy contains Supervisor's Instruction 02-2015, which clarifies Class II requirements under Part 615.	As stated in Comment #1 of this table, only the Governor can request federal authorization. EPA does not recommend naming a specific office within an Agency for implementation, because internal organizational changes could affect federal authorization or require document updates, unless the office has some explicit authority. The Statement of Legal Authority should inform EPA what level of the state governmental organization is appropriate to appear in federal authorization documents. The legal status and intent of the Instruction is unclear. On page 6 of the draft application, the Program Description states that the Instruction clarifies regulatory requirements. On page 7, the Instruction is referred to as providing additional requirements. It is unclear whether the Instruction simply interprets or clarifies existing regulatory requirements and thus has the standing of guidance, or instead, constitutes additional binding regulatory requirements. The Instruction's legal standing has bearing on EPA's evaluation of the proposed program's effectiveness regarding technical standards, which also affects its effectiveness regarding compliance and enforcement. EPA is concerned that Instruction elements will not be federally enforceable, could change over time without a formal, public process, and may be subject to challenge. EPA expects all key technical requirements – i.e. those necessary to prevent endangerment to USDWs -- described in the Program Description and Instruction to be legally binding. EPA expects the Attorney General to explain the legal link between statute, rule, and Instructions, and confirm that Instructions establish legally-binding requirements.	
6-7	**I. Structure, Coverage and Scope**	The following additional categories of injection and disposal wells are included: • "Authorized By Rule Well" means a Class II well that was classified and/or treated by the U.S. EPA as an Authorized By	It is unclear under what authority the "existing Class II Wells" were approved. If this designation describes wells permitted by EPA, the definition should be modified for clarity. EPA will need to ascertain that Michigan's proposed permit approach would meet the goals stated in the primacy package (including the Program Description, statutes, and rules). Part of the discussion needs to include an example Michigan Class II permit and/or a 615 permit for an existing Class II	5

pg.	Heading/Topic	Draft Application Language	Comment	#
		Rule Well on or after January 1, 1984. • "Existing Class II well" means a Class II well that has been approved, constructed, or converted prior to the MDEQ OOGM assumption of primacy of the UIC Class II program, and that has a Part 615 permit. • " ew Class II well" means a Class II well that is constructed or converted under Part 615 after the date of OOGM's assumption of primacy of the UIC Class II program.	well, since Michigan states that EPA-permitted Class II injection wells already have duplicate Michigan injection permits. Furthermore, EPA will follow-up with Michigan officials on the Memorandum of Agreement (MOA) to ensure that it describes how EPA's current permits would be adopted by, transferred to, or otherwise replaced by Michigan's program should the program be approved.	
7	**I. Structure, Coverage and Scope**	The primary purpose of this program is to protect aquifers used as Underground Sources of Drinking Water (USDW) from contamination by injection operations as specified in Part 615 Rule 324.801(3), which provides that: "A permittee of a well shall ensure that an injection well is constructed and operated so that the injection of fluids is confined to strata approved by the supervisor or authorized representative of the supervisor."	EPA notes that the UIC program should protect all USDWs whether or not they are currently used for drinking water. The federal definition of USDW encompasses water that could be used as a drinking water source though may not be considered potable (that is, it contains fewer than 10,000 mg/l toal dissolved solids). In short, aquifer use is not the criteria for protection under the federal program. Although the draft application on page 7 describes the primary purpose of the UIC Class II program is to protect USDWs, EPA notes several instances throughout the draft application where language, statutes, and regulations apply to "fresh water", which is defined in Michigan rules, rather than to USDWs. In brief, EPA considers the Michigan definition of fresh water to be less protective than the definition of USDW, meaning that some aquifers which would qualify as USDWs under federal law would be not be protected as fresh water. EPA's detailed comments on the difference between the Michigan definition of fresh	6

pg.	Heading/Topic	Draft Application Language	Comment	#
			water and the federal (and State) definition of USDW are found on in Comment #142 of this table. The table also comments on examples where the "fresh water" definition is problematic where the examples occur in the draft application. The federal UIC program is concerned with ensuring that injection operations do not mobilize injection fluids and other fluids, even native fluids, such that they affect a USDW. The purpose of the proposed program as described here is unclear, because contamination' or contaminant' is not clearly defined in the draft application (including the statute and rules). In this section, Michigan appears to consider contamination to be a feature of the injected fluid alone, because the supporting rule quoted is concerned only with keeping injected fluids within the intended zone. EPA notes that Rule 324.801(4) addresses movement of contaminants into USDWs. The two rules together are a more complete picture of a USDW protection goal; however, defining contaminant' will clarify the scope of the goal. EPA recommends that Michigan modify statute and/or rule to define contaminant' with respect to Class II injection wells. This section uses the term *strata approved by the supervisor…*," to denote the zone where fluid is injected. Other sections use other terms: *injection zone*, *injection formation,* and *disposal zone.* The diversity of terms used to describe the zone where fluids are injected is confusing and could affect the interpretation of rules and the program. EPA has further comments about terminology throughout the comment table.	
7	**I. Structure, Coverage and Scope**	The current regulations under Part 615 include a definition of <u>a USDW to correspond to the definition under the SDWA.</u>	While the Michigan Rule 324.103 defines USDW that corresponds to the federal definition defined in 40 CFR Part 144.3, other rules specifying technical requirements refer to "fresh water" only. One such example is the well construction rule establishing surface casing depth relative to "fresh water" strata (Rule 324.408). The definition of fresh water" is less protective than the federal (or Michigan) definition of USDWs. Therefore, some proposed program protections do not appear to apply to all USDWs as defined under the federal regulations, despite the inclusion of the USDW definition in Michigan rules.	7

pg.	Heading/Topic	Draft Application Language	Comment	#
			Michigan will need to modify language in rules to reflect the protection of all aquifers that meet the definition of a USDW. Specific instances where language should be modified are highlighted in this table as they occur in the draft application. EPA has further specific comments on the definitions and rules in later sections of this table.	
7	**I. Structure, Coverage and Scope**	Therefore, under Part 615, the Supervisor has authority to implement SDWA standards for construction, conversion, and operation of all Class II wells.	The statement that the Supervisor "has authority to implement SDWA standards" is unclear, because the State has opted for primacy under SDWA 1425 alternative, meaning that the State need not adopt standards equivalent to EPA regulations. If Michigan proposes to implement SDWA rules (40 CFR part 144 and 146), Michigan needs to identify the statutory or rule provision or provisions that allow this and should be explicit as to which federal rules the State will implement. In addition, this general statement is insufficient to demonstrate Michigan's legal authority to implement or enforce Class II well standards and thus demonstrate program effectiveness. Specific and definitive authorities should be established in statute in rule and described in the Statement of Legal Authority.	8
7	**II. Operation of Rules**	The Underground Injection Control Program for Class II wells will be administered by the MDEQ, OOGM. Part 615 governs the location, drilling, construction, operation or conversion of a well to a Class II well, and well plugging under this program.	EPA notes that many of the rules under MCL Part 615, cited for the Michigan Class II proposed program, pertain to oil and gas wells. It is not always clear whether these rules can apply to Class II injection wells. For example, some rules directed at "oil and gas operations;" can be understood to include injection once the reviewer locates the appropriate rules. EPA notes that Rule 324.103(b) defines "oil and gas operations" to include "operation of oil and gas wells" and Rule 324.103 (c) defines "operation of oil and gas wells" to include "brine disposal" "injecting" and "secondary recovery." In other instances, however, noted throughout this comment table, rules seem to apply to oil and gas pooling. It is unclear if pooling-related rules apply to injection wells. EPA has specific comments on rules in other sections of the table. The Statement of Legal Authority should make it clear when rules apply and when they do not.	9
7	**II. Operation of Rules**	Supervisor's Instruction 2-2015 (Section D) <u>provides additional requirements</u> not currently specified	The statement here contradicts the statement on page 6 of the draft application that states that Instruction *clarifies* requirements. As stated in Comment #110 of this table, the draft application should be consistent and clear on whether the	10

pg.	Heading/Topic	Draft Application Language	Comment	#
		for UIC Class II wells in Part 615…	Instruction are providing additional requirements or clarifying existing requirements. The Instruction's legal standing has bearing on EPA's evaluation of the proposed program's effectiveness regarding technical standards, which also affects its effectiveness regarding compliance and enforcement. EPA expects all key technical requirements – i.e. those necessary to prevent endangerment to USDWs – that are described in the Program Description and Instruction to be legally binding. As EPA understands it, Instruction are not regulatory requirements – but rather, policy or interpretive statements clarifying how the Supervisor of Wells would exercise his or her broad, discretionary authority under the regulations. For EPA to consider the Instruction as legally binding requirements, the Attorney General will need to explain the legal link between statute, rule, and Instructions, and confirm that the Instruction establishes legally-binding requirements. EPA identifies where the standing of key technical requirements are in question in further comments, corresponding to where the specific requirement appears in the document.	
7	**II. Operation of Rules**	This instruction is enforceable under Part 615, Michigan Compiled Laws (MCL) 324.61506	As stated in the preceding comment, EPA understands the Instruction to be policy or interpretive statements clarifying how the Supervisor would exercise his or her broad, discretionary authority under the regulations, rather than requirements. To demonstrate that an Instruction is enforceable, Michigan must provide the specific parts of MCL 324.61506 that describe how additional requirements put forth in an Instruction are enforceable. Rule 324.61506 (a) states that the supervisor is specifically empowered "to promulgate and enforce rules, issue orders and instructions necessary to enforce the rules." The statement is unclear on whether the Instruction itself creates additional enforceable legal requirements, as opposed to the Instruction providing clarification of existing requirements. If the Instruction imposes additional enforceable legal requirements not in the existing rules, the application needs to explain the legal basis for this. EPA expects the Attorney General to explain the legal link between statute, rule, and instructions, and confirm that the Instruction establishes legally-binding requirements. This information should be included in the Statement of Legal Authority.	11

pg.	Heading/Topic	Draft Application Language	Comment	#
8	**III. Permitting** **Applicable Regulatory Conditions**		EPA needs to understand how Michigan will hold applicants accountable for the duties and construction and operating requirements in (a) through (h), which appear to be drawn from EPA's Guidance 19's suggestion that state programs identify the applicable permit conditions that require permittees to comply with the duties listed. A discussion of the State's legal authorities and how they operate will help clarify the operation of statutes and rules. In addition, the draft application should describe whether wells will have specific conditions in their injection permits. It is not clear whether the listed regulatory conditions in the III. Permitting Section are review guidelines or would be included in individual permits.	12
8	**III. Permitting**	C. Signatories: Any permit application or form required for a Class II well must be signed by the permittee, or an authorized agent. An individual who signs as an agent must furnish satisfactory evidence of authority to the OOGM as required by Rule 324.201(2)(h).	It is unclear how the referenced regulation applies to the signature placed on the application, insofar as the cited regulation describes the filing of an organization report: "A person shall file an organization report if a current organization report is not on file with the supervisor" (Rule 324.201(2)(h)). In addition, a different rule is cited with regard to signatories on page 17, and is similarly unclear. The draft application should describe how the cited rules support the signatory requirements.	13
8 - 10	**III. Permitting** **Applicable Regulatory Conditions**	c. Duty to Halt or Reduce Activity: The provisions of Part 615 and the rules, orders, and instructions promulgated thereunder provide Michigan with full enforcement authority to bring a person issued a permit under this article into compliance with the conditions of the permit … …A hearing required to extend Suspension of Operations will therefore be scheduled within 21 days pursuant to the rule. Operations cannot resume until	EPA is concerned that the rule cited under III Permitting, c. limits Michigan's compliance and enforcement authority with respect to USDW protection. Rule 324.1014(2) limits orders to suspend operations to a total duration of 21 days. Part 615 under MCL 324.61516(1) limits emergency orders to 21 days. With these time limitations, it is not clear how the draft application can state that "operations cannot resume until completion of the hearing and compliance with resulting order is achieved and mechanical integrity is demonstrated" on page 10. Furthermore, the draft application language appears to link hearings to extending suspensions until compliance is achieved. The link is not clear in the Program Description, and EPA does not find that link expressed in MCL 324.61516(1) or (2), which address emergency orders. In conversations during EPA's review, MDEQ and Attorney General's Office staff described subsequent actions that MDEQ can take to extend suspension orders; however, the approach is not described in the Program Description and	14

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		completion of the hearing and compliance with resulting order is achieved and mechanical integrity is demonstrated.	it is unclear how scheduling a hearing supersedes the 21-days limit to emergency orders or to suspensions. The application needs to contain a full explanation of the State's legal authorities related to suspension orders. EPA remains concerned, however, that the process of extending every suspension order via scheduling hearings places a burden on MDEQ to continually reestablish authority for suspension on a case-by-case basis and possibly constrains the program's effectiveness. EPA has further comments on Rule 324.1014; see Comment #162. Typo: the quote of Rule 324.1014 should be "…and may schedule a hearing under part 12 of <u>these rules</u>" (not "under Part 12 of <u>Part 615</u>").	
10	**III. Permitting** **Applicable Regulatory Conditions**	<u>d. Duty to Mitigate</u>: A permittee shall correct any adverse environmental impact that results from noncompliance with a permit or Part 615. Continued operation of a Class II well is prohibited until the noncompliance is abated or an extension of time for abatement is issued in writing by the OOGM.	Authority to require corrective action is supported by Rule 324.1014(1) in an apparent two-part test: first, the Supervisor determines a violation and second, the violation threatens health and safety. In Comment #119, which addresses this rule, EPA further describes the concern that the two-part test for the exercise of enforcement authority limits Michigan's authority and therefore the program's effectiveness. The second sentence appears to be a permit duty to halt activity, not mitigate. This language is inconsistent with Rule 324.1014(2) which requires a hearing for a suspension to be extended beyond 5 days and limits orders of suspension overall to 21 days. The prohibition described in this sentence does not appear to be supported by statute or rule and therefore would be difficult to sustain. As stated above, Michigan will need to provide clarification by describing how statutes or rules support prohibiting operations until compliance is achieved or modify the statutes or rules to ensure that suspensions by MDEQ are not time-limited.	15

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10	**III. Permitting** **Applicable Regulatory Conditions**	e. Proper Operation and Maintenance: A permittee must maintain proper operation and maintenance of all Class II wells and facilities. The operation and maintenance of all Class II wells must be in accordance with Part 615, Rule 324.801 (4). *324.801 (4) A permittee of a well shall ensure that construction, operation, maintenance, conversion, and plugging and abandonment of the well will not allow the movement* of fluid containing any contaminant into an underground source of drinking water.	The language included under Section C. III Permitting G. Suspension more accurately describes Michigan's expectations: "Supervisor may suspend operations under a permit upon a finding that: (d) the operation of a Class II well results in the migration of fluids outside of the permitted injection zone or into a USDW as a result of injection." The Program Description should include that proper operation and maintenance involves complying with all specific statutes and rules that address operations and maintenance, in addition to the broad program goals described by Rule 324.801(4). In addition, there is no mention of compliance with permit terms and conditions. EPA could better understand Michigan's expectations for permittees if the draft application included more information about Class II permits as envisioned by the Michigan Class II program. A sample permit would also be useful.	16
10	**III. Permitting** **Applicable Regulatory Conditions**	f. Permit Actions: Under the provisions of Part 615, the OOGM may issue, reissue, modify or revoke a permit for a Class II well…	EPA recommends not describing a specific office such as OOGM as implementer because administrative reorganization or renaming would necessitate updating program documents. The Program Description will retain long-term flexibility with more general, but still accurate, designations.	17
10	**III. Permitting** **Applicable Regulatory Conditions**	h. Inspection and Entry: ii. require a permittee to produce all records related to the permitting, drilling, and operating of a well for oil and gas purposes.	In order for EPA to fully review the application, Michigan needs to clarify which part of NREPA obligates permittees to produce records and whether the requirement extends to injection wells. It is not clear whether "operating a well for oil and gas purposes" legally includes injection for disposal or secondary recovery. Other statements and rules describe "oil and gas operations," which includes "operation of oil and gas wells" which in turn includes "brine disposal" "injecting" and "secondary recovery." Modifications to statutes or rules will be necessary if the requirement does not extend to injection well permittees.	18
10-11	**III. Permitting** **Applicable Regulatory Conditions**	Unless certain exceptions apply, permittees of all Class II wells are required to conduct monitoring and reporting pursuant to Rule 324.806(1). Failure to submit an annual report by	Rule 324.806 requires records to be retained by the permittee for 3 years. We suggest requiring permittees to retain records for five years to allow them to inform the results of the periodic MIT, which is requires every 5 years. For example, if a well fails mechanical integrity testing, the records of injection rate, pressure and volume for the same period would be on hand for analysis. It	19

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		March 1 of the following year will require immediate suspension of use pursuant to Rule 324.806(2). Records shall be retained according to Rule 324.806(3).	would be beneficial to the protection of USDWs to have the previous MIT records on hand for comparison. If other record retention schedules apply, such as State retention schedules for permittee reports, please include them, and citing supporting regulation or guidance, in the draft application.	
12	**III. Permitting** **H. Modification**	Modifications resulting in a substantial alteration of a permit issued by the Supervisor may result in the initiation of a new public notice process as described in Phase II - Public Notification and Permit Decision section of this Program Description. A substantial alteration is one that results in the modification of one or more specific permit conditions that necessitate a more complex technical review of the permit such as a stratigraphic change in injection zone or change of well location.	The descriptions of permit modification in the Program Description and the Instruction do not appear to be supported by rules. EPA reviewed Rule 324.206 Modification Of Permits; Deepening Permits; Change Of Ownership, but did not find the requirements (new public notice) or definition (substantial alteration) described here (and in the Instruction). The draft application should clarify the basis for the requirement, referencing applicable regulatory requirements and guidance as appropriate. Furthermore, EPA recommends that requirements for applicants regarding substantial changes to an application should be codified. Michigan may need to modify rules to reflect the requirements described here. It is unclear what the State means by stratigraphic change. This could lead to the operator/consultant supplying the State with insufficient information on changes to the well design. The draft application should clarify the criteria it expects applicants to follow, referencing applicable regulatory requirements and guidance as appropriate. The language describing permit modification indicates that holding a hearing in response to substantial alterations to a Class II permit will not be implemented in a consistent fashion (i.e. "it *may* result in the initiation of a new public notice process"). It would be beneficial to the public and the regulated community to know what modifications will trigger a new notification process. (For example, under the federal program, public notice and the opportunity to request a hearing is required for modifications other than those which qualify as a minor modification under 40 C.F.R. § 144.41.)	20
13	**III. Permitting** **L. Area Permits**	All Class II wells under U.S. EPA Area Permits and the Rule-Authorized classification are currently authorized	The draft application has not demonstrated that existing 615 permits will be consistent with the State's Class II program requirements as they are described in this draft application. Michigan should provide an example 615 permit or an	21

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	or Project Permits and Rule-Authorized Permits	as single well permits because these wells have valid permits under Part 615. Additional area or project permits and rule-authorized permits will not be issued or considered under this program. Application for a Class II well must be made on an individual well basis.	existing 615 permit for review as part of the draft application to allow EPA to understand Michigan's enforceable permit conditions. In particular, it is not clear that Michigan 615 permits will contain injection-related operating conditions or reporting requirements, which appear to be part of Michigan's proposed Class II injection well program.	
	III. Permitting **M. Compliance Schedules**	Under Guidance 19, a schedule for review of all existing Class II wells is required, however, Michigan has a mature regulatory program for injection wells and each Class II well already has a valid Part 615 permit, is on a monitoring, reporting, and Mechanical Integrity Test (MIT) schedule, and therefore this review is not applicable. Further, U.S. EPA has already evaluated existing wells and either authorized by rule, required upgrades, or given them a Class II permit. As there is a valid Part 615 permit for each Class II well regulated by U.S. EPA, no further compliance schedule or review work is required at the time Michigan assumes primacy of the Class II program.	Guidance 19 provides that state applications should "contain a plan (including the basis for assigning priorities) for the review of all existing Class II wells in the State within five years of program approval to assure that they meet current non-endangerment requirements of the State…" This step was meant to allow states to evaluate existing oil and gas-related injection wells for permits under the then-new Class II program. Guidance 19 was aimed at bringing all applicable wells into the then-new Class II program within 5-years of the program's start. Therefore, Michigan's view of its program maturity or statement that wells are covered by Part 615 permits are not related to this Guidance 19 element. EPA recommends removing this section or retaining only statements that (1) EPA has already review existing Class II wells in Michigan and brought them under SDWA regulation and (2) other sections in this application address file reviews of existing Class II wells every five years and to assure that new Class II wells meet permit operation, monitoring, and reporting requirements under the State program once the State program receives federal authorization. Insofar as Guidance 19 (Section 3.3, a.4)) identifies compliance schedules under the permit process, Michigan can address permittee compliance schedules under that process.	22
13	**III. Permitting** **N. Process**	<u>PHASE I Permit Application Review</u> This phase completed by the OOGM begins at the time that the OOGM receives a permit application. Timeframes are targets, Michigan	The <u>N. Process, Phase I</u> section of the draft application is difficult to follow for several reasons: - The process describes technical requirements for permit applicants in terms of the State's review, therefore legal requirements are not at times distinguishable from policy or process decisions about reviewing application.	23

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		regulations do not have a provision for automatic permit issuance if target review periods are exceeded.	- The review standards applied by the State are not always clear; that is, in some instances the review described appears to be a completeness check for whether an element is present rather than an analysis of the information; for example, in the description of well review in the AoR, on page 18 of the draft application. - Some terms and requirements appear to be inconsistent across the draft application. - Construction requirements for converting wells and newly constructed wells are described under separate steps, the former under Step 1 Permit Application review (page 17), and the latter under Step 2 – District Field Staff Review (page 21). The unclear organization and intent of the section and the inconsistencies introduce ambiguity about which program aspects are requirements and enforceable, and which parts are directed at MDEQ procedures for implementing its program. EPA is looking for a clear and consistent description of both the State's technical standards and the implementation process. EPA recommends that MDEQ reorganize information in the permitting section to clearly identify where the application is describing requirements and where it is describing MDEQ processes or policies about the requirements.	
14	**III. Permitting** **N. Process**	PHASE II Public Notification and Permit Decision A. Step 1 Publication of Notice B. Step 2 Public Hearing C. Step 3 Permit Decision (Issue, Modify, Deny)	Formatting: headings A -C are not found under Phase II on pages 22-24; instead there are two lists labelled A through G.	24
15	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I A. Step 1. (1-18)	Some of the items requested under Step 1 require well construction first. For example, the applicant for a proposed Class II well cannot submit site-specific subsurface information prior to drilling and completion. Estimates for this data can be used in the initial evaluation, but in order to protect USDWs there should be a process to get the needed information upon well construction.	25

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15	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I A. Step 1 a – b	The draft application should clarify the following elements: whether the conformance bond covers plugging and abandonment only or includes other remediation needs related to the well; whether there is a limit to the number of wells that can be covered by a blanket conformance bond. The draft application should describe why the depth-based approach is effective for plugging wells in Michigan.	26
15	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I A. Step 1. 2.	It would be helpful for the Program Description to describe the standards for adequacy of financial statements or refer to relevant statutes or rules.	27
15	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I A. Step 1. 3. A plat that shows the location and total depth of the proposed injection well, shows each abandoned, producing, or drilling well and dry hole within one-quarter mile of the proposed injection well location, and which identifies the surface owner of record on the proposed injection well site is to be located and each operator of a well within one-quarter mile of the proposed injection well. The plat also will show fresh water wells pursuant to Rule 324.201(G)(H).	EPA has several concerns about the draft application's approach to evaluating conduits for contamination around a proposed injection well. First, the draft application does not define an AoR, instead, it presents a program with a series of AoRs defined by the types of potential conduits surrounding a proposed injection well. EPA is concerned that this approach is less effective because some of the distances in the draft application are less than 1,350 feet. EPA considers ¼ mile (1,320 feet) to be the baseline minimum effective AoR, unless some other area is indicated based on computation of the zone of endangering influence. EPA has further comments on these distances in comments on Rule 324.201, under Comment #143 of this table. Second, requirements for AoR-related information are inconsistent across the draft application. For example, the Program Description does not state that an application should include any of the application requirements in Rule 324.201(A) – (F); these are application requirements for plat information on features such as floodplains, endangered species, coastal zone management areas, etc. The Instruction, however, states they are required (See page 50 of the draft application). In another example, the Instruction indicates that the application should include "available geologic information in proximity to the proposed well for faults, structures, or other known features that may allow	28

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			vertical migration of fluids or cause induced seismicity as a result of the proposed injection," though it is unclear whether this is an actual permit application requirement. The requirement for such information is not found elsewhere in the draft application, including in statute or rule. EPA has further comments about this part of the Instruction under Comment #118 of this table. EPA recommends that the draft application be made consistent with regard to AoR information requirements and minimum distances, and that relevant rules be modified to include all application requirements the State expects. Third, the draft application does not include applicant information or mention MDEQ review of subsurface features within an AoR that could allow fluid movement such as karst formations and mines. These should be included in the list of information within an AoR that either applicants provide or MDEQ reviews. EPA also recommends modifying pertinent rules or guidances as applicable, to reflect its proposed program requirements. EPA also recommends defining the AoR in rules. EPA suggests MDEQ use and inform the applicant to use either (1) a computation of the zone of endangering influence, using a Theis equation as illustrated in 40 CFR 146.6(a)(2); or (2) a fixed radius around the well of not less than quarter mile well or well field if an area permit is to be implemented (as in 40 CFR 146 (b). For high volume disposal wells, MDEQ should consider if they would like to have the option to use an AoR that extends beyond the ¼ mile minimum. All wells of public record penetrating the injection interval within the AoR should be identified. Incorrect reference: "Rule 324.201(G)(H)" is likely meant to be Rule 324.201(b)(iv)(G) and (H). EPA has further comments on Rules 324.201(b)(iv)(G) and (H) on under Comments #146 and #147 of the table corresponding with the draft application's Section E, Applicable Statutes and Rules.	
15	**III. Permitting** **N. Process**	Phase I. A. Step 1. 4. If a well is proposed to be converted to an injection well, a copy of the	The sentence's meaning is unclear.	29

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	Phase I. Permit Application Review	completion report, together with the written geologic description log or record filed pursuant to Rule 324.418(a) and borehole and stratum evaluation logs filed pursuant to Rule 324.419(1).		
15	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I. A. Step 1. 5. Plugging records of all abandoned wells and casing, sealing, and completion records of all other wells within 1,320 feet of the proposed injection well location. If the wells are plugged or constructed in a manner that they could serve as a potential conduit for fluid migration as a result of the proposed injection, an applicant shall also submit a corrective action plan reflecting the steps or modifications believed necessary to prevent proposed injected fluids from migrating via inadequately plugged, sealed, or completed wells into a USDW.	The specification to include plugging records for wells within 1,320 feet of the proposed well, as described in this section, doesn't appear in the application regulations under Rule 324.201(2). If the State means to require this information of applicants, the regulation will need modification; otherwise the draft application should describe how this information will be obtained, either from the applicant by State policy or guidance or by the State, by searching its own information.	30
16	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I. A. Step 1. 6. A schematic diagram of the proposed injection well that shows all of the following information:	Schematic information that is required to be submitted' (per page 14) for the application is inconsistent across the draft application. Specifically, while the lists in the Program Description (pages 16 and 20) are the same, the Instruction list (page 50) includes an additional measurement – depth of the confining zone – that is not mentioned in the Program Description.	31
16	**III. Permitting** **N. Process** Phase I. Permit Application	6.d. The geological name thickness of the confining zone.	The Program Description requirement for confining zone information is not supported by rule; Rule 324.201(2)(k)(iv), which describes permit application requirements (page 79) does not require information on the confining zone. EPA recommends that the draft application be made consistent and that relevant rules be modified to include all application requirements.	32

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	Review		Typo: "… geological name ***and*** thickness of the confining zone."	
16	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I. A. Step 1. 7. Information confirming that injection of liquids into the proposed injection zone will not exceed the fracture pressure gradient pursuant to Rule 324.804.	For clarification purposes, it would be helpful if item 1.7 specified whether the fracture pressure gradient is for the injection zone or the confining zone, since fracture gradients for both zones are referenced elsewhere in the draft application (page 18). EPA has further comments on Rule 324.804 in Comment #168 of this table. Briefly, EPA is concerned that the rule does not satisfactorily address injection into all Class II well types. The operating conditions described here are unclear and inconsistent with information elsewhere in the draft application. Specifically, Step 1.7 seems to establish the fracture gradient as an operating condition that should not be exceeded; however, Rule 324.804 indicates that a calculated surface pressure (Pm) must not be exceeded, rather than fracture gradient. It is unclear how and whether fracture pressure gradient will be an enforceable operating condition. In addition, Rule 324.804 gives only a default value of 0.8 for the fracture pressure gradient, while other language in the Program Description states that the EPA fracture gradients for field values may be used. It is not clear that the EPA field values are allowable under Rule 324.804, which specifies that only a value of 0.80 psi/ft could be used if the actual fracture gradient is unknown. The restriction on exceeding the fracture pressure gradient appears to be inconsistent with other aspects of the application regarding "high-volume hydraulic fracturing" (see pages 139 - 141). Furthermore, Michigan's Class II program must include wells that hydraulically fracture using diesel (or demonstrate that such activity is banned as a matter of State law or rule); such wells would necessarily exceed injection zone fracture pressure. The Program Description should clarify this apparent inconsistency.	33
16	**III. Permitting** **N. Process** Phase I. Permit Application	Existing U.S. EPA values for injection pressures of individual adjacent fields or wells may be deemed acceptable and satisfactory pressure gradient standards	EPA field values ("aka "EPA field rules") are for fracture pressure *gradients*, not injection pressures, the latter of which depend on additional factors. Values were established for fields, not wells.	34

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16	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I. A. Step 1. 8. If any potential exists for migration of fluids out of the injection zone, a corrective action plan of the steps or modifications (e.g. remedial plugging, etc.) needed to prevent migration of injection fluids outside of the permitted injection zone, or into USDWs through any wells must be provided by the applicant and reviewed by the OOGM. The plan should take the following into account	This Program Description language is inconsistent and potentially in conflict with Rules 324.201 and 324.801, which consider the migration of fluids *containing any contaminant* (as opposed to *injection fluids* as stated here) into USDWs. (See Comments #58 and #166 for further discussion in inconsistent terms regarding fluids.)	35
17	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I. A. Step 1. 9. Information such as well records as presented in Rule 324.416 or a demonstration indicating there is sufficient cementation behind the casing per Rule R324.411 or the results of geophysical logging as provided in Rule R324.419 that shows there is no fluid migration outside of the permitted injection zone or into a USDW as a result of injection. This is one part of the two part demonstration of mechanical integrity in addition to the Standard Annulus Pressure Test (SAPT) required after construction or conversion and prior to authorization to inject.	Understanding the draft application's program for mechanical integrity is crucial to EPA's review; however, the draft application does not define clearly mechanical integrity and describes its components out of context with one another across several pages. This step references the first part of the demonstration, while the second part is mentioned in a separate context on pages 25 and 26 of the application. Because of the importance of mechanical integrity to Class II regulation, the draft application should clearly identify Michigan's definition of mechanical integrity and its program's approach to evaluating and assuring mechanical integrity, referencing applicable regulatory requirements and guidance as appropriate. EPA recommends adding a section about the State definition of mechanical integrity and standards for mechanical integrity that explains its component parts in context with one another. (See similar comments under Comment #71, #76, and #79).	36
17	**III. Permitting** **N. Process** Phase I. Permit	Phase I. A. Step 1. 10. With respect to existing Class II wells, a successful demonstration of Mechanical Integrity per Part 615 Rule 324.803 will be	On page 6. "Existing Class II well" is defined as "a Class II well that has been approved, constructed, or converted prior to the MDEQ OOGM assumption of primacy of the UIC Class II program, and that has a Part 615 permit." Step 1.10 implies that MDEQ will re-evaluate MIT for existing Class II wells" upon	37

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	Application Review	sufficient to prove adequate well construction.	assuming the program. If this is intended, it should be clearly described as part of the transfer process; EPA and MDEQ can revisit whether this is practicable when revisiting the MOA.	
17	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I. A. Step 1. 10. (continued) Existing Part 615 wells that are converted to Class II wells after the date of this Instruction are deemed to meet Program Requirements if: i. The well met the construction requirements specified by the OOGM at the time of the well's construction as evidenced by a Part 615 permit; and **ii.** The injection casing has a minimum of 250 feet of cement above the injection zone; and **iii.** injection into the well will not result in the migration of fluids outside of the permitted injection zone or into a USDW; and **iv.** the well successfully demonstrates mechanical integrity pursuant to Rule 324.803	EPA is concerned that this approach, which presumably applies to wells undergoing conversion from production to injection, is not protective of USDWs. First, the overall approach described here (particularly the language "deemed to meet") can be interpreted to mean that wells that do not meet the Michigan standards in effect at the time of permitting could be considered allowable by a permit-by-rule" approach. The opportunity for "permit-by-rule" was part of the initial start-up of the UIC program in the early 1980s, and is no longer available to new injection wells (whether converted wells or new construction wells). EPA expects an effective Class II program enacted now to have all new Class II wells under permits that meet the approved State program's injection well standards. Wells converting to injection should be held to the same standard as new-construction injection wells. Michigan needs to provide an approach that ensures wells that convert from production will meet approved injection well standards regardless of whether they were approved for production under past production well standards. Second, the draft application has not demonstrated that the criteria under (i) is sufficiently protective. Part 615 construction requirements have been based on "fresh water" not USDW depths. Therefore, permitting injection for wells meeting requirements at the time of the well's construction may allow wells to operate with standards that are not protective of all USDWs. Third, EPA notes several problems with criteria (ii) because it introduces a technical term, "injection casing," not found elsewhere in the draft application. It also describes a key technical provision, requiring the injection casing to have a minimum of 250 feet of cement above the injection zone that is not clearly required by rule. Minimum cementing requirements for injection wells, whether converting from production or new construction, are not in Michigan	38

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			rules. EPA expects technical provisions – i.e. those necessary to prevent endangerment to USDWs -- described in the Program Description and Instruction to be legally binding requirements. EPA remains concerned that unless the key technical provisions are codified in regulation as legally binding requirements, they will not be federally enforceable, could change over time without a formal rulemaking process, and may be subject to challenge. In addition, the Program Description does not describe how adequate cementing (external mechanical integrity) is demonstrated for existing wells, although the Instruction does (under Drilling and Completion and Conversion, p.54). The draft application should be consistent in its description of requirements and processes. In order to ensure adequate cementing and protection of USDWs, it would be helpful to specify that cement logs and/or cementing records for existing wells should be submitted for proposed conversion wells and then list exceptions for where such records do not exist. (EPA has further comments about rules pertaining to injection zone cementing and external mechanical integrity overall under Section E, Applicable Statutes and Rules, in Comments #156 and #157.) Fourth, the approach does not appear to allow the State to request corrective action for the proposed conversion well. Corrective action is a key protection in repurposing former production wells as injection wells. (In EPA's experience with Class II wells in Michigan, some oil and gas production wells do not meet federal Class II requirements, and EPA has required corrective action in these cases before permitting injection). It would be worthwhile to state corrective action could be a component in permitting well conversions. Finally, limiting technical examination to (i) (ii) and (iv) may forgo examination of other well construction details that could affect a converting well's safety for injection, such as the cementing of the surface casing in older production wells. EPA notes that item iii is nonspecific and may allow the State flexibility to offer variances from standards for conversion wells, though as a criterion, it is not clear how the State would determine whether a well meets this standard separate from the other standards in the list. While EPA prefers	

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			that converting wells meet injection well standards, either by original construction or through corrective action, there are instances where converted wells can be permitted to inject on the basis of other tests or with other permit conditions. Resolving concerns with this section will depend on several comments already made in this table: by protecting USDWs in State rules, rather than fresh water' only; by introducing corrective action as a plausible way for converting wells to meet State standards; by describing how the general criteria (iii) may be used to determine that a well meets requirements; and by demonstrating key technical terms and provisions are grounded in rules. As identified elsewhere, modifications to specific rules are likely to be necessary.	
17	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I. A. Step 1. 11. Signature on the permit application, by the permittee or authorized agent, under Rule 324.201(4); and	The referenced Rule 324.201 (4) states that the supervisor shall not issue a permit to a person or an authorized representative of a person if the person is not eligible for a permit. Michigan should describe who is eligible for a permit and signatory requirements for permit applications and reports.	39
17-18	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I. A. Step 1. 13. Proposed operating data, excluding injection wells utilized for gas storage, including all of the following data: iii. a qualitative and quantitative analysis of a representative sample of fluids to injected, pursuant to Rule 324.201(2)(K)(5)(C).	Reference: The reference to Rule 324.201(2)(K)(5)(C) is likely meant to be Rule 324.201(2)*(k)(vi)*(C). The fluid analysis list in Rule 324.201(2)(k)(vi)(C) does not include specific gravity which would be needed if the MDEQ/applicant chooses not to use the default value of specific gravity in Rule 324.804.	40
18	**III. Permitting** **N. Process** Phase I. Permit Application Review	v. The name and depth to top and bottom of the confining formations(s).	It is unclear what MDEQ means by confining formation, because the term is not defined in the draft application, nor in statutes or rules. The draft application should clarify the term, and consider defining it in statute or rule.	41

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18	**III. Permitting** **N. Process** Phase I. Permit Application Review	vi. Anticipated fracture pressures of the injection and the confining formations. This should include calculations and/or other substantiating data; Acceptable information includes Initial Shut-in Pressure (ISIP), Step Rate Tests, or other methods approved by the Supervisor. Existing U.S. EPA field values for injection pressures for individual fields or wells are deemed acceptable and satisfactory pressure gradient standards and are automatically approved.	The draft application needs to be clearer about which geologic zone will be the basis for the calculation of fracture pressure. Many areas of the draft application do not identify whether the fracture gradient/fracture pressure is to be calculated for the confining or injection zone. Furthermore, the discussion of fracture pressure is inconsistent across the draft application. On page 18 and 20, the Program Description indicates that an applicant is required to submit the fracture pressure of the injection *and* confining zone. However, in talking about EPA field values (page 16) and using 0.80 psi/ft in Rule 324.804, the draft application overall implies that fracture pressure for only the injection zone is relevant because these EPA-determined values are based on injection zones in Michigan. (EPA established 0.80 psi/ft to be the conservative default fracture gradient for most Michigan injection zones, and EPA field rules published in the Federal Register were determined for injection zones in specific oil fields in Michigan.) Additionally, the reference to field values is incorrect. Existing EPA field values are for fracture pressure gradients, not injection pressures, the latter of which depends on additional factors. Values were established for fields, not wells. The use of ISIPs and SRTs require the well to be constructed prior to conducting these tests. Information from an ISIP or SRT is being asked for in the information submitted to the agency prior to well construction. It is unclear how the operator will be able to get the State the required information prior to well construction. If the State is suggesting the use of information for an ISIP or SRT from an existing well it would be helpful to clearly state that information from an existing well is an acceptable means of evaluating anticipated fracture pressures.	42
18-19	**III. Permitting** **N. Process** Phase I. Permit	Phase I. A. Step 1. 15. A general review of the surveyed well location must include:	This section describes MDEQ's review of the applicant's information, but in a more generalized way than the earlier steps, which also describe MDEQ's review of similar information (plat information under Phase I A. Step 1. 3. A, on page 15, for example). The repetition of elements from earlier sections, and	43

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	Application Review	i. A spot of the well location with distances to nearest section lines. b. The outlined quarter-mile Area of Review. c. The surface and bottom-hole location of all oil, gas, disposal, and injection wells within the quarter-mile Area of Review.	questions about whether those earlier sections describe applicant requirements or MDEQ's review process, carry over into this section. For example, if this section describes MDEQ's review process of a submitted plat from the application, it seems that it should also include all the other items that are described in other sections that describe MDEQ's review – such as all the items on the submitted plat, in particular the wells within the AoR. EPA recommends that MDEQ reorganize information in the permitting section to clearly identify where the application is describing requirements and where it is describing MDEQ processes or policies about the requirements. This section raises the question of whether Michigan has authority to require an applicant to make changes to wells in the AoR if they are potential conduits for fluid to reach a USDW. Corrective action on wells in the AoR is a key component to prevent fluid from leaving the injection zone and entering a USDW. This section describes the required plat without this detail and without discussion of its review, that is, without describing what MDEQ reviewers are looking for to either mark the application as adequate or prompt MDEQ to require further information or corrective action. It is unclear whether this step is a completeness review or a review to determine if wells within the AoR meet some standards, such as construction standards. Reorganizing the draft application and clearly describing requirements versus MDEQ review processes, referencing applicable regulatory requirements and guidance as appropriate, may resolve this concern,. Typo note: Step 1.15.i.a is missing, or the list of b though d is mislabeled.	
19	**III. Permitting** **N. Process** Phase I. Permit Application Review	d. The fresh water wells pursuant to Rule 324.201(G)(H).	Reference: should item d. refer to Rule 324.201(b)(iv)(G) and (H)?	44
19	**III. Permitting**	Phase I. A. Step 1. 18. A check of the applicants' status to determine if the	Page 8 of the application, under III. Permitting, describes Section 61505 of Part 615 as giving authority to the Supervisor of Wells for enforcement actions,	45

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	N. Process Phase I. Permit Application Review	application should be denied further processing as the result of enforcement action by the OOGM due to "holds permit status." The technical review will not be initiated if an applicant is otherwise ineligible to receive a permit.	whereas this section assigns authority directly to OOGM. It is not clear whether this statement refers to a different law or rule, or whether the active agent of enforcement is misidentified. EPA is looking for consistent legal identifications of authority throughout the Program Description. Including or referencing delegation documents, in the Program Description or in the Statement of Legal Authority will help distinguish the appropriate delegated level.	
19	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I. B. Step 2 – District Field-Staff Review. Upon completion of Step 1, the application materials are forwarded to the UIC Coordinator and district area geologist for review. Generally, an application that is submitted in an acceptable form and satisfies all program requirements should be processed through the field-staff review within 30 working days of submittal. During this review, information contained on the application is further verified from existing information on file with the OOGM or other offices, both inside and outside of the MDEQ. An examination of the following required information is performed in Step 2.	The numbering system used under Step 2 (a - j) is inconsistent with numbering under Step 1 (1 - 18) Step 2 is described as an internal review step, however, in its reference to "the following required information," the document implies that it is again describing the information applicants are required to submit. Therefore, it is sometimes unclear whether Step 2 refers to applicant requirements or MDEQ requirements for staff reviewers, or even to MDEQ staff-generated information. Further complicating the Step, EPA notes that technical requirements for newly constructed Class II wells are embedded in Step 2. MDEQ should change the language under Step 2 to be clear and consistent and to make a distinction between technical standards, what the applicant is required to submit, and the State's review process. In addition, EPA recommends combining the discussion of well construction requirements for converting and newly constructed Class II wells for better clarity and reference to rules. Similar lists of schematic information requirements are found on pages 16, 20, 50, 79. Information required for the application schematic is inconsistent with requirements elsewhere in the draft application. EPA notes also that this section indicates that confining zone information is required, although that is not included in the supporting rule. Specifically, the lists in the Program Description (pages 16 and 20) are the same. The Instruction list (page 50) requires an additional measurement (depth) of the confining zone. The regulation (Rule 324.201, page 79) does not require information on the confining zone at all. EPA recommends that the information be made consistent across all sections where it is mentioned.	46

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19-20	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I. B. Step 2. a: For newly constructed wells…	EPA notes that language and citations in Phase I. B. Step 2. A. are inconsistent with a later description of technical requirements on page 26 of the draft application. In particular, the description here does not cite Rule 324.408, whereas the description on page 26 does. (Both sections, however, reference Rules 324.801 and 324.803). Inconsistent description of requirements and legal basis make the draft application difficult to review and raise questions about the authorities supporting program elements. The draft application should be consistent in its descriptions and citations.	47
20	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I. B. Step 2. a: The following casing for newly constructed Class II wells is required: i. Surface casing, run and set a minimum of 100 feet below the base of the glacial drift into competent bedrock and 100 feet below all freshwater strata. This casing string must be set with a cement volume sufficient to circulate to the top of the hole;	Phase I. B. Step 2. a. i. describes surface casing to be run 100 feet below "freshwater strata." As stated throughout these comments, EPA considers Michigan's definition of fresh water to be less inclusive than the federal definition of a USDW. Therefore, EPA is concerned that the construction standard is not completely protective of sources defined as USDWs. It is also inconsistent with the referenced Rule 324.801(4), which prohibits the movement of fluids containing contaminants into USDWs, not simply into "fresh water" sources. EPA considers the use of surface casing that isolate the lowest USDW to be a key component for protecting USDWs. The requirements for surface casing are uncertain in the draft application and Michigan rules. Although this section states that surface casing is required for Class II wells, later descriptions of plugging (on page 28 of the draft application) imply that there may be injection wells without surface casing. Furthermore, the rules do not establish definitively that all Class II wells would be expected to have surface casings. Rule 324.408 (page 93 of the draft application) contains standards for surface casings but does not confirm that they are required for Class II injection and Rule 324 Part 8 Injection Wells includes no rules or statements about surface casing with regard to injection wells. EPA remains concerned that unless the key technical provisions are codified in regulation as legally binding requirements, they will not be federally enforceable, could change over time without a formal rulemaking process, and may be subject to challenge. Therefore, Michigan will need to clarify its requirements for surface casings in the program description, particularly in rules pertaining to Class II wells.	48

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20	**III. Permitting** **N. Process** Phase I. Permit Application Review	ii. Long string casing as required to confine injection fluids to strata approved by the Supervisor, Rules 324.801(3) & 324.801(4); and	Under Phase I. B. Step 2. a. ii, it is unclear how the discretionary language "long string casing as required" will be applied. either Rules 324.801 (3) nor 324.801 (4) include requirements for long string casing. The draft application should clarify requirements for long string casings in Class II wells, referencing applicable regulatory requirements and guidance as appropriate. EPA notes that the discussion of converting wells on page 17 uses the terms "injection zone" and "injection casing", which are not used here in describing newly constructed wells. It is unclear why different terms are used. The draft application should be clear and consistent in its terms throughout. EPA recommends defining the earlier-used terms "injection zone" and "injection casing" in relevant rules and using them uniformly throughout the application, whether for converting or newly constructed wells. EPA notes that long string cementing requirements for newly constructed wells are not evident in the program application. Without a clear picture of Michigan casing and cementing requirements for injection wells, it is difficult to determine what the State considers an adequate fulfillment of this part of mechanical integrity, or how the State will determine whether operators are in compliance. The draft application should explain whether the proposed program has long string casing cementing standards for newly constructed wells, referencing applicable regulatory requirements and guidance as appropriate. EPA expects key technical requirements that protect USDWs, such as cementing requirements, to be expressed in rule so that they are enforceable by the State and by EPA under incorporation by reference. EPA remains concerned that unless the key technical provisions are codified in regulation as legally binding requirements, they will not be federally enforceable, could change over time without a formal rulemaking process, and may be subject to challenge. Therefore, Michigan will need to clarify and modify its requirements for long string casings in the program description, and particularly in rules pertaining to Class II wells.	49
20	**III. Permitting**	Phase I. B. Step 2. b. A field-staff review of the schematic diagram of	The items listed here may be more appropriately listed under Phase I. A. Step 1. It appears the list details requirements for the applicant to meet with the	50

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	N. Process Phase I. Permit Application Review	the proposed well that must accompany the application and illustrate the following…	schematic submitted by the applicant.	
20-21	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I. B. Step 2. d and e	The lettered list under Phase I, Step 2 needs to be re-ordered because the d' and e' step designation is repeated twice, with different text.	51
20	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I. B. Step 2.e if the brine is obtained from a facility, the name, facility number, permittee, and location of the surface facility. The proposed maximum injection pressures (in pounds per square inch at the well head) and maximum expected injection/disposal rates (in barrels per day or thousand cubic feet per day) Injection pressure shall be limited according to the calculation contained in Rule 324.804 or based on other verifiable existing data for the location.	The step indicates that the Michigan intends to limit injection pressure to a maximum pressure determined by the cited calculation, presumably in a permit. EPA recommends the draft application clarify further whether permits will include injection pressure limits as an enforceable condition and describe this permit condition separately, rather than combining it with brine source administrative data standards.	52
21	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I. B. Step 2. d Review anticipated maximum injection pressures and information confirming that injection of fluids into the proposed zone will not exceed the fracture pressure gradient and information showing that the injection will not initiate fractures through the overlying strata	This statement introduces the term "*anticipated* maximum injection pressure." In EPA's experience with Michigan Class II applicants, the term usually indicates a value that the permittee self-determines, sometimes based on equipment limits, and is often different than the value calculated by the regulator using a regulatory formula for *allowable* maximum pressure injection pressure. EPA recommends revising the language in combination with that in Step 2. e. on page 20 to explain how the State will evaluate the permit application and how it will set the maximum injection pressure limit, referencing applicable State regulatory requirements and guidance as	53

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			appropriate. Such description should also confirm whether the State-set limit is the enforceable permit limit. For EPA to determine effectiveness, the draft application needs to clearly identify enforceable requirements, not only program goals, such as the prevention of fractures in an injection or confining zone. A clear description of the State's rules about and approaches to calculating and setting injection pressure limits is crucial to EPA's evaluation of effectiveness. The draft application needs to clearly identify which geologic zone will be the basis for the calculation of fracture pressure. It is not clear whether the fracture pressure gradient described in this step is intended to be based on the injection zone or the confining zone, since the discussion does not specify which one and the Program Description on pages 18 and 20 asks the applicant to supply both.	
21	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I. B. Step 2. e. A determination that injection/disposal will be through tubing and a packer, set inside casing within a specified distance above the top of the open hole or the uppermost injection/disposal perforations as determined by the Supervisor;	This language implies indirectly that long string casing is required, whereas the Program Description (Phase I Step 1) identifies only "casing or casings" generally (page 16) or presumes an injection zone casing for existing Part 615 wells (page 17). The Program Description should include a consistent description of whether such casing is required, referencing applicable regulations as appropriate.	54
21	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I. B. Step 2. f. An inspection of the proposed well site	It is unclear who is responsible for the inspection. Since B. Step 2. is framed as a list of required information for MDEQ to review, it seems like this might be an expectation for the applicant or some other entity to provide an inspection for MDEQ to review. If this step is meant to be an MDEQ staff action, rather than required information, the draft application needs to clarify these steps.	55
21	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I. B. Step 2. g. Verification of USDW Protection: All information submitted by an applicant is verified by the OOGM to insure that identifiable USDWs have, in fact, been identified. The proper identification of USDWs involves	This language reflects the inconsistency and potential confusion caused by interchanging the terms "USDW" and "fresh water" in the Program Description (and in the regulations). Although the Program Description here refers to verification that all USDWs are identified, various regulatory provisions refer only to protection of a more limited subset of USDWs that would meet the definition of "fresh water" (e.g. surface casing requirements at Rule 324.408(1)). Thus, the Program Description appears to be an inaccurate	56

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		obtaining information from various sources including, but not limited to…	characterization of the regulatory requirements.	
21	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I, B. Step 2. h. The location and depth of all wells, whether active or abandoned (oil, gas, brine, mineral, disposal or secondary recovery) within 1,320 feet of the proposed well, and fresh water wells pursuant to Rule 324.201(G)(H).	The review specified in this language does not include all potential conduits to the USDW within the AoR, such as subsurface features as karst formations and mines or other deep wells such as PWS wells. The Program Description should clarify whether the review must or should also consider other wells or conduits for fluid migration, referencing applicable State regulatory requirements or guidance. The reference should be Rule 324.201(2)(b)(iv)(G) and (H).	57
21	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase I Step 2. i. The plan of the steps or modifications needed to prevent fluid migration out of the permitted injection zone or into a USDW resulting from injection.	The language in Step 2.i. is inconsistent with Rule 324.801 (4) where the migration of *fluid containing any contaminants* is singled out rather than fluid migration in general (see Comment #154 of this table). Also, Phase 1, Step 1.8 on page 16 of application refers to *injection* fluids (See Comment #35). The draft application should use consistent language when describing the fluids of interest, since the terms contaminated fluid' injection fluid' and fluid' have different meanings, and the differences speak to the scope of the proposed program (that is, whether it is concerned with preventing injection from causing any fluid from entering the USDW or causing any contaminated fluid or injected fluid). The draft application should clarify if the plan in Step 2. i. is meant to be prepared by MDEQ staff or by the applicant. Because of other issues with this Step (described in Comment #62) it is difficult to discern whether the activity is meant to be an applicant requirement or an MDEQ staff responsibility.	58
	III. Permitting **N. Process** Phase I. Permit Application Review	Phase I Step 2. j. Review available geologic information in proximity to the proposed well for faults, structures, or other known features that may allow vertical migration of fluids or result in induced seismicity.	Given recent issues surrounding seismic events, MDEQ may want to consider strengthening its requirements for and review of geologic information related to faults, structures, or known seismicity. EPA recommends consulting the final work product by the National UIC Technical Workgroup entitled "Minimizing and Managing Potential impacts if Injection-Induced Seismicity from Class II Disposal Wells: Practical Approaches" available at https://www.epa.gov/sites/production/files/2015-08/documents/induced-seismicity-201502.pdf	59
22	**III. Permitting**	C. Step 3 - Final Review	To determine the effectiveness of the draft application's proposed program,	60

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	N. Process Phase I. Permit Application Review		EPA needs to understand how Michigan will make decisions about well applications. To this end, the Program Description should clarify how the State will record its findings on a permit application and whether MDEQ's findings are part of the public notice process.	
22	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase II. Public Notification	Formatting: Page 14 organizes Phase II into headings A through C, which are not found under Phase II on pages 22-24; instead there are two lists labeled A through G.	61
22	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase II: Pursuant to Supervisor's Instruction 02-2015, an applicant for a permit shall provide notification information to the OOGM as prescribed below, concurrent with the submittal of the permit application or a change of well status (ACOWS):	Clarification is needed in order to understand what the applicant's and the State's role and responsibilities are in this process. The Program Description needs to make a distinction between technical standards, what the applicant is required to submit, and the State's review process. Since the notification information is submitted by the applicant, it would be clearer to list it in Phase I. A. Step 1. It could then be referenced for the review in Phase I Step 2 and the Phase II process. In addition, the Program Description should reference the applicable regulatory requirements and guidance as appropriate related to these requirements.	62
22	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase II. A. The name and address of the permittee of each oil, or gas well within 1,320 feet of the proposed well location;	EPA suggests clarifying whether injection wells are included in the notification requirement.	63
23	**III. Permitting** **N. Process** Phase I. Permit Application Review	Phase II (page 23): Notification information required above is a matter of public policy and not as a requirement of jurisdiction, and therefore will not be a bar to processing of the application if	It is not clear if the text speaks to the permit applicant's notice to MDEQ (OOGM) or to the State's notification to the public. Therefore, this statement can be understood to mean that the public notification is not a requirement and that substantial compliance toward public notification could be sufficient. EPA would question the effectiveness of any system that allows incomplete public notice, because consistent, timely and informative public notification is a	64

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		substantial compliance is achieved towards notification.	keystone to any effective Class II program. If, however, this section means to discuss whether the permit applicant has provided sufficient materials for the State's use, EPA suggests clarifying the language to describe substantial compliance is achieved toward providing notification information for the State's use,' or some similar language that clearly demarcates the permit applicant's role in notifying the State and the State's role with regard to public notice.	
23	**III. Permitting** **N. Process** Phase II. Public Notification	Within ten (10) days after receipt of the permit application or ACOWS and notification information the Supervisor will mail notice to each surface owner of record and well permittee within 1,320 feet of the proposed injection well, and shall post the notice on the MDEQ website concurrently with the weekly permit list publishing.	In MDEQ's approach, the application on public notice includes the applicant's proposal only, without modification by the State reviewers. This approach will be a marked change from current process, under which EPA provides notice on a draft permit that reflects EPA's review and any modifications that may have been made to meet EPA's requirements. The new approach may confuse applicants as well as the public, therefore, we recommend that the Program Description clearly state that public comment happens prior to MDEQ completing its review, if that is the case. EPA suggests that greater clarity about the public input process will help the public understand where public input fits in the process and help MDEQ keep a clear record of its decision-making process.	65
23	**III. Permitting** **N. Process** Phase II. Public Notification	E. maximum anticipated injection pressure per square inch at the well head;	It is unclear whether the State would public notice the "maximum *anticipated* injection pressure" or the calculated pressure limit. This is an important distinction, because in practice, the term "maximum *anticipated* injection pressure" is usually a value that the permittee self-determines, and is often different than the calculated maximum *allowable* injection pressure. On page 23, the Program Description indicates that the State would public notice the "maximum *anticipated* injection pressure." However, the process on page 20 states that the State will review the *anticipated* pressure, and that the "injection pressure shall be limited according to the calculation contained in Rule 324.804 or based on other verifiable existing data for the location." Therefore, the State's intention for which value to place in a public notice is unclear. The Program Description should clarify whether the Michigan program would use the permittee's *anticipated* value for public notice and the permit or the State-calculated maximum allowable pressure for the well, citing applicable State regulatory requirements and guidance as appropriate.	66

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23	**III. Permitting N. Process** Phase II. Public Notification	Phase II: The Supervisor shall review all comments and objections to the proposed well received timely from interested persons. If the Supervisor determines that there is a relevant and significant comment or objection from an interested person, then the Supervisor may ask the interested person and/or the applicant to submit additional information within 15 days in an attempt to resolve the comment or objection. If the Supervisor is unable to resolve the issue after receiving timely submitted additional information then the Supervisor may hold a public hearing on the application.	As previously stated, the public notice process is an important component to an effective program. For EPA's evaluation of the draft application, Michigan needs to clarify its proposed Class II public hearing process. This section raises many questions that need to be addressed before EPA can evaluate the program's effectiveness on this point: - Is a hearing held only for the purpose of resolving issues? - Will MDEQ take comments at the public hearing, consider them and respond to comments at the hearing or in a later document or some other record? - Is the hearing for only the issues that could not be resolved, or may the public comment on other aspect of the application? - Must there have been a comment / issue through this resolution process before a hearing is held? - Can the public request a hearing if resolution was not attempted? - What must the public do to request a hearing? - What happens, in terms of the decision to hold a hearing, if the Supervisor elects not to seek additional information or the interested person does not supply the requested information? - Does Michigan have a legal definition or policy for defining "timely" "interested persons," and "relevant and significant " - Will persons other than the person who submitted the relevant and significant comment receive notice of the hearing? - Will only comments from "interested parties" be considered - It is unclear how a hearing would affect the timing of permit issuance. Will the review/comment period be extended? The description of issue resolution during the public comment period is not reflected in the flowchart on page 41. Given that language in Phase II implies that notification information provided by the applicant may change (as it is a matter of policy) from permit to permit, it may be difficult for the Supervisor to consistently identify "interested" persons and consistently determine the relevance of their comments. In cases where the notification information is limited it will be difficult for the public to	67

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			provide relevant comments. It would be helpful for MDEQ to describe attributes that make a comment relevant. It is unclear how the Supervisor's request for additional information from a commenter will affect the 30-day comment period, described in subsequent passages of the draft application. Would a request for additional information extend the comment period? Additional detail in this section would help clarify the process followed for the review of comments and the decision to hold a hearing. For example, EPA needs to understand whether the public requests a hearing, who has standing to request a hearing, and what must a member of the public do to request a hearing. The section also lacks specific information about appeal rights, possessed by either the public or the permit applicants/holders. It would be helpful to create a process that describes the following, referencing applicable regulatory requirements and guidance as appropriate: - The rights of the public to appeal a permit (administratively and/or judicially); - whether the right to appeal is restricted by any law to a set or subset of the public, such as those who commented; - any appeals board or, if appeals are through civil actions, state to which court appeals must be made; - if there is an appeal whether it affects the schedule for permit issuance; and - statutes and rules apply to this type of public hearing (Administrative Procedures Act rules about hearings appear to apply to public hearings about new rules only).	
23 - 24	**III. Permitting N. Process** Phase II. Public Notification	The Supervisor will review and consider all relevant comments, and post responses to the comments on the MDEQ website. The Supervisor shall not issue a permit or approve an ACOWS until the 30 day comment	The language implies that approving an application for change of well status (ACOWS) is equivalent to issuing an injection permit. It is unclear whether converted wells with approved ACOWs can be considered to have injection well permits. In other comments, EPA has asked Michigan to clarify the permit process and describe the actual contents of a permit, such as whether it includes enforceable standards such as a maximum allowable injection pressure. The	68

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		period described above has expired, or a public hearing as described above, if any, has been held.	clarifications should also include a discussion of whether approving a conversion application is equivalent to issuing a permit, and whether similar conditions apply to permits and approved ACOWs.	
24	**III. Permitting** **N. Process** Phase II. Public Notification	The issuance of a permit authorizes the drilling and construction of the well only. No well may be drilled until a permit has been issued by the OOGM. The original, or a copy, must be posted at the drilling site during drilling operations.	Michigan's approach to issuing injection well permits is unclear. Since the permit authorizes drilling or construction only, it is unclear whether it will also include operating conditions. Therefore, it is unclear overall which document or set of documents for individual wells will explain the full set of well-specific conditions that are approved by the State and are enforceable by the State. The draft application should describe Michigan's approach to permitting and imposing enforceable conditions; inclusion of a sample permit, a permit template, and/or a description of the legal authority to impose operating conditions on a permittee could help further explain Michigan's approach.	69
24	**III. Permitting** **N. Process** Phase III. Testing, Authorization and Operation	The final phase of the permitting process focuses on the steps to be taken relative to the operation of a well. If a MIT has not been performed and approved, it is required at this time. Well testing shall be conducted per Rule 324.803.	This language is inconsistent with the application requirements listed at Phase I. A. Step 1. 10. The earlier language indicates that for wells that are converting from production, an up-to-date MIT demonstration is part of the application, or at least factors into the permit decision process. While that section needs clarification, the language here leaves open a possibility that suggests MIT results for existing wells are not required to be submitted with the application and a permit may be issued without this information. MIT results are crucial for understanding if well operations will potentially endanger USDWs. EPA recommends revising the language here to explain how recent an MIT should be to be considered a viable demonstration and explain the circumstances in which a well may already have an MIT if it has not been previously permitted as an injection well.	70
	III. Permitting **N. Process** Phase III. Testing, Authorization and Operation	A. Step1 - Mechanical Integrity Tests: A SAPT must be performed. Typically, the SAPT is conducted under the supervision of an OOGM area geologist. In the event that an OOGM area geologist is unable to	EPA notes that the draft application does not define mechanical integrity and describes its components out of context with one another across several pages, which complicates a straightforward depiction of the Michigan approach and requirements for mechanical integrity overall. Phase III references the second part of mechanical integrity demonstration, while the first part is mentioned in separate context under Phase I on page 17. Because of the importance of mechanical integrity to Class II regulation, the draft application should clearly	71

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		witness a test, the permittee shall file a certified copy of the test procedure and results in accordance with the provisions of Part 615 Rule 324.803. This is the second part of the two part demonstration of well integrity.	identify Michigan's definition of mechanical integrity and its program's approach to evaluating and assuring mechanical integrity, referencing applicable regulatory requirements and guidance as appropriate. EPA recommends adding a section about the State definition of and standards for mechanical integrity that explains its component parts in context with one another (see similar comments #76 and #79). A clear description, referencing applicable statute, rules and guidance, should identify enforceable standards that form the basis for determining compliance and violations and will comprise reporting within the State and to EPA. We recommend including a definition for "certified copy," referencing any applicable rule or guidance, in order to make expectations for the permittee clear.	
24	**III. Permitting** **N. Process** Phase III. Testing, Authorization and Operation	a. Review *anticipated maximum injection pressures* and information confirming that injection of fluids into the proposed zone will not exceed the *fracture pressure gradient* and information showing that the injection will not initiate fractures through the overlying strata.	As commented earlier in this table, "anticipated maximum pressure" is typically an operator-determined parameter, and is not necessarily equivalent to the calculated maximum allowable injection pressure using fracture gradients and other parameters. It is important for EPA to understand whether the State program will set or calculate a maximum allowable injection pressure independent of an applicant's proposed anticipated maximum pressure. The permit condition appears to be that injection should not exceed the fracture pressure gradient (the pressure of which strata is unclear). Clarify whether the gradient mentioned here is the injection zone or confining zone gradient, because both are mentioned in other parts of the application. In addition, the text implies that the fracture pressure gradient will be the enforceable measure rather than the injection pressure. For example, would an operator be in violation for exceeding the [anticipated] maximum pressure or for exceeding the fracture pressure gradient? The proposed program should be clear about which value will be a standard or measure used for compliance and enforcement.	72
24	**III. Permitting** **N. Process**	Acceptable information includes ISIP, Step Rate Tests, or other methods approved by the	Correction: EPA field values are for *fracture gradient*, not injection pressures, which depend on additional factors. EPA publishes values for fields, not wells.	73

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	Phase III. Testing, Authorization and Operation	Supervisor. Existing U.S. EPA field values for injection pressures for individual fields or wells are deemed acceptable and satisfactory pressure gradient standards and are automatically approved.		
25	**III. Permitting** **N. Process** Phase III. Testing, Authorization and Operation	Step 2 - Authorization to Inject: Upon review of the completion information, successful demonstration of integrity and completion of any required corrective actions, the OOGM will issue a written Authorization to Inject.	A demonstration of internal and external MI is required prior to injection through new or converted wells. The draft application should clarify whether the Authorization to Inject includes any operating conditions or is a one-time authorization to commence operations. EPA has stated in other comment (Comment #5, #12, #21, #68, and #69, for instance) that the draft application is unclear overall about which document or set of documents for individual wells will explain the full set of well-specific conditions that are required by the State and are enforceable by the State. If the Authorization to Inject is intended to include any ongoing operating requirements, the draft application should explain how it fits in context with the permit.	74
25	**IV. Initial File Review**	Under Guidance 19, a schedule for review of all existing Class II wells in Michigan would undergo a complete file review within five (5) years of the effective date of the state program. However Michigan has a mature regulatory program for injection wells and each Class II well already has a valid Part 615 permit, is on a monitoring, reporting, and MIT schedule with the U.S. EPA and the MDEQ, and therefore this review is not applicable. Five (5) year file reviews will be conducted on an	Guidance 19 provides that state applications should "contain a plan (including the basis for assigning priorities) for the review of all existing Class II wells in the State within five years of program approval to assure that they meet current non-endangerment requirements of the State…" This step was meant to allow states to evaluate existing oil and gas-related injection wells for permits under the then-new Class II program. The description of Michigan's view of its program maturity is not relevant here, because the topic in Guidance 19 was aimed at bringing all applicable wells into the then-new Class II program within 5-years of the program's start. Therefore, this section could be completely removed, or replaced with a statement to the effect that (1) since Michigan did not seek primacy when the program was first authorized in 1982, EPA implemented the Class II program and reviewed all existing Class II wells in the State and issued permits where necessary to assure they met federal program requirements, and (2) other sections in this application address	75

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		ongoing basis for each Class II well as described in Section VI.	Michigan's program to undertake file reviews of existing Class II wells every five years and to assure that new Class II wells met permit, operation, monitoring, and reporting requirements under the State program once the State program receives federal authorization.	
25	**V. Technical Requirements** A. Well Construction		Though this section is labelled "well construction" it indirectly addresses mechanical integrity overall. EPA recommends that the draft application directly define and discuss mechanical integrity in a dedicated section referencing applicable regulatory requirements and guidance as appropriate to avoid. Directly addressing the mechanical integrity discussion could increase the clarity of the document overall by avoiding repetitions throughout the document, which are sometimes contradictory or out of context, complicating review. Similar comments are in Comment #36, #71, and #79.	76
	V. Technical Requirements		EPA notes that the technical requirements in this V. Technical Requirements are initially described in III. Permitting, though in the earlier location they are difficult to distinguish from MDEQ policies or process instructions about technical review of applications. Furthermore, there are inconsistencies among the several discussions of technical requirements in the draft application. Several comments in III. Permitting are referenced in the comments on V Technical Requirements and again in comments on the Instruction. EPA recommends organizing technical requirements together, to avoid inconsistency and to clarify which requirement MDEQ intends to have Class II applicants follow, referencing applicable regulatory requirements and guidance as appropriate.	77
	V. Technical Requirements A. Well Construction	All wells must demonstrate adequate cementation to prevent fluid migration outside of the permitted injection zone or into a USDW as a result of injection.	This language suggests that cementation alone can prevent fluid migration into a USDW, and that such fluid migration occurs only during injection. This language is not accurate. Wells must also be sited, constructed, operated and/or properly plugged and abandoned to prevent fluid migration, even during periods of temporary abandonment or periods on non-injection. EPA recommends revision to "All wells must demonstrate that their cementation is adequate to prevent …" and citing to the supportive regulation or guidance standard for adequate cementation. Given the inconsistencies in the draft application regarding casing and cementing requirements, EPA recommends defining adequate casing and cementation that is acceptable to the State to	78

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			achieve the isolation of all USDWs within the AoR from fluid migration in rules or in guidance, and describe how these standards will be enforceable under Michigan's legal authority. MDEQ's review of long-string casing cement demonstration is not included in the permitting process. EPA suggests incorporating review of records or logs into the Program Description Phase III, understanding that such a review is not a regulatory requirement but rather an MDEQ internal operating procedure.	
25 - 26	**V. Technical Requirements** A. Well Construction	This is one part of the two part demonstration of mechanical integrity in addition to the Standard Annulus Pressure Test (SAPT) required after construction or conversion and prior to authorization to inject. This is part two of the two part mechanical integrity requirement. Two (2) approved methods of proof that demonstrate adequate cementation to prevent fluid migration outside of the permitted injection zone or into a USDW are:	The discussion of the parts of a two part demonstration are confusing. The discussion about SAPTs, while related to mechanical integrity overall, seems out of context within the discussion of adequate cementation, especially since SAPT is addressed again in the following paragraphs. As described in previous comments (for example, Comment #36 and #71), the Program Description could describe the State's precise requirements for mechanical integrity separately from the State's review, which may clear up the references throughout the various sections.	79
26	**V. Technical Requirements** A. Well Construction	Newly constructed Class II wells must demonstrate Mechanical Integrity per Part 615 Rule 324.803, and be constructed in accordance with Part 615 Rule 324.408 et seq. that provides for running and cementing of surface and additional strings of casing while Rule 324.801 addresses the requirements for non-corrosive fluids in the tubing-casing annulus and the packer setting. These two (2) rules are used in combination to protect all	Language and requirements in the application need to be consistent. Clear and consistent technical requirements and the authority under which they are established (law, rule, policy, and etc.) allow EPA to evaluate program effectiveness. First, citations in this section are inconsistent with an earlier description of newly constructed well requirements. A previous description on page 20 of the draft application of new well construction references other additional rules (see Comment #47). The text also needs to be revised to note that three, not two, rules are cited. Second, descriptions in this section are not consistent with regulations. Under (i.) the draft application inserts the term *USDW* for the term that is actually in Rule 324.408, *freshwater strata*. These terms, as defined by	80

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		USDWs by ensuring that injection of fluids is confined to strata approved by the Supervisor or authorized representative of the Supervisor as follows: i. Surface casing set into an impervious zone below the lowest USDW and cemented with enough slurry to circulate to the surface; intermediate casing if required by the Supervisor; and the long string. ii. Tubing set on a packer to within a specified distance above the injection zone and surrounded by a non-corrosive annular fluid; and iii. Access to casing and tubing annuli at the surface.	Michigan and as reviewed by EPA, are not equivalent. EPA has additional comments on Rule 324.408 to this effect in Comment #144. Furthermore, the language here states that Rule 324.408 "provides for running and cementing of surface and additional strings of casing" when the rule pertains to surface casing only. Third, the actual casing and cementing standards for new Class II wells are not fully specified – that is, there is no definitive regulatory requirement for casings, other than the surface casing, though the presence of an injection well casing is implied in Rule 324.801. In addition, there are no clear requirements given for any long string or injection zone casing. The draft application should clarify which requirement Michigan intends to have Class II applicants follow, referencing applicable regulatory requirements and guidance as appropriate.	
27	**V. Technical Requirements** A. Well Construction	Existing Part 615 wells that are converted to Class II wells after the date of primacy must demonstrate Mechanical Integrity per Part 615 Rule 324.803, and will meet construction requirements if: i. The well met the construction requirements specified by the OOGM at the time of the well's construction as evidenced by a Part 615 permit; and	EPA is concerned that the approach to converting wells from production to injection is not protective of USDWs. Comment #38 of this table addresses the draft application's discussion of construction requirements for wells converting to Class II injection wells (described under Section III, Permitting, Phase I. A. Step 1. 10, on page 17 of the draft application).	82

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		ii. The injection casing has a minimum of 250 feet of cement above the injection zone; and iii. Injection into the well will not result in the migration of fluids outside of the permitted injection zone or into a USDW.		
27	**V. Technical Requirements** A. Well Construction	Existing Class II wells: successful demonstrations of Mechanical Integrity per Part 615 Rule 324.803 will be sufficient to prove adequate well construction.	The purpose of including already-permitted Class II wells in this section is not clear. EPA understands from conversations with MDEQ that Michigan does not intend to re-evaluate construction of EPA-permitted Class II wells, and will consider current MITs sufficient. EPA recommends clarifying this statement to describe that wells transferred to the State in the event of federal authorization will be presumed to have mechanical integrity if they successfully demonstrated mechanical integrity in their most recent test, or that they will be tested on their regular 5-year schedule.	83
27	**V. Technical Requirements** B. Well Operation		The Well Operation section does not describe any technical requirements for well operation, such as maximum allowable injection pressure limitations. EPA evaluates such criteria when reviewing applications for primacy. To evaluate the State program's effectiveness, EPA would like to understand if the State program plans to enforce a calculated injection pressure limit, the basis for any such limit, and if there will be other enforceable operating requirements. This should be clarified in the Program Description, including references to applicable State regulatory requirements and guidance.	84
	V. Technical Requirements B. Well Operation	Any proposed change in permit specifications must be submitted to the OOGM prior to implementation if the proposed change would alter an approved permit condition.	This language indicates that the operator is in charge of determining which modifications are appropriate for submission to OOGM. This process could lead to inconsistent application of crucial permit conditions and a reduction in the protection of USDWs. In addition, it is unclear if OOGM needs to approve the proposed change prior to implementation. If this is the case the State should clearly state that the proposed changes must be approved prior to implementation, citing to applicable regulatory requirements.	85

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27	**V. Technical Requirements** B. Well Operation	Plugging and abandonment	This heading looks like it was meant to be a separate section, such as, C. Plugging and Abandonment. EPA's review finds that other plugging and abandonment requirements or procedures are not included in this description. EPA recommends that the Program Description describe all plugging and abandonment provisions requirements or practices referencing applicable regulatory requirements and guidance as appropriate. For example, EPA notes that Rule 324.412 allows casing removal when a well is being plugged back to a shallower depth or is being plugged to the surface. In addition, EPA is aware that MDEQ has directed operators to plug across specific geological zones, specifically the Traverse Formation, during plugging and abandonment. Including these and any other measures in the Program Description, citing supporting regulations or guidance, will help demonstrate the States's entire approach to plugging and abandonment.	86
27-28	**V. Technical Requirements** B. Well Operation	Bottom Hole Cement Plug: a. A bottom hole cement plug a minimum of 200 feet in length, allowed to set undisturbed for minimum of 4 hours, having reached a compressive strength of 100 pounds per square inch or more, and is tagged to ensure that it is still in place before setting the next plug up-hole; or b. A mechanical bridge plug or other approved bridge plug set with a minimum of 50 feet of cement placed on the bridge plug before setting the next plug up-hole.	In order to help ensure the continued protection of USDWs after well closure, the EPA needs to know where the bottom hole plug and the bridge plug are going to be set. The Program Description should provide this information, referencing any applicable regulations or guidance.	87

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28	**V. Technical Requirements** B. Well Operation	Surface Casing Cement Plug:	The draft application details the need for cement plugs relative to the base of the surface casing and the injections zone. EPA notes, however, that surface plug provisions in Rule 324.902(7) are not described here. EPA recommends fully describing all required plugs, referencing applicable regulations and guidelines, otherwise this section implies that a surface plug is required only in the absence of a surface casing.	88
28	**V. Technical Requirements** B. Well Operation	If surface casing is not present, a cement plug will be set at a minimum of 100 feet below the base of the glacial drift or at least 100 feet below the lowest USDW, whichever is the greater depth, and shall circulate cement to within 5 feet of the surface.	This statement implies that injection may be permissible without a surface casing, which contradicts statements on page 19 about required surface casing (see comments on page 19 for further discussion of surface casing requirement). (Although it is not clear that Rule 324.408 definitively requires a surface casing or just gives technical standards for surface casings should they be used.) This statement is an example of interchanging "USDW" for "fresh water." Here in the Program Description, the standard references USDW depth, while Rule 324.902 (8) actually references "fresh water": "If surface casing is not present, a permittee of a well shall set a mechanical open hole bridge plug or other approved bridge a minimum of 100 feet below the base of the glacial drift or 100 feet below the *deepest fresh water stratum*, whichever is the greater depth, and shall circulate cement to within 5 feet of the surface" (Rule 324. 902.8, page 111).	89
28	**VI. Monitoring and Reporting**	Permittees of Class II brine disposal wells must monitor and record the injection pressure, injection rate, and cumulative volume of injected fluids on a weekly basis and must report the results to the OOGM monthly unless a lesser frequency is approved by the Supervisor.	Although neither the Program Description, nor the Instruction, nor State rules appear to specifically require operators to report annulus pressure, Form EQP 7609 (on page 371) appears to expect weekly or monthly annulus pressure measurements. (For background, Region 5 UIC Class II permits require operators monitor weekly, report monthly on annulus pressures a demonstration of internal mechanical integrity.) It would be helpful to clarify whether operators are required to report annulus pressure, referencing rules or guidance as appropriate.	90

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28	**VI. Monitoring and Reporting**	The permittee of a secondary recovery injection well must monitor and record the injection pressure, injection rate, and cumulative volume of injected fluid on a monthly basis and must report the results to the OOGM annually unless a lesser frequency is approved by the Supervisor. Manifold monitoring is allowed pursuant to Rule 324.806.	This should apply to permittees of all types of enhanced recovery wells not just secondary recovery. The Program Description should clarify whether this requirement applies to all types of enhanced recovery wells, referencing applicable State regulations or guidance.	91
28	**VI. Monitoring and Reporting**	A permittee of a commercial disposal well shall submit a complete list of sources of disposed fluids on a quarterly basis on a form prescribed by the Supervisor. In addition to the annual chemical analysis, the permittee will provide the Supervisor with updated chemical composition information of the injectate to account for any new sources.	Separate requirements for commercial wells are not consistently identified throughout the Program Description. It is unclear if this instance is an additional requirement for commercial wells that non-commercial wells do not have to report on. For example, the Program Description should describe how MDEQ will define fluid sources, because it affects operator reporting and compliance, referencing any applicable State regulations and guidance. EPA will also want to know the rationale behind Michigan's new source definition. Current operators have been using Region 5's method of defining fluid sources by Township, Range, and Section, and defining a new source as one from a Township/Range/Section that hasn't been previously approved. There are alternative ways of defining a new source, such as by well or by oilfield, and a change in approach needs to be communicated to operators. The Program Description should also clarify how Michigan defines which operators would be subject to these requirements, as the term "commercial well" is not defined in the regulations. It appears that "commercial wells" are defined only in the Instruction. EPA is concerned that Instructions, unlike statute and regulations, may be changeable without public input or formal process. The definition of a commercial well or their related operating requirements could fluctuate, making it difficult for operators to understand and follow expectations. It is also unclear whether Michigan will be able to enforce requirements for commercial wells.	92

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			The draft application should clarify "annual chemical analysis" with regard to commercial wells, insofar as commercial wells have more than one waste stream.	
29	**VI. Monitoring and Reporting**	A permittee must verbally notify the Supervisor or authorized representative of the Supervisor of any pressure test failure, significant pressure change, or other evidence of a leak in an injection well, within 24 hours of the test failure, pressure change, or evidence of a leak. Oral notification must be followed by a written notice of the pressure test failure or other evidence of a leak to the Supervisor or authorized representative of the Supervisor within five (5) days of the occurrence. If the permittee has been required to cease injection as a result of a test failure or other evidence of a leak, injection may not be resumed until the permittee has tested or repaired the well, or both.	This section appears to denote duties of the operator to self-report losses of mechanical integrity. The second sentence, "If the permittee has been required to cease injection…" could be understood to mean that the description extends to circumstances when the Supervisor has required an operator to cease injection. If the latter is also intended, it is unclear if this would be related to authorities under Rule 324.104 and subject to the same limits to orders of suspension. Otherwise, language in Rule 324.807 is more specific, stating "If injection has ceased pursuant to subrule (1) of this rule, then a permittee shall not resume…" The draft application should clarify this section, referencing applicable statutes and rules. The notification criteria "significant pressure change" is vague, so the expectation of operators is not clear. EPA recommends that MI explain the parameters of a significant pressure change: what type of pressure (e.g. tubing pressure, annulus pressure) and what pressure change Michigan would consider significant, referencing any applicable State regulatory requirements or guidance. The draft language should be consistent with regards to criteria for ceasing injection. The first sentence and second sentences are describing criteria for ceasing injection: "…test failure, <u>significant pressure change</u>, or other evidence of a leak" versus "test failure or other evidence of a leak…"	93
29	**VII. Five-year File Review**	a. An evaluation to determine the continued adequacy of the wells' construction with respect to: ii. a determination as to whether hydraulic connections exist between the injection zone and USDW's.	Under item ii., it is unclear how the MDEQ determines a hydraulic connection from file records of existing, permitted Class II wells, absent of new well tests.	94

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31	**VIII. Compliance and Enforcement**	Compliance and enforcement are conducted in accordance with the provisions of the MDEQ OOGM Compliance and Enforcement Policy and Procedures 601.00 through 601.13, Section F.	In order for the EPA to understand the effectiveness of MDEQ's enforcement of its proposed program, it would be useful for the draft application to contain an enforcement overview that brings together information from rules, SOPs, etc. to demonstrate how they together form a complete Class II enforcement program. The procedures in Section F describe the general approach, but do not fully illustrate the information EPA needs to evaluate the effectiveness of the proposed enforcement program.	95
	VIII. Compliance and Enforcement	VIII. Compliance and Enforcement	The process described does not clearly set forth criteria for taking enforcement actions in response to Class II violations specifically. Specific points needing clarification are: specific violations to be considered and the types of actions available to Michigan to enforce its program, including penalties. We recommend that the Program Description or an SOP document establish guidelines to which staff should refer when developing recommendations for the enforcement response to a given violation or set of violations. The guidelines should contemplate escalation of enforcement in appropriate circumstances, such as for wells with repeat violations and wells that ignore violation citations.	96
31	**VIII. Compliance and Enforcement**	In the event of an imminent or obvious environmental or public health risk, the Supervisor can issue an Administrative Consent Order that is immediately enforceable without prior administrative review. The order is, in effect, an injunction to cease noncompliance	It is not clear how the Administrative Consent Order differs from the authority to order an operator to suspend operations previously described pp. 9-10. It is unclear whether MDEQ has authority to order an injunction unilaterally, without consent. Administrative consent orders, issued with the consent of the alleged violator, constitute one form of enforcement. EPA recognizes that there are many ways for a state to demonstrate an effective enforcement program. EPA encourages states to consider unilateral injunctions or penalties issued without consent, insofar as, in EPA's experience, they encourage timely return to compliance and deter future noncompliance.	97
31	**VIII. Compliance and Enforcement**	A. Unannounced inspections are conducted by each of the area geologists employed by the OOGM. The inspections may include the following:	While this section refers to Section F, that Section does not include UIC-specific information about inspections. To fully describe the Michigan program, EPA recommends the Program Description describe the enforcement process.	98

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		a. Physical inspection of well, well related equipment, piping, pumping, and fluid containment facilities on at least an annual basis; and b. Observation of wellhead injection pressure; and annular pressures.		
31	**VIII. Compliance and Enforcement**	NOTE: Where feasible and when practicable the OOGM will use permittee provided gauges to measure wellhead injection and annular pressures.	EPA recommends that, when the permittee's gauge is used, inspectors request and discuss documentation on gauge calibration from the operator. EPA recommends that the draft application avoid naming an office as the level of action (such as OOGM), as it may change at some future time. A more general level would be preferable for maintaining the Program Description's accuracy into the future.	99
32	**VIII. Compliance and Enforcement**	Systems Comparison: Each component of Michigan's compliance and enforcement system contains an action which correlates to an action utilized by the U.S. EPA. A comparison of the actions taken by U.S. EPA and Michigan follows: EPA notice of non-compliance = MI violation notice EPA administrative order = MI administrative consent agreement or order EPA civil or criminal referral = MI General or Michigan Department Of Natural Resources, Law Enforcement Division, Environmental Investigation Section Although the U.S. EPA and the MDEQ are bound to different	It would be helpful for EPA to evaluate the effectiveness of the proposed program if the systems' comparison included MDEQ's equivalent of EPA's Significant Noncompliance (SNC) designation. The Systems Comparison does not describe EPA options accurately. EPA will supply supplemental information for a revision. The table does not appear to include the full list of potential Michigan actions, as found on pp. 199-201, pp. 205-206 and other sections of the Compliance and Enforcement SOPs. The table includes Michigan Department of Natural Resources (MDNR) authorities, which may not be relevant to Class II actions presumably under MDEQ. The draft application should explain how MDNR authorities would pertain to Class II and whether this means that Michigan is seeking to share Class II authority among two State agencies. This approach would need a full discussion and consultation with EPA.	100

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		guidelines regarding timing, notification, publication, administrative adjudication and legal action, the systems are similar in terms of the intended effect for each item noted above.		
32	**VIII. Compliance and Enforcement**	In addition, the MDEQ will record and provide metrics for the following compliance violations to the U.S. EPA on an annual basis: b. Loss of Mechanical Integrity – Well operation without mechanical integrity that causes the movement of fluid outside of the permitted formation – if fluid migration has the potential for endangering a USDW. c. Excessive Injection Pressure – Well operation at an injection pressure that exceeds the permitted or authorized injection pressure and causes the movement of fluid outside the authorized zone of injection – if fluid migration has the potential for endangering a USDW.	The Program Description should attribute that items a-d are verbatim from the 7520 reporting form. EPA does not find references to violations for failure to report or failure to conduct a test. These types of violations should be identified. With regard to item c., Michigan should report any exceedance of maximum injection pressure on EPA 7520 reporting forms. EPA considers any exceedance to have potential for endangering a USDW.	101
39	**XII. Exempted Aquifers**	The UIC program is designed to protect USDWs. Although federal UIC regulations have provisions to exempt an aquifer, or a portion of an aquifer, Michigan will not seek to exempt any USDWs under its approved program.	We recommend revising this section to state that the authority to approve aquifer exemptions remains with EPA. If aquifer exemptions are not legally banned under State law, the draft application needs to explain Michigan's process for referring aquifer exemptions to EPA. If aquifer exemptions are banned in Michigan, the Program Description should identify applicable Stare regulations underlying the prohibition.	102

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39	**XIII. Use of Diesel Fuels in Hydraulic Fracturing**	The U.S. EPA Guidance #84, February 2014, requires a UIC Class II permit for using diesel fuel for hydraulic fracturing operations. Part 615 Rule 324.804 prohibits injection wells from injecting fluids above fracture gradient for the zone into which fluids will be injected or disposed. Therefore, the OOGM will not issue any Class II permits for the use of diesel fuel to fracture producing formations.	The Program Description states that Michigan will not issue Class II permits for hydraulic fracturing using diesel fuels. However, Michigan has not pointed to any State statute or regulation that bans this activity. (A Program Description is not a legally-valid vehicle for establishing a ban.) This is problematic because diesel fuels hydraulic fracturing is considered to be "underground injection" within the meaning of the Safe Drinking Water Act, and thus covered under EPA's Class II UIC regulations. To the extent that Michigan does not ban the use of diesel fuels in hydraulic fracturing, then this activity could still occur – and would require a UIC Class II permit. Therefore, in order for the State program to be considered "effective," the activity of diesel fuels hydraulic fracturing must either be legally prohibited under State law, or subject to Class II UIC permits if it occurs. The statement here, indicating a policy of not issuing Class II permits for this activity, is not sufficient evidence of a State ban on this activity. Moreover, it does not provide sufficient assurance that if diesel fuels hydraulic fracturing does occur, the State will require a Class II UIC permit for such activity. Although Part 615 Rule 324.804 limits injection pressure above the fracture gradient, this rule applies specifically to "disposal operations," and thus it is not clear whether this restriction on injection pressure applies to diesel fuels hydraulic fracturing – which is a form of enhanced recovery, rather than "disposal." Therefore, this provision limiting injection pressure above the fracture gradient would not appear to apply to diesel fuels hydraulic fracturing – and thus does not evidence a ban on this activity. Moreover, this provision appears to be inconsistent with other regulatory provisions that allow for "high-volume hydraulic fracturing." See, e.g., Rule 324.1401, 1402. Thus, these provisions in fact suggest that diesel fuels hydraulic fracturing could in fact occur, and thus must be permitted as a Class II well under the State program.	103
39	**XIV. Review of Existing Wells**		It is unclear if Section C. XIV. Review of Existing Wells will take place within 5 years of assuming primacy and thus replace the need for an initial file review or if MDEQ is forgoing the initial file review (Section C. IV) in favor of their own schedule.	104

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40	**XV. Transition of Class II to Class VI**	If oil or gas recovery is no longer a significant aspect of a Class II permitted secondary recovery operation, the CO2 injection well may be transitioned to Class VI jurisdiction (The U.S. EPA Class VI Administrator) if a risk to a USDW is present from the geological sequestration of CO2. In this situation, the MDEQ OOGM Class II Director will coordinate with the U.S. EPA Class VI Director as appropriate based on cessation of secondary recovery operations or other operational conditions where increased risk is observed in the well(s).	Please note that a well must be transitioned to Class VI if it meets the Class VI criteria and is no longer functioning as a Class II well. Suggested rewording is included below: "If oil or gas recovery is no longer a significant aspect of a Class II permitted secondary recovery operation, the CO2 injection well **will** ~~may~~ be transitioned to Class VI jurisdiction (The U.S. EPA Class VI Administrator) if **there is an increased** ~~a~~ risk to a USDW **from injection** ~~is present from the geological sequestration of CO2~~. In this situation, the MDEQ OOGM Class II Director will coordinate with the U.S. EPA Class VI Director ~~as appropriate based on cessation of secondary recovery operations or other operational conditions where increased risk is observed in the well(s).~~ **to transfer jurisdiction of those wells subject to this transition from secondary recovery operations into operations primarily for long-term storage of C 2.**	105
40	**XV. Transition of Class II to Class VI**	Secondary recovery operations involving CO2 injection can be long term and ongoing, with CO2 being a commodity that may be injected, withdrawn, and re-injected in projects involving multiple wells or reservoirs.	EPA has no position on CO2 as a commodity. For purposes of clarity we suggest MDEQ delete under the II- I section the word "commodity" or change the sentence to read: Secondary recovery operations involving CO2 injection can be long term and ongoing, and MDEQ considers ~~with~~ CO2 ~~being~~ a commodity that may be injected, withdrawn, and re-injected in projects involving multiple wells or reservoirs.	106
41	**C. Appendix 1:**	**permit processing & notification Flowchart**	As noted above, the flow chart does not include the full processes described in the Program Description, especially the public comment response and comment resolution descriptions. In addition, the chart should include any appeal processes belonging to operators or the public.	107
45	**C. Appendix 4**	**U.S.EPA guidance on Transition of Class II C 2 Well**	EPA recommends striking this Appendix, insofar as it is an internal EPA guidance memo. Reference to the regulations is preferred.	108
A. Supervisor of Wells Instruction for Class II Underground Injection Control				
48	**Purpose**	The purpose of this Supervisor of Wells Instruction is to clarify the	EPA has several concerns with the Instruction. First, MDEQ should clarify whether the Instruction represents regulatory requirements, its interpretation	109

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		requirements under Part 615, Supervisor of Wells, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, (Part 615) for permitting, drilling, completing, testing, operating, and records reporting for Class II wells.	and clarification of existing regulatory requirements, or non-binding recommendations as to how to meet the existing regulatory requirements. The distinction is meaningful for EPA's review of how Michigan will implement and enforce its program requirements. EPA expects all key technical provisions – i.e. those necessary to prevent endangerment to USDWs -- described in the Program Description and Instruction to be legally binding. EPA expects the Attorney General to explain the legal link between statute, rule, and Instructions, and confirm that Instructions establish legally-binding requirements. Second, it is unclear what is meant by the statement that the purpose of the Instruction is to "clarify the requirements" of the regulations, particularly when compared to earlier statements on page 7: "Supervisor's Instruction 2-2015 (Section D) provides additional requirements not currently specified for UIC Class II wells in Part 615…" It would also be helpful to provide an annotated Instruction document that identifies specifically which Michigan rules are clarified by which sections of the Instruction. Third, EPA notes that there are differences and inconsistencies among technical requirements set forth in the rules, described in the Program Description, and listed in the Instruction. Therefore, requirements of the proposed program are unclear. The draft application should present consistent requirements, referencing applicable regulatory requirements and guidance as appropriate.	
48 49	**Definitions**	"Class II well" means a well utilized for the disposal of fluids and/or gas (hereafter "fluids") associated with the production of oil and natural gas, or utilized for the injection of fluids (including carbon dioxide gas) for the purpose of secondary recovery operations…	"Secondary recovery" does not include forms of enhanced recovery such as diesel fuels hydraulic fracturing that may occur in conjunction with primary recovery as well as any recovery subsequent to the secondary (however rare it may be). As discussed in Comment #23 of this table, diesel fuels hydraulic fracturing must be subject to Class II UIC requirements, unless it is legally prohibited under State law.	110
49	**Applicability of Instruction**	Applicability of Instruction This Instruction is applicable to Class	The Instruction states that the Supervisor of Wells will not issue Class II permits for hydraulic fracturing using diesel fuels. However, Michigan has not	111

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		II wells only. Section 300h(d) of the federal Safe Drinking Water Act (SDWA), United States Code Title 42, defines "underground injection" as excluding the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities. The Supervisor of Wells (Supervisor) will not issue any Class II well permits for the use of diesel fuel for hydraulic fracturing.	indicated that this Instruction represents a legally-binding requirement, or otherwise pointed to any state statute or regulation that bans this activity. This is problematic because diesel fuels hydraulic fracturing is considered to be "underground injection" within the meaning of the Safe Drinking Water Act, and thus covered under EPA's Class II UIC regulations. To the extent that Michigan does not ban the use of diesel fuels in hydraulic fracturing, then this activity could still occur – and would require a UIC Class II permit. Therefore, in order for the State program to be considered "effective," the activity of diesel fuels hydraulic fracturing must either be legally prohibited, or subject to Class II UIC permits if it occurs. The statement here, indicating that the Supervisor of Wells will not issue Class II permits for this activity, does not appear to be sufficient evidence of a legal prohibition on this activity. Moreover, it does not provide sufficient assurance that if diesel fuels hydraulic fracturing does occur, the State will require a Class II UIC permit for such activity	
49	**Applicability of Instruction**	Existing Part 615 wells that are converted to Class II wells after the date of this Instruction are deemed to meet the requirements of the SDWA if: 1. The well met the construction requirements specified by the OOGM at the time of the well's construction as evidenced by a Part 615 permit; and 2. The injection casing has a minimum of 250 feet of cement above the injection zone; and 3. Injection into the well will not result in the migration of fluids outside of the permitted injection zone or into a USDW; and 4. The well successfully demonstrates mechanical integrity pursuant to Rule 324.803.	It is not clear why the Instruction references meeting SDWA requirements here. The Instruction should instead refer to applicable requirements under State law, which includes the standards that applicants and permittees would presumably be required to meet. EPA has concerns that this approach for converting wells from production to Class II injection, is not protective of USDWs. The concerns were noted in Comment #38 of this table. Those comments apply to the discussion in the Instruction here. EPA also notes Rule 324.410 but gives the Supervisor authority to require or order additional casing strings to seal off various zones, but does not mention casings relative to injection zones among these. As in the Program Description, the Instruction implies a casing into the injection zone, but does not overtly describe or define it as a requirement. It is unclear whether Michigan is proposing a program that definitively includes casing relative to the injection zone. The draft application should clarify which requirement MDEQ intends to have Class II applicants follow, referencing applicable regulatory requirements and guidance as appropriate.	112

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49	**Permit Applications**	The following requirements apply to an application to drill and operate or an Application for Change of Well Status (ACOWS), submitted for Class II wells:	The Instruction should reference the applicable regulatory requirements and guidance as appropriate related to these requirements. In addition, EPA notes that the list of requirements is inconsistent with the list under on page 22, which also includes "the clerk of the county in which the proposed well is to be located." The draft application should be revised so that requirements and processes are consistent, in order for EPA to evaluate the effectiveness of the proposed program.	113
49	**Permit Applications**	1. A person shall not commence construction or conversion of a well until a permit has been issued, or an ACOWS has been approved.	This implies that converted wells will not have an injection permit, and it is not clear whether an ACOWs is sufficiently protective. The draft application should describe how an ACOWs would be sufficient; for example, by referring to legal requirements for permits, by describing how ACOWs demonstrate protective standards are met and include enforceable operating standards, and/or by including a sample permit/ACOWs. In order to protect USDWs from endangerment due to underground injection, the well permit would have to be modified to include additional parameters or reporting.	114
50	**Permit Applications**	2. A permit applicant shall submit a plugging and abandonment plan and schematic with the permit application.	The Program Description does not indicate that a schematic is required (Section C. III. N. Phase I Step 1 14). It is therefore unclear whether applicants would be required to submit a schematic.	115
	Permit Applications	3 G.	EPA's comments on the draft application's approach to the AoR are under Comment #28 of this table and apply here as well.	116
50	**Permit Applications**	3 H. A schematic diagram of the proposed injection well that shows all of the following information: i. The total depth or plug-back depth of the proposed injection well. ii. The geological formation name(s), true vertical depths, and thicknesses of the disposal or injection intervals. iii. The geological formation name(s), true vertical depths, and thicknesses of the confining zones. iv. The geological formation name(s), true vertical depths, and thicknesses of	Information required for the application schematic is inconsistent with requirements elsewhere in the draft application. Similar lists of schematic information requirements are found on pages 16, 20, 50, 79. The lists in the Program Description (pages 16 and 20) are the same. The Instruction list (page 50) requires an additional measurement (depth) of the confining zone. The regulation (Rule 324.201, page 79) does not require information the confining zone at all. EPA recommends that the information be made consistent across all sections where it is mentioned. In addition, the draft application should reference applicable regulatory requirements and guidance as appropriate. EPA expects all key technical provisions – i.e. those necessary to prevent endangerment to USDWs -- described in the Program Description and Instruction to be legally binding requirements.	117

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		all known freshwater strata and USDWs. v. The depths of the top and bottom of the casing or casings and cement to be used in the proposed injection well. vi. The size of the casing and tubing and the estimated depth of the packer. The packer will be set within 100 feet of the base of the injection casing or within 100 feet of the top perforation of the injection zone, unless otherwise approved by the Supervisor.		
	Permit Applications	5. Notification information required above is a matter of public policy and not as a requirement of jurisdiction, and therefore will not be a bar to processing of the application if substantial compliance is achieved towards notification.	It is not clear that the text speaks to the permit applicant's notice to MDEQ (OOGM) or to the State's notification to the public. Therefore, this statement can be understood to mean that the notification is not a requirement and that substantial compliance toward notification could be sufficient. EPA would question the effectiveness any system that allows incomplete public notice, because consistent, timely and informative public notification is a keystone to any effective Class II program. If, however, this section means to discuss whether the permit applicant has provided sufficient materials for the State's use, EPA suggests clarifying the language to describe substantial compliance is achieved toward providing notification information for the State's use,' or some similar language that clearly demarcates the permit applicant's role in notifying the State and the State's role with regard to public notice.	118
51 52	**Public Comment; Hearings**	The Supervisor shall review all comments and objections to the proposed well received timely from interested persons. If the Supervisor determines that a comment or objection from an interested person requires further investigation or	EPA considers an effective program to contain a public involvement process that heeds relevant comments. EPA is concerned that the "significant and serious impairment" standard establishes a very high bar for a comment from an interested person to trigger a hearing or change in direction on a permit. EPA is also concerned that the proposed approach may rule out relevant comments because the language implies that the Supervisor would not pursue	119

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		review because it raises a significant and relevant issue that the operation of the proposed well will cause a significant and serious impairment to a USDW then the Supervisor may ask the interested person and/or the applicant to submit additional information within fifteen (15) days in an attempt to resolve the comment or objection. If the Supervisor is unable to resolve the issue after receiving timely submitted additional information, then the Supervisor may hold a public hearing on the application.	comments about USDW impairment issues the Supervisor determines to be less than serious.	
52 53	**Public Comment; Hearings**	The Supervisor will review and consider all relevant comments, and post responses to the comments on the MDEQ website. The Supervisor shall not issue a permit or approve an ACOWS until the thirty (30) day comment period described above has expired, or a public hearing as described above, if any, has been held.	EPA needs additional information to fully understand the process for dealing with public comments and issuing the MDEQ responses. The timing of MI's response to comments relative to permit issuance or denial is unclear. MDEQ should make clear a commenter or petitioner's options for an appeal after a comment or hearing and after the MDEQ response to comments so EPA can fully evaluate MDEQ's consideration of public input.	120

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52	**Application Review**	The Supervisor's review of applications will include the following: b. Complete an evaluation within a one-quarter mile (1,320 feet) area of review. The evaluation shall consider location of well bores, their construction and cementing details, plugging records, and open formations to determine potential for fluid migration outside of the permitted injection zone or into USDWs as a result of the proposed injection.	Note: There is not item a.; the list begins with b. EPA's comments on the draft application's approach to the AoR are in Comment #28 and apply here as well.	121
52	**Application Review**	c. Review available geologic information in proximity to the proposed well for faults, structures, or other known features that may allow vertical migration of fluids or cause induced seismicity as a result of the proposed injection.	This section implies that the geologic information could be part of the application; however, other parts of the draft application that address permit application requirements or descriptions, namely the Program Description and Rule 324.201, do not include this type of information. Based on EPA's review, the applicant does not appear to be responsible for providing this information. It would be helpful to the review to understand Michigan's approach to locating and evaluating this information, for example in the Program Description or standard operating procedures or guidances as applicable. If Michigan intends to require the information of applicants, the draft application should be consistent across all its sections that describe application requirements and should reference applicable regulatory requirements and guidance as appropriate.	122
53	**Application Review**	i. Complete on-site review of proposed well or well being converted.	It is difficult to evaluate the effectiveness of this requirement without knowing what an on-site review entails.	123

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53	**Permit Modification**	Modifications resulting in a substantial alteration of a permit issued by the Supervisor may result in the initiation of a new public notice process as described in paragraph three of Permit Applications section of this Instruction. A substantial alteration is one that results in the modification of one or more specific permit conditions that necessitate a more complex technical review of the permit such as a stratigraphic change in injection zone or change of well location.	It is unclear if permit modifications (other than emergency permits) are supported by regulation. EPA is concerned that without legally binding requirements for permit modification that USDWs may not be protected to the fullest extent under each permit. It would be helpful for EPA and the general public to understand the circumstances requiring a new public notice process and whether they are discretionary. The language also implies that Michigan's definition of substantial' is based not on the type of alteration but on the depth of Michigan's review. To clarify this passage, EPA recommends classifying levels of alterations/modifications on objective standards. The term "more complex review" implies that the original review is less complex and perhaps less rigorous. EPA recommends explaining the increased rigor of the second review of substantial alterations, or rewording the passage to avoid distinguishing some reviews as more complex than others.	124
54	**Drilling and Completion and Conversion**	The following requirements apply….	EPA made extensive comments on drilling, completion, and conversion standards and descriptions on page 27 of the draft application. EPA's comments apply to the Instruction, which has identical language.	125
55	**Testing, Operating, and Records Reporting**	For a Class II well that has not been utilized for its intended purpose for a period of greater than two (2) years, the permittee shall, prior to resuming injection, demonstrate mechanical integrity for the well and receive authorization to resume injection from the Supervisor or authorized representative	The MI demonstration requirement for temporarily abandoned wells is not described in the Program Description. Does a temporarily abandoned well still have to demonstrate MI every 5 years so long as the permit is in effect? The draft application should describe whether the State will allow TA wells to remain in TA status indefinitely or whether the State has requirements or policies to compel TA wells to be plugged or to make some other demonstration of non-endangerment.	126
55	**Testing, Operating, and Records Reporting**	7. A Permittee of a commercial disposal well shall submit any new source for Supervisor approval prior to disposal from that source.	Commercial wells and their unique requirements are not described in the Program Description or in rules. The Program Description should include all aspects of the proposed program, including concepts in the Instruction such as this. It is also unclear whether requirements in this Instruction for commercial wells are enforceable, insofar as the existing Michigan rules do not appear to define commercial wells or subject them to such requirements. EPA remains concerned that unless the key requirements are codified in	127

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			regulation, Instruction elements will not be federally enforceable, could change over time without a formal rulemaking process, and may be subject to challenge. EPA expects all key technical provisions described in the Program Description and Instruction to be legally binding. EPA expects the Attorney General to explain the legal link between statute, rule, and instructions, to and confirm whether the Instruction establishes legally-binding requirements.	
55	**Testing, Operating, and Records Reporting**	10. The permittee shall submit an annual chemical analysis of the injectate by March 1 of the following year, or more frequently if there has been a change in sources or characteristics of the injectate.	It is unclear how this requirement applies to commercial wells, which have more than one waste stream. The draft application should clarify how commercial wells are expected to comply with this requirement.	128
Section E. Applicable Statutes and Rules				
Part 615 Supervisor of Wells, 1994 PA 451, as Amended				
			EPA has not completed review of the Statute.	129
Part 615 Administrative Rules				
74	**Part 1. General Provisions** R 324.102 and R 324.103	Definitions	Several concepts fundamental to a UIC program that are used throughout the Program Description are not defined in rules. Given that the draft application overall uses some key terms widely and inconsistently, EPA notes that defining the terms in rules and using terms uniformly can clarify the proposed program in the draft application. These terms are: *Class II injection well*; *injection zone*; *confining zone*; *commercial well*; *mechanical integrity*; *Area of Review*; *injection casing*; and *contaminant*. Revisions to the draft application may yield other terms needing definition as well.	130

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74	R 324.102	(s) "Fresh water" means water that is free of contamination in concentrations that may cause disease or harmful physiological effects and is safe for human consumption.	Michigan's definition of "fresh water" does not encompass all water sources designated as Underground Sources of Drinking Water (USDW)[1] as defined in applicable federal regulations[2]**.** That is, an aquifer could meet USDW criteria because, for example, it has fewer than 10,000 milligrams per liter total dissolved solids, but not meet the definition of "fresh water" because it may not be considered to be "free from contamination and safe for human consumption in its present state". This is problematic because Michigan's regulations provide certain protections to only "fresh water," thus providing such protections to only a limited subset of the water sources considered to be USDWs under SDWA. Michigan will need to modify language in rules to reflect the protection of all aquifers that meet the definition of a USDW.	131
78	**Part 2. Permits to Drill and Operate** R 324.201 Application for permit to drill and operate requirements; issuance of permit		EPA notes this rule does not include certain application requirements that are described elsewhere in the draft application. The rule does not require several pieces of information that the Instruction possibly indicates should be part of an application: "available geologic information in proximity to the proposed well for faults, structures, or other known features that may allow vertical migration of fluids or cause induced seismicity as a result of the proposed injection" (page 52 of the draft application). If these items are meant to be an application requirement, this rule should include them. (If the State is responsible for the information in its review, the draft application should be clear that the State will supply this information, as stated in Comment #122 of this table.)	132

[1] 40 CFR 144.3 Underground source of drinking water (USDW) means an aquifer or its portion:
(a)(1) Which supplies any public water system; or
(2) Which contains a sufficient quantity of ground water to supply a public water system; and
(i) Currently supplies drinking water for human consumption; or
(ii) Contains fewer than 10,000 mg/l total dissolved solids; and
(b) Which is not an exempted aquifer.

[2] 40 CFR 144.1 9 (g): In carrying out the mandate of the SDWA, this subpart [Subpart A – General Provisions] provides that no injection shall be authorized by 1permit or rule if it results in the movement of fluid containing any contaminant into underground sources of drinking water (USDWs see §144.3 for definition) if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR part 141 or may adversely affect the health of persons (§144.12).

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			EPA has recommendations for additional information within the AoR that is useful to effectively evaluate proposed Class II injection wells, below. - Information on faults, structures, or other known features that may allow vertical migration of fluids as contemplated by the Instruction. Faults are a potential conduit for fluid migration and are needed to avoid potential impacts due to over-pressurization of a reservoir. - Additional subsurface features that could be conduits to potential conduits within an AoR to potentially allow fluid movement from a well into a USDW, such as karst formations and mines that could act as conduits for fluid movement.	
78	R 324.201	R 324.201(2)(b)(iv) Information relative to the approximate distances and directions from the stake or marker to special hazards or conditions, including all of the following:	The state regulation does not require a map showing faults. An environmental impact assessment is required at Rule 324.201(f), but it is unclear what this would include.	133
78	R 324.201	R 324.201(2)(b)(iv) (A) Surface waters and other environmentally sensitive areas within 1,320 feet of the proposed well…. through … (F) Threatened or endangered species, as identified by the provisions of sections 36501 to 36507 of the act, within 1,320 feet of the proposed well.	EPA notes that the Program Description does not include requirements (A) through (F), while the Instruction does. The draft application should be made consistent and reflect State regulatory requirements accurately.	135
78	R 324.201	R 324.201(2)(b)(iv)(G) All buildings, recorded fresh water wells and reasonably identifiable fresh water wells utilized for human consumption, public roads, pipelines, and power lines that lie within 600 feet of the proposed well location.	Though this rule appears to pertain to obtaining information on surface features around a well, including drinking water wells introduces subsurface information into this requirement. Since drinking water wells penetrate into the subsurface, the rule appears to omit requiring information on some potentially penetrating wells in the full 1,320-foot radius of an injection well. EPA recommends clarifying that the applicants should provide information for and that the State will evaluate any wells within the 1,320-foot radius of the well that penetrate into the injection zone as potential conduits. Additionally, not all	145

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			potential conduits (e.g. private wells) within 1/4 mile are included in the review.	
78	R 324.201	R 324.201(2)(b)(iv)(H) All public water supply wells identified as type I and IIa that lie within 2,000 feet of the proposed well location and type IIb and III that lie within 800 feet of the proposed well location, as defined in 1976 PA 399, MCL 325.1001 to 325.1023.	As in the comment on Rule 324.201(2) (b)(iv)(G), EPA recommends the state explain that all penetrating wells within the 1,320-foot radius of a proposed injection will be evaluated as potential conduits. Overall, EPA recommends adding that the applicant's plat maps are required to also include any wells within the 1,320-foot radius of a proposed injection well identify and include information on wells that penetrate the proposed injection zone.	136
79	R 324.201	R 324.201(2)(k) All of the following additional information shall be submitted with an application for a permit to drill and operate an injection well or to convert a previously drilled well to an injection well:	For wells that are already constructed and being proposed for conversion to injection, the application should include well completion records in addition to schematics for conversion to an injection well.	137
79	R 324.201	R 324.201(2)(k) (iv) A schematic diagram of the proposed injection well that shows all of the following information:	This rule does not support requirements for confining zone information described in the Program Description on page 16. The rule should be modified to be consistent with the States desired program requirements.	138
79	R 324.201	R 324.201(2)(k)(iv)(C) The geological name of the disposal interval.	The term *disposal interval* is not defined; the term appears to indicate a zone where injected fluid is disposed, which could preclude injection for enhanced recovery or for storage of liquid hydrocarbons – both these activities are included in the federal definition of Class II injection wells. The rule should be modified to include potential injection zones for all types of Class II wells.	139
79	R 324.201	R 324.201(2)(k)(iv)(D) The geological name and the top and bottom depths of all fresh water strata to be penetrated.	Fresh water' as defined by Michigan is less protective than the definition of USDWs, in both Michigan's rules and EPA's UIC regulations. The schematic of the proposed injection well should show all USDWs penetrated by the UIC well because all must be isolated via casing and cementing in order to protect against endangerment.	140
83	R 324.206 Modification of Permits	R 324.206 (6) If a permittee of a well conveys his or her rights as an owner of a well to	EPA needs to evaluate the State program's approach and regulatory authority for permit modifications such as transfers because it is related to the State program's ability to manage compliance and financial liability. While this rule	141

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		another person, or ceases to be the authorized representative of the owner of a well, before final completion, then a request for the transfer of the permit to the acquiring person shall be submitted by the acquiring person to the supervisor …	requires a transfer request if the transfer occurs before final completion, it is not clear that the State requires a formal transfer application or action in the event a well is transferred after final completion. The draft application needs to clarify the State's approach to transfers, citing the regulatory basis for any requirements relative to well transfers. Michigan may need to modify regulations as appropriate to address transfers at all stages of well operation.	
83	R 324.207 Suspension of oil and gas operations due to failure to transfer permit.	If a permittee of a well conveys his or her rights as an owner of a well to another person, or ceases to be the authorized representative of the owner of a well, and a request for transfer of the permit under R 324.206(6) has not been approved, then, in addition to other enforcement actions, failure to comply shall be cause for immediate suspension of any or all components of the oil and gas operations on the well, including the removal or sale of oil, gas, or brine.	EPA notes this rule is tied to Rule 324.206(6), which pertains to a permittee which "conveys his or her rights as an owner of a well to another person, or ceases to be the authorized representative of the owner of a well, *before* final completion" (emphasis added). Many wells in Michigan are transferred long after they are constructed and injecting. Michigan should point also to authorities that govern well transfers for wells that are constructed and operating in addition to those not yet constructed or explain how this rule is relevant to all well transfers.	142
89	**Part 4. Drilling and Well Construction** R 324.401 Preventing waste	A person who drills a well or wells as described in R 324.201(1) shall use every reasonable precaution to prevent waste.	EPA is concerned that the "reasonable precaution" language in this rule allows room for an applicant to successfully argue that a drilling requirement is not reasonable, thereby superseding other standards that protect the USDW. The draft application should explain how reasonable precaution' does not supersede other construction standards. EPA recommends defining "reasonable" and/or revising the rule to reflect that a person drilling a well must follow all applicable State requirements.	143
94	R 324.408 Surface casing	R 324.408 (1) Surface casing shall be set a minimum of 100 feet below the base of the glacial drift into competent bedrock and 100 feet below all fresh water strata.	EPA is concerned that the regulations do not require the use of surface casing outright to isolate USDWs. EPA has determined that the Michigan definition of fresh water is less protective that the federal definition of USDW. This rule is an example of how "fresh water" not "USDW" is referenced by a technical requirement in Michigan rules. This rule would need to be modified for EPA to consider it effective to protect USDWs.	144

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		R 324.408(2) Surface casing shall be cemented pursuant to R 324.411 and shall be circulated to the surface. If the cement falls back or fails to circulate to the surface, then the open annulus space shall be sealed with cement or other equivalent materials approved by the supervisor or authorized representative of the supervisor before resuming drilling.	EPA notes that the draft application on page 26 states that Rule 324.408 "provides for running and cementing of surface and additional strings of casing." when the rule pertains to surface casing only. EPA's review of Rule 324.408 concludes that the rule pertains to surface casing only. This regulation, is also possibly inconsistent with the referenced Rule 324.801(4), which prohibits the movement of fluids containing contaminants into USDWs – not simply into fresh water sources.	
94	R 324.410 Casing other than surface casing	R 324.410(1) A person who drills a well or causes a well to be drilled pursuant to R 324.201 or rules that were in effect before the effective date of these rules shall case the well in a manner approved by the supervisor to prevent waste. R 324.410(2) In addition to the surface casing, the supervisor may require or order a string of casing to be run to seal off any of the following: (a) A potentially productive oil or gas zone, or both. (b) A lost circulation zone. (c) A utilized natural brine or mineral zone. (d) A storage field. (e) A high-pressure zone. (f) A reservoir undergoing secondary recovery.	EPA notes that Rule 324.410 affects construction of casings other than the surface casing, but does not answer questions raised by other parts of the draft application about whether injection zone casings are required and about the regulatory basis for cementing requirements of such casings. Therefore, this rule does not appear to support standards for long string casings relative to the injection zone. If this rule is intended to be the basis of injection zone casing and cementing requirements, it will need to be modified to include these definitions and requirements.	145
95	R 324.412 Stripping of casing	R 324.412(2) A permittee of a well shall seal the annular space left open and the	Stripping casing and sealing rip points are not addressed elsewhere in the draft application. It is not clear what manner of sealing annular space exposed by ripped casing will be acceptable for Class II wells. Since these rules presumably	146

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		stratum exposed by the approved pulling and stripping of casing in a manner approved by the supervisor or authorized representative of the supervisor.	apply to Class II wells, the draft application should address ripping and sealing rip points in its explanation of the Class II injection well program for plugging and abandonment. Otherwise, the program application needs to explain why these rules do not apply to Class II wells.	
98	R 324.416 Filing of well records	R 324.416(1) A person who drills, deepens, changes well status, or completes a well under R 324.201, R 324.420, R 324.511, or rules that were in effect before the effective date of these rules shall keep and preserve at the well, during drilling, deepening, changes in well status, or completion operations, accurate records recording all geologic strata penetrated, casing and cement used, and other information as may be required by the supervisor in connection with the drilling of the well.	EPA is concerned that the Michigan program does not require well owners/operators to retain records of construction, drilling, and completion for a sufficient time period because the rule appears to require that fundamental records be kept only during drilling, deepening, changes in well status, or completion operations. These records are crucial for pursuing corrective actions and other efforts to maintain the protection of USDWs over the lifetime of a well. The draft application should explain who retains this information and the retention period.	147
102	**Part 5. Completion and operation** R 324.508 Multiple zone completions	R 324.508 The supervisor or authorized representative of the supervisor may allow multiple zone completions upon written application to, and approval by, the supervisor	While Rule 324.508 appears to allow multiple zone completions for Class II injection wells, the draft application has not mentioned multiple zone completion elsewhere. To evaluate the program, EPA needs to know the entire scope of well construction and operation configurations that would be acceptable under Michigan's proposed program. Therefore, the draft application needs to describe its construction and operating standards for multiple zone completion in Class II wells, or else explain why they would not be allowed with respect to this rule.	148
102	R 324.511 Change of well status	R 324.511 (1) A permittee of a well who desires to change the status of a well by an oil and gas operation, including temporary abandonment or high volume hydraulic fracturing… shall	Hydraulic fracturing using diesel fuels is subject to UIC Class II regulation; thus, to the extent that Michigan's regulations allow for hydraulic fracturing – as indicated by this regulation – and to the extent that diesel fuels may be used, this activity would need to be regulated under the Class II UIC program.	149

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		file an application for change of well status with the supervisor. … In addition, an application to change the status of a well by utilizing high volume hydraulic fracturing shall include the information specified in rule 201(2)(c) of these rules.		
106	**Part 7. Disposal of Oil or Gas Field Waste, or Both** R 324.703 Disposal of Oil or Gas Field Waste, or Both	A permittee of a well shall inject oil or gas field fluid wastes, or both, into an approved underground formation in a manner that prevents waste. The disposal formation shall be isolated from fresh water strata by an impervious confining formation	This regulation does not clearly require that underground injection for all Class II well subtypes not endanger USDWs by maintaining a confining formation. The language focuses only on disposal wells and seeks to isolate "fresh water".	150
106	R 324.704 Use of Annular Space For Disposal Prohibited; Temporary Exception.	The supervisor may grant a temporary exception to the prohibition if the supervisor determines that annular disposal will not damage underground fresh water, oil, gas, or other minerals.	The Program Description does not describe how MI regulations allow for temporary exceptions to the annular disposal prohibition criteria, nor does it include directions for permittees, or guidance for MDEQ reviewers about applying the temporary exception to annular disposal. To fully evaluate the application, the EPA needs to know more about how Michigan's proposed UIC program will justify and manage temporary exemptions, the criteria for temporary exemptions, and the duration of temporary exceptions.	151
108	Part 8. Injection Wells 324.801	324.801	The draft application on page 20 refers to long string casing requirements, referencing required by Rule 324.801 (3) and (4). The rules, however, do not include information or statements about surface casing with regard to injection wells, although Rule 324.803 refers to an "innermost casing," which is not defined. Therefore, Michigan's expectations for long string or injection zone casing do not appear to be supported by rule. Michigan may want to specifically incorporate the multiple barrier approach into the rules if the intention of its program proposal is to have each Class II well-constructed with casings extending to the injection zone. EPA remains concerned that unless the key technical provisions are codified in regulation as legally binding requirements, they will not be federally enforceable, could change over time without a formal	152

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			rulemaking process, and may be subject to challenge.	
108	324.801	324.801 (3) A permittee of a well shall ensure that an injection well is constructed and operated so that the injection of fluids is confined to strata approved by the supervisor or authorized representative of the supervisor.	EPA notes that Rule 324.801 uses the term "strata approved by the Supervisor," one of the several terms used to describe the zone into which fluid is to be injected. Elsewhere the draft application uses "injection zone" and other rules use "disposal zone." EPA is concerned that the multiplicity of terms may introduce legal ambiguity into the proposed program which could affect enforcement. The draft application needs to use consistent terminology that is grounded in regulatory authority; this may necessitate modifying rule language such as in Rule 324.801(3).	153
108	324.801	324.801 (4) A permittee of a well shall ensure that construction, operation, maintenance, conversion, and plugging and abandonment of the well will not allow the movement of fluid containing any contaminant into an underground source of drinking water.	EPA notes that this rule references USDWs, whereas other well requirements reference fresh water. EPA also notes that (3) and (4) together set a dual goal for Michigan's Class II injection program that injection wells are constructed so that they do not result in the injected fluid leaving the zone into which it is placed, or allow movement of fluid containing any contaminant into a USDW. EPA notes that (4) reflects language under 40 CFR 144.1(g) which states that federal regulations provide that "no injection shall be authorized by permit or rule if it results in the movement of fluid containing any contaminant into USDWs." EPA recommends defining contaminant' in rules. Previous comments (Comment #35 and #35) discuss the inconsistent use of terms regarding fluids targeted by Michigan's proposed program.	154
108	R 324.802 Temporary Authority to Inject	The supervisor may grant a permittee of a well temporary authorization, for a period of not more than 30 days, to inject fluid for the limited purpose of running injectivity tests.	Insofar as this rule addresses injection well permitting and operation, the draft application should describe how it will be implemented. The process to request and receive authority for temporary injection should be described. The draft application should also explain how Michigan will prevent permittees from injecting above maximum allowable pressure or above the fracture gradient with regard to this rule.	155
108	R 324.804 Maximum injection pressure	During disposal operations, a permittee shall ensure that the surface injection pressure does not exceed a pressure determined by the following equation: Pm = (fpg - 0.433 sg)d where	EPA notes that according to Rule 324.804, injection pressure limits apply to disposal operations only. Enhanced recovery wells and hydrocarbon storage wells are also Class II wells, and are not covered under this rule as written. The Program Description or Statement of Legal Authority will need to demonstrate to EPA's satisfaction how all Class II wells will be held to this standard or describe the standards that will apply to these other types and demonstrate they	156

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		Pm = surface injection pressure fpg = fracture pressure gradient (if unknown, assume 0.800) sg = specific gravity of the injection liquid (if unknown, assume 1.2) d = injection depth in feet (true vertical depth).	are effective. Otherwise, Rule 324.804 will need to be modified to apply to all types of Class II wells. MDEQ's description of acceptable fracture gradients needs clarification. This rule states that 0.80 psi/ft should be used if the fracture gradient is unknown. Both the Program Description (p. 18, 24) and the Instruction (p.53) state that the permit applicant may use EPA field fracture gradients. It is not clear that the EPA values are known' for the purposes of this rule, since the rule does not specify methods for determining the fracture gradient pressure or note discretion by the supervisor to use other values. This section requires operators (of disposal wells) to not exceed a calculated surface injection pressure (Pm). This differs from other places in the draft application that discuss that operators should not exceed a fracture gradient only, without discussing a Pm or maximum allowable pressure.	
109	R 324.805	R 324.805(2) The annulus between the innermost casing and the tubing above the packer shall be tested at least once each 5 years	Item (2) refers to 5-year pressure tests for internal mechanical integrity for injection wells in general. However, Form - 7606 Annular Pressure Test, indicates that temporarily abandoned wells will undergo SAPT every two years. The draft application should clarify which requirement MDEQ intends to have Class II applicants follow, referencing applicable regulatory requirements and guidance as appropriate.	157
109	R 324.806	R 324.806(1) A permittee of a brine disposal injection well shall, on a weekly basis, monitor and record the injection pressure, injection rate, and cumulative volume of the fluid injected…	While the Program Description and Instruction are consistent with this rule, Form 7609 Injection Well Operating Report (page 371) indicates that operators are expected to report annulus pressure readings, which implies that Michigan expects them to monitor and record annulus pressure information as well, though the parameter is not included here. Reporting requirements need to be clarified and made consistent because EPA needs to understand them and their legal basis to determine program effectiveness.	158
110	R 324.806	R 324.806(1) … A permittee of a secondary recovery injection well may conduct the monitoring and recording, required by this rule, on a field or	The draft application should describe the demonstrations Michigan would consider acceptable for showing manifold monitoring is comparable to individual monitoring.	159

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		project basis by manifold monitoring, rather than on an individual well basis, if more than 1 secondary recovery injection well operates with a single manifold, and if the permittee demonstrates that manifold monitoring is comparable to individual well monitoring.		
110	R 324.806	R 324.806(3) All records pertaining to an injection well shall be retained by the permittee for a period of 3 years.	EPA notes that MITs are required every five years; therefore, EPA considers it necessary for records to be retained for 5 years to inform periodic MITs.	160
110	R 324.807	R 324.807(1) A permittee of an injection well shall verbally notify the supervisor or authorized representative of the supervisor of any pressure test failure, significant pressure change, or other evidence of a leak in an injection well….	The draft application should describe how this rule will be implemented because it affects USDW protection as well as determines compliance with operating standards and maintenance of mechanical integrity. While this section appears to pertain to internal mechanical integrity, it is not clear what constitutes significant pressure change.' First, it is unclear which pressure is meant – injection pressure or annulus pressure or both. EPA notes, however, that the Michigan proposed program does not appear to require annulus pressure monitoring by operators; that is, no rule or guidance discusses annulus pressure monitoring, though it is found as a category on a reporting form. As a further note, this rule is not cited anywhere else in the document, although it would seem to be a key part of operator duties under a Class II program.	161
119	R 324.1014 Suspension of oil and gas operations due to threat to public health and safety.	R 324.1014 (1) The supervisor or authorized representative of the supervisor shall have the authority to immediately require corrective action, including suspending any or all components of the oil and gas operations, if the oil and gas operations have been determined by the supervisor to be in violation of the provisions of the act, these rules, permit conditions, instructions, or orders of the supervisor and threatens the public health and safety.	EPA is concerned that Rule 324.1014 (1) establishes a two-part test for the exercise of enforcement authority. First, there must be a violation and second, there must be a threat. A two-part test for the exercise of enforcement authority limits Michigan's authority to require corrective action for all violations. EPA recommends that Michigan change the rule language to eliminate the two-part test. Suggestions for changing language are: (1) changing the language to "... or orders of the supervisor <u>or</u> threatens the public…" or (2) deleting the phrase "and threatens the public health and safety."	162

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119	R 324.1014 Suspension of oil and gas operations due to threat to public health and safety.	R 324.1014 (2) A suspension of oil and gas operations shall be in effect for not more than 5 days or until operation is in compliance and protection of the public health and safety is ensured. To extend the suspension beyond 5 days, the supervisor shall issue an emergency order to continue the suspension of oil and gas operations and may schedule a hearing under part 12 of these rules. The total duration of the suspension of oil and gas operations shall not be more than 21 days, as provided in section 61516 of the act.	EPA has several concerns about Rule 324.1014(2). First, the rule appears to be internally inconsistent. It states that a suspension remains in effect until the operation is in compliance, but establishes a 21-day limit on suspensions overall and obligates the supervisor to use an emergency order to extend suspensions. Second, the rule is not protective of USDWs, because it apparently limits suspensions to 21 days regardless of compliance. A 21-day limit on Michigan's authority to sustain a suspension is not acceptable to EPA. EPA notes that the operation of Rule 324.1014 in relation to the rules it is linked to is difficult to follow, because there appear to be conflicts between Rule 324.1014 (2) and MCL 324.61516, which it references. The conflict is that this rule appears to cite MCL 324.61516 as the provision governing a 21-day limit to *suspension*, while MCL 324.61516 actually provides that *emergency orders* shall remain in force and effect for no longer than 21 days. It is unclear among both rules whether suspensions and emergency orders are the same. The draft application should explain the differences between suspensions and emergency orders, and clarify how these rules and statutes operate. In conversations with MDEQ, MDEQ staff indicated that Michigan's approach to suspension orders involves extending suspension periods using other authorities related to Rule 324.1014. Michigan needs to provide resolution from the AG or other clarification about this rule; otherwise EPA will expect rule changes such that Michigan's authority is not limited.	163
119	R 324.1201 Hearing; Purpose; Scheduling; Request or Petition Generally	R 324.1201 Hearings may be held to receive evidence pertaining to the need or desirability of an action or an order by the supervisor. A hearing may be scheduled at the initiative of the supervisor or by the supervisor upon the receipt of a petition, which is properly filed as specified in R 324.1202, from an owner, producer, lessee, lessor, or other person	Michigan should explain whether members of the public can request a hearing pursuant to this rule. EPA is concerned that the language limits the ability to request hearings for Class II wells to petitioners specifically involved in the oil and gas development community and those specifically with a financial stake related to oil and gas development. Members of the public in nearby communities must be able to request hearings on proposed Class II. Michigan may need to modify regulations to clarify who may request a hearing	164

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		interested in the matter proposed for hearing.		
132	R 324.1202 Petition for hearings; Contents		The information required to petition for a hearing are very detailed and numerous. EPA is concerned the requirements would present a barrier to members of the public seeking a hearing on a permit application. Michigan may need to modify its requirements for hearing petitions to provide an effective public involvement process.	165

Section		#
Section G. Draft MOA Between the MI DEQ and the US EPA, Region V		
EPA recognizes that a Memorandum of Agreement for federal authorization of a program is a joint Michigan – EPA document. EPA will follow-up on the draft MOA later.		166
Section H. QAPP		
EPA's Guidance # 19 does not include the use of a QAPP in demonstrating effectiveness of running a Class II program. We will not review the QAPP for purposes of primacy consideration. The EPA grants program requires a Quality Management Plan, which is a system-wide QA plan for the program overall, in order to receive federal funds to operate the Class II UIC program. Reviewing and approving a QMP is part of a separate process, and EPA will inform Michigan about that process as we move forward in the federal authorization review and decision.		167

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Section I. MI DEQ Office of Oil, Gas and Minerals Class II Program Forms			
347	7200-1 Application for Permit	EQP 7200-1 is the information supplied by the applicant to inform MDEQ's decision, and does not appear to reflect the State's approval – that is, this form is not per se a permit example. It is recommended that MDEQ-OOGM revise the permit application form to include instructions concerning AoR methodology and request appropriate AoR maps (quarter mile radius) that includes other wells and geologic features (faults, fractures, etc.). Alternatively, the information could be included on Form EQP 7200-14 Injection Well Data, which is a supplement for injection well applications.	168
359	7200-14 Injection Well Data	EQP 7200-14 appears to be a supplemental application for injection supplied by the applicant and does not appear to reflect State approval. It is recommended that MDEQ-OOGM revise the permit application form to include instructions concerning AoR methodology and request appropriate AoR maps (quarter mile radius) that includes other wells and geologic features (faults, fractures, etc.).	169
369	7606 Annular Pressure Test	The form indicates that temporarily abandoned wells will undergo SAPT every two years – this is not described in the Program Description or elsewhere in rules. EPA remains concerned that unless technical requirements are codified in regulation, they will not be federally enforceable, could change over time without a formal rulemaking process, and may be subject to challenge. EPA expects all key technical provisions described in draft application to be legally-binding requirements.	170
370	7608 Authorization To Inject	This form includes a check box for "oil and gas field waste." The Program Description does not define this class of waste or describe its suitability for Class II disposal (there is no definition in any law or rule submitted with the draft application either). Without definition, it could encourage disposal of wastes other than appropriate Class II fluids. Discussion of the permit on page 24 states that the permit authorizes drilling or construction only; however, it is unclear where the operating conditions are found. Phase III (p. 25) refers to the authorization to inject, which presumably is Form EQP 7608. EPA notes that this form does not include operating conditions, such as maximum injection pressures. It is unclear, therefore, which document or set of documents explains the full set of operating conditions that are approved by the State and are enforceable by the State.	171

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371	7609 Injection Well Operating Report	The form could be confusing for operators who do not know whether they are in the monthly or annual reporting category. The form does not clearly explain whether the numbers reported should be maximums for the week/month or a one time reading. This form indicates that operators report weekly or monthly annulus pressure readings, though neither the Program Description nor Michigan rules nor Instruction describe or require that operators must report annulus pressure. Is this a requirement that operators are obligated to comply with? It also indicates that every month or year, the operator will report specific gravity, although neither the Program Description nor Michigan rules nor Instruction describe or require that operators must report specific gravity. Is this an enforceable requirement?	172