STATE OF NEW MEXICO
BEFORE THE WATER QUALITY CONTROL COMMISSION

IN THE MATTER OF PROPOSED NEW
RULE 20.6.8 NMAC – *Ground and Surface Water Protection - Supplemental Requirements For Water Reuse*

No. WQCC 23-84(R)

NEW MEXICO ENVIRONMENT DEPARTMENT,
WATER PROTECTION DIVISION,

Petitioner.

AMIGOS BRAVOS AND SIERRA CLUB'S NOTICE OF INTENT TO PRESENT DIRECT TESTIMONY

Pursuant to 20.6.1.202.A NMAC and the Pre-hearing Order issued in this matter, Amigos Bravos and Sierra Club hereby file their Notice of Intent to Present Direct Testimony. As required by the applicable regulations and the Pre-hearing Order, Amigos Bravos provides the following information:

1. Identify the person for whom the witnesses will testify:

The two witnesses identified below, Christopher Lewis, Sc.D., and Charles de Saillan, will testify on behalf of Amigos Bravos, a non-profit water conservation organization dedicated to protecting and restoring the waters of the state, and Sierra Club, a non-profit organization dedicated to promoting the responsible use of the earth's ecosystems and resources.

2. Identify each technical witness the person intends to present, and state the qualifications of that witness, including a description of their educational and work background:

Amigos Bravos and Sierra Club intend to present:

- Christopher Lewis, Sc.D., Senior Technical Consultant, Industrial Economics, Inc., whose educational and work background is set forth in his curriculum vitae, attached as AB-SC Exhibit 3, and

- Charles de Saillan, an attorney, whose educational and work background is set forth in his resume, attached as AB-SC Ex. 5.

3. Include a copy of the direct testimony of each technical witness in narrative form, and state the estimated duration of the direct oral testimony of that witness:

As required by the Pre-hearing Order, ¶ 3, the full written direct testimony of Dr. Lewis is submitted as AB-SC Exhibit 4 and the full written direct testimony of Mr. de Saillan is submitted as AB-SC Exhibit 6. Each witness will limit their oral direct testimony to a summary not to exceed 30 minutes, as provided for in the Pre-hearing Order, ¶ 6.

4. Include the text of any recommended modifications to the proposed regulatory change:

A text of the modifications to 20.6.8 NMAC in redline/strikeout proposed by Amigos Bravos and Sierra Club is attached as AB-SC Exhibit 1. Attached as AB-SC Exhibit 2 is the text of modifications accepting all changes proposed by Amigos Bravos and Sierra Club.

5. List and attach all exhibits anticipated to be offered by that person at the hearing, including any proposed statement of reasons for adoption of the rules:

Below is a list of all exhibits to be offered by Amigos Bravos and Sierra Club in support of their direct testimony, attached. Amigos Bravos and Sierra Club's testimony sets forth reasons to adopt their modifications. This set of exhibits has a table of contents, accessible by clicking on the "bookmarks" tab in Adobe Acrobat. Amigos Bravos reserves the right to offer sur-rebuttal exhibits.

Exhibit	Description
AB-SC Ex. 1	Amigos Bravos and Sierra Club's Proposed Amendments to 20.6.8 NMAC in redline/strikeout
AB-SC Ex. 2	Amigos Bravos and Sierra Club's Proposed Amendments to 20.6.8 NMAC accepting all changes
AB-SC Ex. 3	Resume of Christopher Lewis, Sc.D.
AB-SC Ex. 4	Direct Testimony of Christopher Lewis, Sc.D.
AB-SC Ex. 5	Resume of Charles de Saillan
AB-SC Ex. 6	Direct Testimony of Charles de Saillan
AB-SC Ex. 7	Legislative Council Service Legislative Drafting Manual (2015) [excerpts]
AB-SC Ex. 8	WQCC No. 20-51(R), 3/1/22 Del. Tr. [excerpts]

Respectfully submitted,

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Certificate of Service

I certify that a copy of the foregoing pleading was emailed to the following on April 15, 2024:

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AB-SC EXHIBIT 1

AMIGOS BRAVOS AND SIERRA CLUB'S PROPOSED AMENDMENTS TO NMED'S MARCH 20, 2024 AMENDED PROPOSED RULE

TITLE 20 ENVIRONMENTAL PROTECTION
CHAPTER 6 WATER QUALITY
PART 8 GROUND AND SURFACE WATER PROTECTION – SUPPLEMENTAL REQUIREMENTS FOR WATER REUSE

Amigos Bravos and Sierra Club recommend deleting all definitions of terms not used in the rule, including terms only used in other defintions. Defined terms not used in the rule are highlighted.

20.6.8.1 ISSUING AGENCY: Water Quality Control Commission.
[20.6.8.1 NMAC - N, mm-dd-yy]

20.6.8.2 SCOPE: This rule applies to all ~~All~~ persons subject to the Water Quality Act, ~~NMSA 1978,~~ Sections 74-6-1 through 74-6-17 NMSA, and specifically to persons intending to reuse wastewater and their operations.
[20.6.7.2 NMAC - N, mm-dd-yy]

20.6.8.3 STATUTORY AUTHORITY: Standards and regulations are adopted by the commission under the authority of the Water Quality Act, ~~NMSA 1978,~~ Sections 74-6-1 through 74-6-17 NMSA 1978, and the Produced Water Act, ~~NMSA 1978,~~ Subsection B of Section 70-13-3 and Subsection D of Section 70-13-4 NMSA 1978.
[20.6.8.3 NMAC - N, mm/dd/yy]

20.6.8.4 DURATION: Permanent.
[20.6.8.4 NMAC - N, mm-dd-yy]

20.6.8.5 EFFECTIVE DATE: Month Day, Year, unless a later date is cited at the end of a section.
[20.6.8.5 NMAC - N, mm-dd-yy]

20.6.8.6 OBJECTIVE: The objective of 20.6.8 NMAC is to supplement the general requirements of 20.6.2.1200 through 20.6.2.2201 NMAC and 20.6.4.8 through 20.6.4.900 NMAC, and the general groundwater permitting requirements of 20.6.2.3000 through 20.6.2.3114 NMAC to control the discharges of water contaminants specific to water reuse.
[20.6.8.6 NMAC - N, mm-dd-yy]

20.6.8.7 DEFINITIONS: The following terms as used in this ~~p~~Part shall have the following meanings. ~~:~~ ~~t~~Terms defined in the Water Quality Act, but not defined in this ~~p~~Part, shall ~~will~~ have the meaning given in the act.

A. Terms beginning with numerals or the letter "A," and abbreviations for units.

(1) ~~**"Agricultural application"** means the application of reuse water for cultivating the soil and growing crops or irrigating pasture for livestock grazing. Agricultural application includes the use of water in connection with the operation or maintenance of feedlots or animal feeding operations ("AFOs"), but not those activities defined as livestock application.~~

(2) **"Application"** means a final disposition of a treated wastewater for reuse. Applications include~~, but are not limited to~~ industrial, agricultural, direct potable, indirect potable, recreational turf, rangeland, or ecological restoration water reuse. ~~Applications may have effluent criteria to protect ground water, surface water, and aquatic health.~~

B. Terms beginning with the letter "B".

(1) **"Bench-scale project"** means a project or study conducted in a laboratory.

C. Terms beginning with the letter "C".

(1) ~~**"Commercial application"** means the application of reuse water in connection with any activity that provides, or offers to provide, goods or services for incidental use, such as but not limited to car washes, laundry facilities, window washing, chemical mixing, where public access is not restricted or limited.~~

D. Terms beginning with the letter "D".

(1) **"Demonstration project"** means a bench-scale or pilot project, as defined in this Part.

(2) **"Department"** means the New Mexico environment department.

(3) ~~**"Direct potable application"** means the delivery of purified water to a drinking water plant or a drinking water distribution system without an environmental buffer. Additional treatment, monitoring, or an engineered buffer would be used in place of an environmental buffer to provide equivalent protection of public health and response time if the purified water does not meet specifications.~~

(4) **"Discharge permit"** as defined in 20.6.2 NMAC.

(5) ~~**"Discharge plan"** as defined in 20.6.2 NMAC.~~

(6) ~~**"Discharge site"** as defined in 20.6.2 NMAC.~~

(7) **"Disposal"** as defined in 20.6.2 NMAC.

(8) **"Domestic wastewater"** means untreated wastewater containing human excreta and water-carried waste from typical residential plumbing fixtures and activities, including but not limited to, wastes from toilets, sinks, bath fixtures, clothes or dishwashing machines and floor drains.

E. Terms beginning with the letter "E".

(1) ~~**"Environmental buffer"** means any ground water, streams, lakes, or impoundments used for reuse water storage or conveyance purposes related to an indirect potable application.~~

F. Terms beginning with the letter "F".

(1) **"Feasibility study"** means a study conducted by a person to determine if a new or modified domestic wastewater treatment technology will be technically, economically, or financially viable for use in a ~~direct or indirect~~ potable application.

(2) ~~**"Flood irrigation application** means land application of reuse water by ditches, furrows, pipelines, low flow emitters, and other non-sprinkler methods.~~

(3) ~~**"Flowback water"** means the fluid returned after the hydraulic fracturing process is completed, where the internal pressure of the rock formation causes fluid to return to the surface through the wellbore. Flowback water is a component of produced water.~~

(4) ~~**"Food crop application"** means application of reuse water to domestic plants which are produced for the purpose of or may be used in whole or in part for, consumption by people or livestock, including, but not limited to nursery, root, seedstock to be used for the production of food crops.~~

(5) ~~**"Formation water"** means water that occurs naturally within the pores of rock.~~

G. Terms beginning with the letter "G".

(1) **"Ground water"** as defined in 20.6.2 NMAC.

H. Terms beginning with the letter "H".

(1) **"Hydraulic fracturing"** means a technique that fractures a rock formation by pumping large quantities of fluids at high pressure down a borehole and into a target rock formation, which ~~that~~ stimulates the flow of natural gas or oil, increasing the volumes that can be recovered. ~~Fractures are created by pumping large quantities of fluids at high pressure down a wellbore and into the target rock formation. Hydraulic fracturing fluid, also referred to as fracking fluid, commonly consists of water, proppant, and chemical additives that open and enlarge fractures that can extend several hundred feet away from the wellbore. This technique is generally used in unconventional oil and gas production.~~

I. Terms beginning with the letter "I".

(1) ~~**"Indirect potable application"** means the application of reclaimed wastewater for drinking water purposes with an intermediary environmental or constructed buffer.~~

(2) ~~**"Industrial application"** means the application of reuse water in any activity that is used in connection with industrial processes, such as alternative energy, hydrogen production, cooling water, process/boiler feeds, utility power plants, chemical plants, and metal working facilities where at a minimum, public access is restricted or limited.~~

(3) **"Industrial project"** means a reuse water project that does not discharge to ground or surface water and that is used in connection with industrial processes, such as alternative energy, hydrogen production, cooling water, process/boiler feeds, utility power plants, chemical plants, and metal working facilities where ~~at a minimum,~~ public access is restricted or limited.

(4) ~~**"Injection"** as defined in 20.6.2 NMAC~~

(5) ~~**"Irrigation application"** means application of reuse water to land areas to foster plant growth.~~

J. Terms beginning with the letter "J". [RESERVED]

K. Terms beginning with the letter "K". [RESERVED]

L. Terms beginning with the letter "L".

(1) ~~**"Land application"** means the application of reuse water to the ground surface in which no other application has been assessed and to which the application or run-off does directly or indirectly enter a surface or ground water of the state.~~

(2) ~~**"Livestock application"** means the application of reuse water for the consumption of~~

~~water for the care and feeding of domestic animals such as cattle or horses. Livestock application does not include the use of water in connection with the operation or maintenance of feedlots or agricultural application of water.~~

M. Terms beginning with the letter "M". [RESERVED]

N. Terms beginning with the letter "N".

(1) ~~"National Pollutant Discharge Elimination System"~~ ~~means the federal program for issuing, modifying, revoking, and reissuing, terminating, monitoring, and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 318, 402, and 405 of the federal Clean Water Act. The NPDES program is administered by the United States Environmental Protection Agency (EPA) in the State of New Mexico.~~

(2) ~~"NTU"~~ ~~means nephelometric turbidity units, measured by a nephelometer.~~

(3) ~~"NPDES permit"~~ ~~means a national pollutant discharge elimination permit which is an authorization, license, or equivalent control document issued by the authorized permitting entity to implement the requirements of the federal program as identified in 40 C.F.R. Sections 122, 123, and 124.~~

O. Terms beginning with the letter "O". [RESERVED]

P. Terms beginning with the letter "P".

(1) "Person" as defined in 20.6.2 NMAC.

(2) "Pilot project" means a representative engineering scale model or prototype system that is beyond the bench-scale and tested in a non-laboratory environment. A pilot project represents an increase in the technological scale than otherwise achievable in a laboratory and often involves larger quantities of materials over longer periods of time.

(3) "Potable" means ~~describes~~ water that is suitable for human consumption that meets state drinking water standards at 20.7.10 NMAC.

(4) "Potable application" means the delivery to a drinking water plant or a drinking water distribution system of reuse water that has been purified to remove all contaminants.

(4) ~~"Pretreatment"~~ ~~means the reduction, elimination, or alteration of pollutants in wastewater prior to or in lieu of discharging into a publicly owned treatment works (POTW) or other wastewater treatment facility. The reduction or alteration may be obtained by physical, chemical, or biological processes, process changes, or by other means. Appropriate pretreatment technology includes control equipment, such as equalization tanks or facilities, for protection against volumetric or pollutant surges or load variations that might interfere with or otherwise be incompatible with the treatment facility.~~

(5) "Produced water" means a fluid or ~~(~~wastewater~~)~~ that is an incidental byproduct from drilling for or the production of oil and gas, and includes formation water, flowback water, and any chemicals added downhole during drilling, production, or maintenance processes during the life cycle of an oil or gas well. Produced water includes known and unknown water pollutants.

Q. Terms beginning with the letter "Q". [RESERVED]

R. Terms beginning with the letter "R".

(1) "Reclaimed wastewater" means domestic wastewater that has been treated to the specified levels for the defined applications and complies with other applicable local, state, or federal regulations.

(2) ~~"Recycled produced water"~~ ~~means produced water that is reconditioned by a recycling facility permitted or registered with the oil conservation division of the energy, minerals, and natural resources department, and is reused within the oil and gas industry for the exploration, drilling, production, treatment or refinement of oil and gas.~~

(3) ~~"Restoration application"~~ ~~or~~ **~~"ecological application"~~** ~~means the use of water for the implementation of ecological or environmental restoration activities permitted under applicable state and federal regulations.~~

(4) "Reuse water" means a treated wastewater originating from domestic, industrial, or produced water sources~~,~~ that has undergone a level of treatment appropriate for an application such as agriculture, irrigation, potable water supplies, aquifer recharge, industrial processes, or environmental restoration. Reuse water has a water quality, based on application, determined to be protective of the environment and human health. For purposes of this Part, reuse is categorized by the source of the water. ~~(e.g., "domestic reuse" is wastewater originated from domestic sources following appropriate treatment that may be used for various applications such as irrigation).~~

S. Terms beginning with the letter "S".

(1) "State" means the state of New Mexico.

(2) "Surface water" means a "surface water(s) of the state" as defined in 20.6.4 NMAC.

T. Terms beginning with the letter "T".

(1) ~~"Transference"~~ ~~means the distribution, temporary storage, or disposal of reuse water.~~

(2) "Treated produced water" means produced water that is reconditioned by mechanical

or chemical processes into a reusable form.

(3) ~~**"Treated wastewater"** means wastewater that has undergone treatment.~~

(4) **"Treatment"** means a process in which wastewater has been reconditioned by biological, mechanical, or chemical processes to remove or eliminate contaminants, creating an effluent that can be returned to the water cycle either through discharge, transfer, storage, disposal, ~~transference,~~ or reuse.

U. Terms beginning with the letter "U".

(1) ~~**"Untreated produced water"** means produced water that has not undergone treatment.~~

(2) ~~**"Untreated wastewater"** means wastewater that has not undergone treatment.~~

V. Terms beginning with the letter "V". [RESERVED]

W. Terms beginning with the letter "W".

(1) **"Water contaminant"** means any substance that, if discharged or spilled, could alter the physical, chemical, biological or radiological qualities of water. "Water contaminant" does not mean source, special nuclear or by-product material as defined by the Atomic Energy Act of 1954, but may include all other radioactive materials, including ~~but not limited to~~ radium. ~~and accelerator produced isotopes.~~

(2) **"Water pollutant"** as defined in 20.6.4 NMAC. ~~means a water contaminant in such quantity and of such duration as may with reasonable probability injure human health, animal or plant life or property, or to unreasonably interfere with the public welfare or the use of property.~~

(3) **"Water pollution"** as defined in 20.6.2 NMAC.

(4) **"Wastewater"** means water or other fluids associated directly with sewerage systems, industrial processes, or produced water that is disposed of, or undergoes treatment for discharge, transference, or reuse. Wastewater in this Part does not include dairy "wastewater", ~~;~~ as defined in 20.6.6 NMAC.

X. Terms beginning with the letters "X" through "Z". [RESERVED]

[20.6.8.7 NMAC – N, mm-dd-yy]

20.6.8.8 – 20.6.8.99 [RESERVED]

[20.6.8.8-20.6.8.99 NMAC – N, mm-dd-yy]

20.6.8.100 GENERAL PROVISIONS: Unless otherwise required by this Part, all persons are subject to the state's Ground and Surface Water Protection Regulations at ~~(~~20.6.2 NMAC~~)~~. ~~This includes, but is not limited to, regulations relating to spills, notices of intent, permitting, fees, penalties, compliance orders, and abatement.~~

[20.6.8.100 NMAC – N, mm-dd-yy]

20.6.8.101 UNAUTHORIZED APPLICATIONS OF PRODUCED WATER: The department shall not approve a discharge permit or a discharge permit modification that includes the discharge to ground or surface water of produced water for potable applications.

20.6.8.101 – 20.6.8.199 [RESERVED]

[20.6.8.101-20.6.8.199 NMAC – N, mm-dd-yy]

20.6.8.200 DOMESTIC WASTEWATER REUSE: [RESERVED]

[20.6.8.200 NMAC – N, mm-dd-yy]

20.6.8.201 ~~DIRECT AND INDIRECT~~ POTABLE APPLICATIONS FOR DOMESTIC WASTEWATER:

A. Unauthorized applications. The department shall not approve a discharge permit or a discharge permit modification that includes the discharge of reuse water for ~~direct or indirect~~ potable applications except for those authorized applications identified in Subsection B of 20.6.8.201 NMAC.

B. Authorized applications.

(1) **Feasibility studies**: Persons proposing to conduct a feasibility study for ~~direct or indirect~~ potable applications for domestic wastewater shall: ~~;~~

(a) Comply with all applicable permitting requirements in 20.6.2 and 20.6.4 NMAC.

(b) Ensure there is no connection between a potable water system and the water being studied and no cross connections exist between feasibility study-water and a community's potable water supply.

(c) Ensure that all ~~direct and indirect~~ potable reuse feasibility studies are conducted in a manner that does not interfere with ongoing operations at the wastewater and drinking water facilities.

(d) Obtain approval from the department~~,~~ through ~~either~~ a discharge permit or from

the U.S. environmental protection agency through a national pollutant discharge elimination system permit pursuant to section 402 of the Clean Water Act ~~NPDES permit~~ and comply with all conditions therein.
[20.6.8.201 – N, mm-dd-yy]

20.6.8.202-299 [RESERVED]
[20.6.8.202-20.6.8.299 NMAC – N, mm-dd-yy]

20.6.8.300 INDUSTRIAL WASTEWATER REUSE: [RESERVED]
[20.6.8.300 NMAC – N, mm-dd-yy]

20.6.8.301-399 [RESERVED]
[20.6.8.301-20.6.8.399 NMAC – N, mm-dd-yy]

20.6.8.400 PRODUCED WATER REUSE: As provided in the Water Quality Act, Subsection P of Section 74-6-4 NMSA 1978, and the Produced Water ~~Oil and Gas~~ Act, ~~NMSA 1978,~~ Subsection B of Section 70-13-3 NMSA 1978, the following provisions apply to the discharge of produced water for activities unrelated to the exploration, drilling, production, treatment, or refinement of oil or gas.

A. General requirements.

(1) Untreated produced water discharge to surface water: No person shall cause or allow untreated produced water to discharge so that it may move directly or indirectly to a surface water. The department shall deny certification of any federal permit proposing to discharge untreated produced water to a surface water.

(2) Treated produced water discharge to surface water: No person shall cause or allow treated produced water to discharge so that it may move directly or indirectly to a surface water. The department shall deny certification of any federal permit proposing to discharge treated produced water to a surface water.

(3) Untreated produced water discharge to ground water: No person shall cause or allow untreated produced water to discharge so that it may move directly or indirectly into ground water. The department shall not approve a discharge permit ~~plan~~ or a discharge permit ~~plan~~ modification that includes the discharge of untreated produced water.

(4) Treated produced water discharge to ground water: No person shall cause or allow treated produced water to discharge so that it may move directly or indirectly into ground water. The department shall not approve a discharge permit ~~plan~~ or a discharge permit ~~plan~~ modification that includes the discharge of treated produced water. ~~without development and adoption of standards specific to treated produced water (Subsection D of 20.6.8.400 NMAC). Demonstration projects or industrial projects submitted to the department through the notice of intent process in Subsection C of 20.6.8.400 NMAC are authorized to operate, following the determination of no discharge permit required issued by the department.~~

B. Authorized applications.

(1) Demonstration projects or industrial projects, determined by the department not to require a discharge permit because the ~~D~~demonstration project or industrial project will not discharge in a manner that may directly or indirectly affect ground or surface water, are subject to the following requirements:

(a) Persons intending to conduct a ~~D~~demonstration project or industrial project shall secure and comply with all applicable federal, state, and local statutes, permits, and certifications, including the Produced Water Act, ~~NMSA 1978,~~ Sections 70-13-1 through 70-13-5 NMSA 1978, ~~et. Seq.,~~ and including payment of department fees and satisfying department financial assurance requirements.

(b) The ~~D~~demonstration project or industrial project shall be designed to provide information specific to untreated produced water quality, treatment technologies, treated produced water quality, treatment volumes, and toxicity studies for potential produced water reuse applications.

(c) In accordance with 20.6.2.1201 NMAC, any person intending to use produced water for approved purposes, unrelated to the production of oil and gas, shall submit to the ground water quality bureau of the department a produced water notice of intent prior to use.

(d) Demonstration projects or industrial projects shall not commence until the ~~D~~department has made a determination of no permit required on the notice of intent.

(e) Persons transporting, storing, treating, or utilizing untreated or treated produced water shall have written procedures at the locations where the ~~D~~demonstration project or industrial project is physically located to prevent releases onto the ground, directly or indirectly into ground or surface water.

(f) All untreated and treated produced water shall be handled, transported, and

stored in accordance with all other applicable local, state, and federal regulations.

(g) Any release of untreated or treated produced water is subject to the notifications and corrective actions in 20.6.2.1203 NMAC except releases under the authority of the oil conservation commission pursuant to the provisions of the Oil and Gas Act, ~~NMSA 1978,~~ Section 70-2-12 NMSA 1978, and other laws conferring power on the oil conservation commission and the oil conservation division of the energy, minerals, and natural resources department to prevent or abate water pollution.

(h) Persons disposing of untreated or treated produced water, as part of the final disposition following a ~~D~~demonstration project or industrial project, shall use one of the following methods in accordance with the relative permit: discharge to a produced water disposal well permitted pursuant to the oil conservation commission's regulations for oil and gas injection at 19.15.26 NMAC, delivery to a surface waste management facility permitted pursuant to the oil conservation commission's regulations for oil and gas surface waste management facilities at ~~(~~19.15.36 NMAC~~)~~, or disposal in a permanent pit permitted pursuant to the oil conservation commission's regulations for oil and gas pits, closed-loop systems, below-grade tanks and sumps at 19.15.17 NMAC. The ~~D~~department may consider alternative disposal options on a case-by-case basis.

(i) Persons disposing of the components of a ~~D~~demonstration project or industrial project using untreated or treated produced water, as part of the final disposition must adhere to all local, state, and federal regulations, as applicable.

C. Notice of intent.

(1) Any person intending to use produced water for an authorized application under Subsection B of 20.6.8.400 NMAC shall submit to the ground water quality bureau of the department a produced water notice of intent prior to use.

(a) Notices shall be on a form provided by the department and shall include the following information:

(i) the name and address of the person intending to conduct the ~~D~~demonstration project or industrial project;

(ii) the location of the intended ~~D~~demonstration project or industrial project;

(iii) estimate of the concentration of water contaminants in the produced water used in the demonstration project or industrial project;

(iv) the quantity of produced water used in the produced water used in the demonstration project or industrial project;

(iii) the ~~D~~demonstration project or industrial project research plan and objectives;

(iv) documentation that the ~~D~~demonstration project or industrial project design is consistent with the approved applications in Subsection B of 20.6.8.400 NMAC;

(v) the storage, secondary containment and spill prevention methods that will be used to prevent accidental discharges;

(vi) a plan to transport in and transport out any untreated produced water or treated produced water in a safe manner, in accordance with state and federal regulations;

(vii) plans for safe handling and proper disposal of produced water and any materials that come into contact with untreated produced water or treated produced water, including soils, plant material, treatment equipment, and containment area materials;

(viii) the health and safety considerations that minimize the risk of human exposure to produced water via any exposure pathway; and

(ix) financial assurance in place to cover the cost of cleanup and remediation in the event of failure during operation and closure of the ~~D~~demonstration project or industrial project.

(b) The department, at its discretion, may request additional information.

(c) Based on the information provided in the notice of intent, the department shall make a determination if the ~~D~~demonstration project or industrial project meets the requirements in this section. If the ~~D~~demonstration project or industrial project does not meet the requirements in this section, the person shall not implement the ~~D~~demonstration project or industrial project as proposed.

(2) Persons implementing ~~D~~demonstration projects or industrial projects pursuant to Subsection B of 20.6.8.400 NMAC shall submit to the department all research results, including lab analyses of all water contaminants in the untreated produced water and treated produced water, to assist the department in developing standards and assist the commission in promulgation of regulations for the use of treated produced water

in a manner that prevents water pollution and protects human health and the environment.

~~**D. Effluent quality. [RESERVED]**~~

~~[20.6.8.400 NMAC – N, mm-dd-yy]~~

20.6.8.401-20.6.8.899 [RESERVED]

[20.6.8.401-20.6.8.899 NMAC – N, mm-dd-yy]

20.6.8.900 REFERENCES: [RESERVED]

[20.6.8.900 NMAC – N, mm-dd-yy]

AB-SC EXHIBIT 2

AMIGOS BRAVOS AND SIERRA CLUB'S PROPOSED AMENDMENTS TO NMED'S MARCH 20, 2024 AMENDED PROPOSED RULE

TITLE 20 ENVIRONMENTAL PROTECTION
CHAPTER 6 WATER QUALITY
PART 8 GROUND AND SURFACE WATER PROTECTION – SUPPLEMENTAL REQUIREMENTS FOR WATER REUSE

20.6.8.1 ISSUING AGENCY: Water Quality Control Commission.
[20.6.8.1 NMAC - N, mm-dd-yy]

20.6.8.2 SCOPE: This rule applies to all persons subject to the Water Quality Act, Sections 74-6-1 through 74-6-17 NMSA, and specifically to persons intending to reuse wastewater and their operations.
[20.6.7.2 NMAC - N, mm-dd-yy]

20.6.8.3 STATUTORY AUTHORITY: Standards and regulations are adopted by the commission under the authority of the Water Quality Act, Sections 74-6-1 through 74-6-17 NMSA 1978, and the Produced Water Act, Subsection B of Section 70-13-3 and Subsection D of Section 70-13-4 NMSA 1978.
[20.6.8.3 NMAC - N, mm/dd/yy]

20.6.8.4 DURATION: Permanent.
[20.6.8.4 NMAC - N, mm-dd-yy]

20.6.8.5 EFFECTIVE DATE: Month Day, Year, unless a later date is cited at the end of a section.
[20.6.8.5 NMAC - N, mm-dd-yy]

20.6.8.6 OBJECTIVE: The objective of 20.6.8 NMAC is to supplement the general requirements of 20.6.2.1200 through 20.6.2.2201 NMAC and 20.6.4.8 through 20.6.4.900 NMAC, and the general groundwater permitting requirements of 20.6.2.3000 through 20.6.2.3114 NMAC to control the discharges of water contaminants specific to water reuse.
[20.6.8.6 NMAC - N, mm-dd-yy]

20.6.8.7 DEFINITIONS: The following terms as used in this Part shall have the following meanings. Terms defined in the Water Quality Act, but not defined in this Part, shall have the meaning given in the act.

A. Terms beginning with numerals or the letter "A," and abbreviations for units.

(1) "Application" means a final disposition of a treated wastewater for reuse. Applications include industrial, agricultural, direct potable, indirect potable, recreational turf, rangeland, or ecological restoration water reuse.

B. Terms beginning with the letter "B".

(1) "Bench-scale project" means a project or study conducted in a laboratory.

C. Terms beginning with the letter "C". [RESERVED]

D. Terms beginning with the letter "D".

(1) "Demonstration project" means a bench-scale or pilot project, as defined in this Part.

(2) "Department" means the New Mexico environment department.

(3) "Discharge permit" as defined in 20.6.2 NMAC.

(4) "Disposal" as defined in 20.6.2 NMAC.

(5) "Domestic wastewater" means untreated wastewater containing human excreta and water-carried waste from typical residential plumbing fixtures and activities, including but not limited to, wastes from toilets, sinks, bath fixtures, clothes or dishwashing machines and floor drains.

E. Terms beginning with the letter "E". [RESERVED]

F. Terms beginning with the letter "F".

(1) "Feasibility study" means a study conducted by a person to determine if a new or modified domestic wastewater treatment technology will be technically, economically, or financially viable for use in a potable application.

G. Terms beginning with the letter "G".

(1) "Ground water" as defined in 20.6.2 NMAC.

H. Terms beginning with the letter "H".

(1) "Hydraulic fracturing" means a technique that fractures a rock formation by pumping large quantities of fluids at high pressure down a borehole and into a target rock formation, which stimulates the flow of natural gas or oil, increasing the volumes that can be recovered.

I. Terms beginning with the letter "I".

(1) "Industrial project" means a reuse water project that does not discharge to ground or surface water and that is used in connection with industrial processes, such as alternative energy, hydrogen production, cooling water, process/boiler feeds, utility power plants, chemical plants, and metal working facilities where public access is restricted or limited.

J. Terms beginning with the letter "J". [RESERVED]

K. Terms beginning with the letter "K". [RESERVED]

L. Terms beginning with the letter "L". [RESERVED]

M. Terms beginning with the letter "M". [RESERVED]

N. Terms beginning with the letter "N". [RESERVED]

O. Terms beginning with the letter "O". [RESERVED]

P. Terms beginning with the letter "P".

(1) "Person" as defined in 20.6.2 NMAC.

(2) "Pilot project" means a representative engineering scale model or prototype system that is beyond the bench-scale and tested in a non-laboratory environment. A pilot project represents an increase in the technological scale than otherwise achievable in a laboratory and often involves larger quantities of materials over longer periods of time.

(3) "Potable" means water that is suitable for human consumption that meets state drinking water standards at 20.7.10 NMAC.

(4) "Potable application" means the delivery to a drinking water plant or a drinking water distribution system of reuse water that has been purified to remove all contaminants.

(4)

(5) "Produced water" means a fluid or wastewater that is an incidental byproduct from drilling for or the production of oil and gas, and includes formation water, flowback water, and any chemicals added downhole during drilling, production, or maintenance processes during the life cycle of an oil or gas well. Produced water includes known and unknown water pollutants.

Q. Terms beginning with the letter "Q". [RESERVED]

R. Terms beginning with the letter "R".

(1) "Reclaimed wastewater" means domestic wastewater that has been treated to the specified levels for the defined applications and complies with other applicable local, state, or federal regulations.

(2) "Reuse water" means a treated wastewater originating from domestic, industrial, or produced water sources that has undergone a level of treatment appropriate for an application such as agriculture, irrigation, potable water supplies, aquifer recharge, industrial processes, or environmental restoration. Reuse water has a water quality, based on application, determined to be protective of the environment and human health. For purposes of this Part, reuse is categorized by the source of the water.

S. Terms beginning with the letter "S".

(1) "State" means the state of New Mexico.

(2) "Surface water" means a "surface water(s) of the state" as defined in 20.6.4 NMAC.

T. Terms beginning with the letter "T".

(1) "Treated produced water" means produced water that is reconditioned by mechanical or chemical processes into a reusable form.

(2) "Treatment" means a process in which wastewater has been reconditioned by biological, mechanical, or chemical processes to remove or eliminate contaminants, creating an effluent that can be returned to the water cycle either through discharge, transfer, storage, disposal, or reuse.

U. Terms beginning with the letter "U". [RESERVED]

V. Terms beginning with the letter "V". [RESERVED]

W. Terms beginning with the letter "W".

(1) "Water contaminant" means any substance that, if discharged or spilled, could alter the physical, chemical, biological or radiological qualities of water. "Water contaminant" does not mean source, special nuclear or by-product material as defined by the Atomic Energy Act of 1954, but may include all other radioactive materials, including radium.

(2) "Water pollutant" as defined in 20.6.4 NMAC.

(3) "Water pollution" as defined in 20.6.2 NMAC.

(4) "Wastewater" means water or other fluids associated directly with sewerage systems, industrial processes, or produced water that is disposed of, or undergoes treatment for discharge, transference, or

reuse. Wastewater in this Part does not include dairy "wastewater" as defined in 20.6.6 NMAC.

X. Terms beginning with the letters "X" through "Z". [RESERVED]

[20.6.8.7 NMAC – N, mm-dd-yy]

20.6.8.8 – 20.6.8.99 [RESERVED]

[20.6.8.8-20.6.8.99 NMAC – N, mm-dd-yy]

20.6.8.100 GENERAL PROVISIONS: Unless otherwise required by this Part, all persons are subject to the state's Ground and Surface Water Protection Regulations at 20.6.2 NMAC. [20.6.8.100 NMAC – N, mm-dd-yy]

20.6.8.101 UNAUTHORIZED APPLICATIONS OF PRODUCED WATER: The department shall not approve a discharge permit or a discharge permit modification that includes the discharge to ground or surface water of produced water for potable applications.

20.6.8.101 – 20.6.8.199 [RESERVED]

[20.6.8.101-20.6.8.199 NMAC – N, mm-dd-yy]

20.6.8.200 DOMESTIC WASTEWATER REUSE: [RESERVED]

[20.6.8.200 NMAC – N, mm-dd-yy]

20.6.8.201 POTABLE APPLICATIONS FOR DOMESTIC WASTEWATER:

A. Unauthorized applications. The department shall not approve a discharge permit or a discharge permit modification that includes the discharge of reuse water for potable applications except for those authorized applications identified in Subsection B of 20.6.8.201 NMAC.

B. Authorized applications.

(1) Feasibility studies: Persons proposing to conduct a feasibility study for potable applications for domestic wastewater shall:

(a) Comply with all applicable permitting requirements in 20.6.2 and 20.6.4 NMAC.

(b) Ensure there is no connection between a potable water system and the water being studied and no cross connections exist between feasibility study-water and a community's potable water supply.

(c) Ensure that all potable reuse feasibility studies are conducted in a manner that does not interfere with ongoing operations at the wastewater and drinking water facilities.

(d) Obtain approval from the department through a discharge permit or from the U.S. environmental protection agency through a national pollutant discharge elimination system permit pursuant to section 402 of the Clean Water Act and comply with all conditions therein.

[20.6.8.201 – N, mm-dd-yy]

20.6.8.202-299 [RESERVED]

[20.6.8.202-20.6.8.299 NMAC – N, mm-dd-yy]

20.6.8.300 INDUSTRIAL WASTEWATER REUSE: [RESERVED]

[20.6.8.300 NMAC – N, mm-dd-yy]

20.6.8.301-399 [RESERVED]

[20.6.8.301-20.6.8.399 NMAC – N, mm-dd-yy]

20.6.8.400 PRODUCED WATER REUSE: As provided in the Water Quality Act, Subsection P of Section 74-6-4 NMSA 1978, and the Produced Water Act, Subsection B of Section 70-13-3 NMSA 1978, the following provisions apply to the discharge of produced water for activities unrelated to the exploration, drilling, production, treatment, or refinement of oil or gas.

A. General requirements.

(1) Untreated produced water discharge to surface water: No person shall cause or allow untreated produced water to discharge so that it may move directly or indirectly to a surface water. The department shall deny certification of any federal permit proposing to discharge untreated produced water to a surface water.

(2) Treated produced water discharge to surface water: No person shall cause or allow treated produced water to discharge so that it may move directly or indirectly to a surface water. The department

shall deny certification of any federal permit proposing to discharge treated produced water to a surface water.

(3) Untreated produced water discharge to ground water: No person shall cause or allow untreated produced water to discharge so that it may move directly or indirectly into ground water. The department shall not approve a discharge permit or a discharge permit modification that includes the discharge of untreated produced water.

(4) Treated produced water discharge to ground water: No person shall cause or allow treated produced water to discharge so that it may move directly or indirectly into ground water. The department shall not approve a discharge permit or a discharge permit modification that includes the discharge of treated produced water.

B. Authorized applications.

(1) Demonstration projects or industrial projects, determined by the department not to require a discharge permit because the demonstration project or industrial project will not discharge in a manner that may directly or indirectly affect ground or surface water, are subject to the following requirements:

(a) Persons intending to conduct a demonstration project or industrial project shall secure and comply with all applicable federal, state, and local statutes, permits, and certifications, including the Produced Water Act, Sections 70-13-1 through 70-13-5 NMSA 1978, and including payment of department fees and satisfying department financial assurance requirements.

(b) The demonstration project or industrial project shall be designed to provide information specific to untreated produced water quality, treatment technologies, treated produced water quality, treatment volumes, and toxicity studies for potential produced water reuse applications.

(c) In accordance with 20.6.2.1201 NMAC, any person intending to use produced water for approved purposes, unrelated to the production of oil and gas, shall submit to the ground water quality bureau of the department a produced water notice of intent prior to use.

(d) Demonstration projects or industrial projects shall not commence until the department has made a determination of no permit required on the notice of intent.

(e) Persons transporting, storing, treating, or utilizing untreated or treated produced water shall have written procedures at the locations where the demonstration project or industrial project is physically located to prevent releases onto the ground, directly or indirectly into ground or surface water.

(f) All untreated and treated produced water shall be handled, transported, and stored in accordance with all other applicable local, state, and federal regulations.

(g) Any release of untreated or treated produced water is subject to the notifications and corrective actions in 20.6.2.1203 NMAC except releases under the authority of the oil conservation commission pursuant to the provisions of the Oil and Gas Act, Section 70-2-12 NMSA 1978, and other laws conferring power on the oil conservation commission and the oil conservation division of the energy, minerals, and natural resources department to prevent or abate water pollution.

(h) Persons disposing of untreated or treated produced water, as part of the final disposition following a demonstration project or industrial project, shall use one of the following methods in accordance with the relative permit: discharge to a produced water disposal well permitted pursuant to the oil conservation commission's regulations for oil and gas injection at 19.15.26 NMAC, delivery to a surface waste management facility permitted pursuant to the oil conservation commission's regulations for oil and gas surface waste management facilities at 19.15.36 NMAC, or disposal in a permanent pit permitted pursuant to the oil conservation commission's regulations for oil and gas pits, closed-loop systems, below-grade tanks and sumps at 19.15.17 NMAC. The department may consider alternative disposal options on a case-by-case basis.

(i) Persons disposing of the components of a demonstration project or industrial project using untreated or treated produced water, as part of the final disposition must adhere to all local, state, and federal regulations, as applicable.

C. Notice of intent.

(1) Any person intending to use produced water for an authorized application under Subsection B of 20.6.8.400 NMAC shall submit to the ground water quality bureau of the department a produced water notice of intent prior to use.

(a) Notices shall be on a form provided by the department and shall include the following information:

(i) the name and address of the person intending to conduct the demonstration project or industrial project;

(ii) the location of the intended demonstration project or industrial project;

(iii) estimate of the concentration of water contaminants in the produced water used in the demonstration project or industrial project;

(iv) the quantity of produced water used in the produced water used in the demonstration project or industrial project;

(iv) the demonstration project or industrial project research plan and objectives;

(v) documentation that the demonstration project or industrial project design is consistent with the approved applications in Subsection B of 20.6.8.400 NMAC;

(v) the storage, secondary containment and spill prevention methods that will be used to prevent accidental discharges;

(vi) a plan to transport in and transport out any untreated produced water or treated produced water in a safe manner, in accordance with state and federal regulations;

(vii) plans for safe handling and proper disposal of produced water and any materials that come into contact with untreated produced water or treated produced water, including soils, plant material, treatment equipment, and containment area materials;

(viii) the health and safety considerations that minimize the risk of human exposure to produced water via any exposure pathway; and

(ix) financial assurance in place to cover the cost of cleanup and remediation in the event of failure during operation and closure of the demonstration project or industrial project.

(b) The department, at its discretion, may request additional information.

(c) Based on the information provided in the notice of intent, the department shall make a determination if the demonstration project or industrial project meets the requirements in this section. If the demonstration project or industrial project does not meet the requirements in this section, the person shall not implement the demonstration project or industrial project as proposed.

(2) Persons implementing demonstration projects or industrial projects pursuant to Subsection B of 20.6.8.400 NMAC shall submit to the department all research results, including lab analyses of all water contaminants in the untreated produced water and treated produced water, to assist the department in developing standards and assist the commission in promulgation of regulations for the use of treated produced water in a manner that prevents water pollution and protects human health and the environment.

20.6.8.401-20.6.8.899 [RESERVED]

[20.6.8.401-20.6.8.899 NMAC – N, mm-dd-yy]

20.6.8.900 REFERENCES: [RESERVED]

[20.6.8.900 NMAC – N, mm-dd-yy]

AB-SC EXHIBIT 3

IEc

DR. CHRISTOPHER LEWIS — SENIOR TECHNICAL CONSULTANT

Overview

Dr. Christopher Lewis, Senior Technical Consultant at Industrial Economics, Incorporated (IEc), specializes in the assessment of environmental harms from releases of hazardous substances and oil. He has over 17 years of experience assisting clients with science-based analysis and decision-making in the context of natural resource damage assessment (NRDA), economic and policy analysis, risk assessment, and ecosystem services valuation. Dr. Lewis also has extensive experience in the design and implementation of field and laboratory work, including design, planning, and logistics for environmental sampling operations, as well as analysis and interpretation of environmental monitoring data, environmental modeling, and restoration planning. For the past decade, Dr. Lewis has also served as a Governor-appointed Director on the State of Colorado Cherry Creek Basin Water Quality Authority, including in leadership roles, and is a member of the professional Society of Environmental Toxicology and Chemistry (SETAC). Dr. Lewis lives and works in Denver, CO.

Education

Doctor of Science in Environmental Health, concentrating in Environmental Science and Engineering, Harvard University School of Public Health.

Master of Science in Environmental Health, concentrating in Environmental Science and Engineering, Harvard University School of Public Health.

Bachelor of Arts in Biology with minor in Spanish, Middlebury College.

While attending Harvard as a doctoral student, Dr. Lewis also served on the disciplinary committee and assisted in the teaching of a course on Water Pollution. His dissertation was titled "Assessment of Spatial and Temporal Variability of Heavy Metal Speciation in Aquatic Environments."

Project Experience

For the **U.S. DEPARTMENT OF ENERGY**, since 2010, Dr. Lewis has served as the Lead Environmental Scientist on the assessment of natural resource damages stemming from releases of hazardous substances and oil from historical U.S. Department of Energy operations at the Los Alamos National Laboratory (LANL). In this role, Dr. Lewis supports the Trustee Council, consisting of the Department of Energy, the State of New Mexico, the U.S. Forest Service, Santa Clara Pueblo, Jemez Pueblo, Pueblo de San Ildefonso, and Cochiti Pueblo. Current efforts are focused on evaluation and use of existing site data and information for assessing injuries to natural resources including soil, surface water, sediment, air, groundwater, and biota. Dr. Lewis previously led efforts to compile and review information on historical site operations and contamination of environmental media with hazardous substances, including metals, explosives, and radionuclides, and drafted the

Preassessment Screen and Damage Assessment Plan documents designed to guide future assessment activities at the site.

For the **STATE OF NEW MEXICO, OFFICE OF THE NATURAL RESOURCES TRUSTEE,** led the development of the first Gold King Mine (Bonita Peak Mining District) Restoration Plan, which outlined environmental restoration projects funded through approximately $1 million in settlement funds. As part of this effort, Dr. Lewis helped identify stakeholders, establish restoration criteria, solicit restoration project proposals, evaluate proposed projects, and plan and present at public meetings.

For the **STATE OF NEW MEXICO, OFFICE OF THE NATURAL RESOURCES TRUSTEE AND NAVAJO NATION,** assisted with the assessment of damages stemming from releases of hazardous substances, including metals, from the Bonita Peak Mining District in Colorado. This included the assessment of injuries from the short-term acid mine drainage release from the Gold King Mine Spill into the Animas River. Efforts included case management and strategy, review of site risk assessment documents produced by the U.S. Environmental Protection Agency, and drafting of NRDA case documents, including technical evaluations related to the fate and transport of metals and injuries to downstream aquatic natural resources. Efforts culminated in numerous monetary settlements with responsible parties.

For the **U.S. DEPARTMENT OF JUSTICE**, and the **U.S. DEPARTMENT OF THE INTERIOR FISH AND WILDLIFE SERVICE**, is serving as an expert witness and consultant on the natural resource damage assessment and restoration of the Sauget Industrial Corridor in Illinois. This has included overseeing efforts related to evaluations of injury and identification of approaches for establishing baseline, as well as planning and managing environmental field sampling programs focused on aquatic habitats and impacts of hazardous substances on avian resources.

For the **STATE OF COLORADO OFFICE OF THE ATTORNEY GENERAL,** developed damages estimates associated with natural resource injuries stemming from a petroleum tanker rollover and spill into Fountain Creek. This included documentation and quantification of injuries to aquatic resources, consideration of restoration options, and assisting the State with settlement discussions with the responsible parties.

For the **U.S. ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF WATER AND OFFICE OF RESEARCH AND DEVELOPMENT**, managed the implementation of functionality related to reporting of environmental justice impacts into the BenSPLASH model for evaluating the economic benefits of ambient water quality improvements.

For the **U.S. DEPARTMENT OF ENERGY**, provided decision support related to the natural resource damage assessment and restoration process being conducted at the Hanford Reservation. This included preparation of technical analyses and white papers to assist the Trustees prioritize assessment activities and navigate technical uncertainties. It also included support on a detailed pilot assessment of remedial-based injuries within the 100-BC area that incorporated factors including baseline habitat quality and condition as well as revegetation efforts.

For the **U.S. DEPARTMENT OF THE INTERIOR FISH AND WILDLIFE SERVICE**, assisted in the assessment of damages related to legacy hazardous substance contamination and numerous petroleum spills in Duck and Otter Creeks, in the Maumee River Watershed in northeastern Ohio. This included technical analyses and reporting, case development, restoration project evaluation and scaling, and case strategy and settlement discussion support.

For the **U.S. DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE**, is leading the implementation of the Anacostia River NRDA, in the District of Columbia. Dr. Lewis previously led the development of the Natural Resource Damage Assessment Plan for the River.

For the **WORLD BANK, ENVIRONMENT, NATURAL RESOURCES AND BLUE ECONOMY GLOBAL PRACTICE**, provided logistics and analysis support to the Government of Peru in the wake of the Pampilla Oil Spill. Efforts included documenting the economic impacts of the spill on the regional tourism and fisheries sectors, developing and delivering guidance related to disaster response capacity building, and planning and leading expert workshops on oil spill response planning.

For the **U.S. DEPARTMENT OF THE INTERIOR FISH AND WILDLIFE SERVICE**, assisted state and Federal Trustees in the assessment of damages related to the Houston Ship Channel Texas City Y Oil Spill, as well as restoration planning for avian and shoreline restoration. Assistance included shoreline and avian injury determination and quantification, data management, data quality assurance and quality control, data evaluation, case strategy and technical support, and restoration scaling and alternatives assessment.

For the **CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT**, managed the seafood safety sampling program for the Pipeline P00547 Orange County, California Huntington Beach Oil Spill. This included planning and oversight for commercial and recreational fishing species sampling and analysis for petroleum contamination for human health risk assessment purposes. Results were used to justify reopening of the commercial and recreational fisheries in the wake of the oil spill.

For the **STATE OF ARKANSAS GAME AND FISH COMMISSION**, assisted in the assessment of damages related to the Mayflower Oil Spill in Dawson Cove in Lake Conway. This effort has included the evaluation of existing data and information on resource injury and the preliminary evaluation of potential restoration projects and estimation of damages, as well as the provision of guidance related to case strategy and management.

For the **NATIONAL ACADEMIES OF SCIENCE, NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM**, assisted in the development of a framework for the evaluation of out-of-kind stormwater mitigation techniques for state departments of transportation. This focused on generating guidance for the evaluation of ecosystem service co-benefits such as human health, recreational, and carbon sequestration benefits, as well as the development of case studies and information and decision support resources.

For the **GOVERNMENT OF THE U.S. VIRGIN ISLANDS,** oversaw and assisted in the planning of a baseline ecological evaluation of the estuarine environment at the St. Croix South Shore Industrial Complex. This included development of the Sampling and Analysis and Quality Assurance and Control Plan.

For the **NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION**, served as the Technical Work Group Lead for the Deepwater Benthic Communities Technical Work Group for the MS Canyon 252 Deepwater Horizon Oil Spill. Efforts included organization, budgeting, and planning of offshore cruises for environmental sampling, work group facilitation, and the provision of technical, strategic, and case support. As part of this effort, Dr. Lewis drafted the Benthos Chapter of the Programmatic Damage Assessment Restoration Plan.

For the **U.S. DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE**, conducted a resource equivalency analysis to scale restoration required to compensate for avian wildlife killed as a result of the Suncor petroleum spill into a wetland and Sand Creek, in Denver, CO. This process included working with U.S. Fish and Wildlife personnel to develop life history parameters for affected avian species and identifying and scaling appropriate restoration options. Dr. Lewis also assisted in settlement negotiations and subsequently assisted the **STATE OF COLORADO OFFICE OF THE ATTORNEY GENERAL** with post-settlement filings associated with the case.

For the **U.S. DEPARTMENT OF THE INTERIOR**, assisted the **BUREAU OF LAND MANAGEMENT** and the **FISH AND WILDLIFE SERVICE** to assess damages for a petroleum spill into West Creek, near Grand Junction, CO. As part of this effort, Dr. Lewis conducted a habitat equivalency analysis for natural resource injuries resulting from the spill and assisted in settlement negotiations with the responsible party.

For the **U.S. DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE**, assisted with damages assessment efforts related to a petroleum spill in the Upper Missouri River in the Bakken region of North Dakota. Dr. Lewis also provided support on the oil spill response effort for this spill.

For the **NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION**, participated in damage assessment efforts related to the Enbridge Pipeline Oil Spill in the Kalamazoo River. Efforts included drafting assessment work plans and assisting in the drafting of Shoreline Cleanup Assessment Team (SCAT) forms for use in the context of the damages assessment.

For the **U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF OCEAN ENERGY MANAGEMENT**, assisted in the development of restoration cost estimates for ecological injuries caused by oil spills resulting from offshore oil and gas development as part of the development of the Offshore Economic Cost Model.

For **HEALTH CANADA, AIR HEALTH EFFECTS DIVISION OF THE WATER, AIR, AND CLIMATE CHANGE BUREAU**, assisted in the conduct of literature reviews focusing on quantifying the economic benefits of health improvements associated with reductions in air pollution-related asthma prevalence and incidence, and reduced indoor mold exposure.

For the **STATE OF NEW JERSEY, OFFICE OF THE ATTORNEY GENERAL**, assisted in the evaluation and quantification of natural resource injuries to groundwater at numerous contaminated sites. These evaluations supported the development of expert reports and damage claims in litigation against potentially responsible parties.

For the **STATE OF MISSOURI, DEPARTMENT OF NATURAL RESOURCES**, assisted the State in the development of several groundwater damages claims. Dr. Lewis previously collected and synthesized information on groundwater resources, contaminated groundwater sites, baseline groundwater quality, and damage assessment approaches used in other states to develop a technical approach to pursuing groundwater claims in Missouri.

For the **STATE OF ILLINOIS, OFFICE OF THE ATTORNEY GENERAL**, quantified anticipated changes in water quality in the Chicago Area Waterway System (CAWS) attributable to potential changes in the regulatory use designations of river reaches.

For the **STATE OF DELAWARE, DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL**, assisted in the modeling of changes in water quality caused by estimated changes in the extent of wetlands over time.

For the **U.S. ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF SUPERFUND REMEDIATION AND TECHNOLOGY INNOVATION AND THE OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE**, provided a range of risk assessment support, including assessment of inhalation risks associated with exposures to volatile organic contaminants (VOCs) stemming from domestic water use. This effort included a review of analytical approaches and the equations and parameters used in those approaches for estimating inhalation risk.

For the **U.S. ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF SUPERFUND REMEDIATION AND TECHNOLOGY INNOVATION**, contributed to an evaluation of a draft guidance document on clean-up strategies for soils at Superfund sites. This draft guidance document provides information about alternative approaches for identifying contaminated soil for removal (area-averaging versus not-to-exceed thresholds).

For the **ENVIRONMENTAL DEPARTMENTS OF THE STATES OF MISSOURI, KANSAS, AND OKLAHOMA**, assessed damages stemming from ecological injury to surface water and groundwater stemming from heavy metal contamination attributable to mine waste as part of the ASARCO bankruptcy. This effort also included assistance with the preparation of expert reports.

For the **ST. REGIS MOHAWK TRIBE, ENVIRONMENT DIVISION**, provided technical support in the context of the St. Lawrence River NRDA. This included development of a series of data reports and a fact sheet describing the results various environmental analyses. The reports required review and critical evaluation of data quality, statistical analysis of contaminant concentration trends, and comparison of results with those from other, relevant datasets. The fact sheet summarized one of these reports and presented results from a community-wide study into PCB concentrations in garden soils.

For the **U.S. ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF POLLUTION PREVENTION AND TOXICS**, evaluated and mathematically modeled the U.S. and global elemental mercury markets. Dr. Lewis also assisted in compiling the results of this analysis to support a stakeholder panel for managing domestic stocks of commodity-grade mercury and helped to prepare responses to inquiries by the Committee on Energy and Commerce of the U.S. House of Representatives. Dr. Lewis then assisted in the preparation of a Report to the U.S. Congress on the "Potential Export of Mercury Compounds from the United States for Conversion to Elemental Mercury," as required by the 2008 Mercury Export Ban Act.

Select Peer-reviewed Publications

Georgian, S.E., Kramer, K., Saunders, M., Shedd, W., Roberts, H., Lewis, C., Fisher, C. and E. Cordes. 2020. Habitat suitability modeling to predict the spatial distribution of cold-water coral communities affected by the Deepwater Horizon oil spill. Journal of Biogeography 2020;00:1-12. DOI: 10.1111/jbi.13844.

Lewis, C.G. and R.W. Ricker. 2019. Chapter 21--Overview of Ecological Impacts of Deep Spills: Deepwater Horizon in Deep Oil Spills Facts, Fate, and Effects. Murawski, S.A., Ainsworth, C.H., Gilbert, S., Hollander, D.J., Paris, C.B., Schluter, M. and D.L. Wetzel., Eds. Springer Nature, Switzerland. 611 p.

Reuscher, M.G., Baguley, J.G., Conrad-Forrest, N., Cooksey, C., Hyland, J.L., Lewis, C., Montagna, P.A., Ricker, R.W., Rohal, M., and T. Washburn. 2017. Temporal patterns of Deepwater Horizon

impacts on the benthic infauna of the northern Gulf of Mexico continental slope. PLoS ONE 12(6): e0179923. https://doi.org/10.1371/journal.pone.0179923.

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AB-SC EXHIBIT 4

STATE OF NEW MEXICO
BEFORE THE WATER QUALITY CONTROL COMMISSION

IN THE MATTER OF PROPOSED NEW
RULE 20.6.8 NMAC – *Ground and Surface Water Protection - Supplemental Requirements For Water Reuse* No. WQCC 23 – 84 (R)

NEW MEXICO ENVIRONMENT DEPARTMENT,
WATER PROTECTION DIVISION,

Petitioner.

DIRECT TESTIMONY OF CHRISTOPHER LEWIS, Sc.D.

Q: Please state your name.

A: My name is Christopher Lewis.

Q: Where are you currently employed and what is your position?

A: I am a Senior Technical Consultant with Industrial Economics, Incorporated (IEc). IEc is a consultancy founded in 1981 and headquartered in Cambridge, Massachusetts. IEc employs a wide range of professional consulting staff with expertise in the natural sciences, policy, and economics. Most of our work is conducted on behalf of federal, state, and tribal entities. I have been employed with IEc since 2006, and I live and work in Denver, Colorado. As a Senior Technical Consultant, I assist clients on matters related to natural resource damage assessment, economic and policy analysis, risk assessment, ecosystem services, and scientific data collection, management, and interpretation.

Q: What is your educational background?

A: I have a Bachelor of Arts in Biology with a minor in Spanish from Middlebury College and both a Master of Science and a Doctorate of Science in Environmental Health, both concentrating in Environmental Science and Engineering, from the Harvard University School of Public Health. My dissertation at Harvard focused on aquatic chemistry and the chemical

speciation of metals in the environment relevant to their bioavailability.

Q: Can you briefly describe your work background and the work you have undertaken in New Mexico?

A: After earning my undergraduate degree, but prior to and during graduate school I worked for several years in applied occupational and environmental health epidemiological research as a research assistant. This included a mix of laboratory, desk-based research, and field-based applied aquatic science and survey-based research. I then attended graduate school for a period of five years. After graduate school I joined my current firm, IEc, where I have worked for the past 17 years. Over that time, I have worked on numerous consulting projects throughout the U.S. and to a limited degree, internationally. This has included work for U.S. federal, state, and tribal clients, including the U.S. Environmental Protection Agency (US EPA), the U.S. Department of Interior Fish and Wildlife Service, the U.S. National Oceanic and Atmospheric Administration, the U.S. Department of Energy, the U.S. Bureau of Ocean Energy Management, and numerous state and tribal environmental agencies and offices of Attorneys General.

My work has ranged from providing policy analysis and decision-making support to litigation support and from applied field work to desk-based research and modeling, typically at the intersection of environmental science, policy, and economics. For example, my work for US EPA has included providing policy analysis, managing peer reviews, developing literature reviews, and developing guidance documents. This included, for example, helping US EPA to develop guidance related to soil cleanup approaches at Superfund sites, as well as the assessment of human health risks associated with polychlorinated biphenyls (PCBs). I have also done a significant amount of work in the context of assessing harms from hazardous substance and petroleum releases. This has included applied field work such as planning and executing field

studies to assess the impacts of PCBs on songbirds, managing a large-scale coastal seafood sampling effort to assess the risks of consuming seafood in the wake of an oil spill, and supporting the assessment of impacts of hazardous substances and oil on large freshwater systems. For example, I have worked on natural resource damages assessments of the Buffalo River, Anacostia River, Onondaga Lake in New York State, Animas River, Mississippi River, Missouri River, Lake Conway in Arkansas, and Kalamazoo River. I have also worked on small petroleum spills in numerous freshwater creek systems, for example, in Colorado, the Bakken in North Dakota, and Massachusetts, as well as a number of cases in watersheds affected by mining. Finally, I have also worked on numerous damage assessments related to injuries to groundwater resources, including in New Jersey, New York, Missouri, and the Tri-State Mining District in Kansas, Missouri, and Oklahoma.

In the State of New Mexico, since 2010, I have served as Lead Environmental Scientist for the U.S. Department of Energy on the natural resource damage assessment for releases of hazardous substances and oil from historic operations at Los Alamos National Laboratory. I have also worked on behalf of the State of New Mexico, through the Office of the Natural Resources Trustee, to develop restoration projects related to the 2015 Gold King Mine spill, and for the Office of the Natural Resources Trustee and the Navajo Nation to assess damages from the Gold King Mine spill, which included assistance in the review and provision of comments on site-specific risk assessment documents.

Q: Is an accurate copy of your curriculum vitae attached as AB/SC Exhibit 3?

A: Yes.

Q: Dr. Lewis, can you please summarize the opinions you will provide in your testimony?

A: I will provide opinions regarding the environmental risks associated with the discharge of produced water to surface water and groundwater, as well as the inability to characterize the risks of unknown contaminants in produced water or known contaminants lacking hazard information.[1] My opinions are offered in support of a regulatory prohibition on the discharge of untreated or treated produced water to surface water or ground water. Based on the hazards and potential risks associated with ambient discharge of untreated or treated produced water, the technologies available for treating produced water, and the lack of information on the precise constituents that are in produced water and on the human health and ecological toxicity of many constituents of produced water, in my opinion, a prohibition on discharge of treated and untreated produced water to ground and surface water is prudent and warranted in order to protect human health and the environment.

Q: Dr. Lewis, what is environmental risk assessment?

A: Environmental risk assessment is an analytical process to characterize the nature and magnitude of the potential adverse effects of hazards on human health or the environment. A hazard is a physical, chemical, or biological stressor, such as heat, the element mercury, or a virus. Risk assessment typically involves four steps: hazard identification, dose-response evaluation, exposure assessment, and risk characterization. Hazard identification and dose-response evaluation together constitute the identification and assessment of the toxicity of a given stressor. Exposure assessment is an evaluation of the extent to which the stressor comes into contact with the human or ecological receptor. Risk characterization is a contextualization of the three previous analytical steps that culminates in a conclusion about risk. Putting these steps

[1] I define "known" substances as identified via a Chemical Abstracts Service registry number, which is a unique identifier for chemical substances.

together in risk assessment results in an overall evaluation of the likelihood of adverse effects given the known hazards of the stressor and the extent to which the human or ecological receptor is, or is potentially, exposed to it.

Hazards may be established in a variety of ways, including through laboratory-based toxicity testing, epidemiological studies, and toxicological screening assays. Hazards may also be classified in several different ways, including based on the kinds of adverse effects they cause. For example, a chemical may be considered hazardous based on its ability to cause physical irritation. Or a chemical can be considered carcinogenic if it has the propensity to cause cancer, or a reproductive hazard if it can interfere with reproduction. Whether a hazard poses a risk to human health or the environment, however, is ultimately dependent upon the dose-response relationship and the exposure. For example, a stressor may only pose a risk when inhaled, but not when it comes into contact with the skin. Or a given stressor can be considered acutely toxic or chronically toxic, depending on the duration of exposure required to elicit a given adverse effect.

In environmental risk assessment, we typically think about risk being based on the concentration of a stressor in the environment, dose-response information about how increasing concentrations cause increasing adverse effects, and the extent to which a given human or ecological receptor comes into contact, or might be expected to come into contact, with relevant concentrations in the environment.

Q: Please describe your work experience, with particular attention to your work related to environmental risk assessment.

A: As part of my graduate school experience, I received formal training in environmental risk assessment. This included courses such as risk assessment, regulatory toxicology, and

environmental risk management, as well as courses on properties of environmental contaminants and epidemiology, which are relevant to understanding the environmental hazards and risks posed by stressors. Prior to graduate school, as I noted previously, I worked as a research assistant on occupational and environmental health studies. As a consultant at IEc, I have worked for the US EPA to conduct research and develop internal memoranda related to risk assessment as well as risk assessment guidance documents, and I have managed peer reviews of regulatory risk assessments conducted by US EPA. I have also worked for Health Canada to conduct literature reviews related to the risks of environmental stressors. Finally, as part of my work for clients on natural resource damage assessment matters, I regularly review and rely on information generated as part of environmental risk assessments. And as noted above, this has included reviewing and providing comment on site-specific human and ecological risk assessments.

Q: Dr. Lewis, to prepare your testimony, what sources did you review?

A: I reviewed a variety of peer reviewed journal articles as well as government reports related to produced water, including the known and unknown constituents in produced water, the toxicity of known constituents of produced water, studies of the effects of releasing produced water in the environment, and produced water treatment technologies and regulatory regimes. A list of sources I reviewed is set forth at the end of my testimony.

Q: Dr. Lewis, what is produced water?

A: Produced water is a liquid byproduct from the drilling or production of oil and gas. It is defined in federal regulations as: "the fluid brought up from the hydrocarbon-bearing strata during the extraction of oil and gas, and includes, where present, formation water, injection water, and any chemicals added downhole or during the oil/water separation process." 40 C.F.R.

§ 435.33(a)(2)(v). I will also note that the proposed regulation includes a specific definition for produced water. The definition in the proposed regulation is "a fluid (wastewater) that is an incidental byproduct from drilling for or the production of oil and gas, and includes formation water, flowback water, and any chemicals added downhole during drilling, production, or maintenance processes during the life cycle of an oil or gas well. Produced water includes known and unknown water pollutants." (NMED 2024)

Q: What constituents are found in produced water?

A: Produced water typically contains saline water, as well as natural and man-made hydrocarbons, drilling fluids, and constituents originating from the rocks from which petroleum is extracted (Alley et al. 2011). The salinity of produced water can vary from less than one percent up to greater than 30 percent, or roughly 10 times as salty as the ocean (Neff et al. 2011). A specific study of produced water from five locations in the Permian Basin in New Mexico found salinity ranged from about 10 to 20 percent (Jiang et al. 2022a). Drilling fluids are primarily clay-based but can contain a variety of known and proprietary additives. Drilling fluids can also refer to hydraulic fracturing fluids. Constituents from the environment can include hydrocarbons, salts, metals, and radionuclides.

Q: Please describe the human and ecological health hazards and risks associated with contamination that may be present in untreated produced water.

A: Many of the constituents found in untreated produced water are known hazards; for example, common constituents include arsenic, barium, bromide, mercury, as well as benzene, toluene, ethylbenzene, and xylenes (BTEX). These constituents have the potential to cause carcinogenic, developmental, reproductive, and other adverse effects in humans and other biological organisms (Wollin et al. 2020). In addition, even though one might not think about

salts as being particularly hazardous, the documented concentrations of salts alone in raw produced waters are high enough to be toxic to freshwater organisms (Folkerts et al. 2020). This means that raw produced water discharged into a freshwater stream or lake poses a risk of harming aquatic ecosystems.

However, in addition to these prevalent chemicals, produced water can contain hundreds of other constituents. For some of these constituents, hazard information is lacking. A recent literature review documented more than 1,000 individual known chemical constituents (Danforth et al. 2020). A follow-up presentation reviewing additional data sources suggests more than 2,800 unique compounds may be present in produced water (Thimons et al. 2023). In addition, there are many constituents that are proprietary, so their basic chemical structure is unknown to the public, let alone their potential toxicity. A 2015 study by US EPA identified 692 unique ingredients in hydraulic fracturing fluids, 11 percent of which were designated as confidential business information (US EPA 2015). It is also possible that new chemicals are created during the drilling or operation of oil and gas wells through chemical transformation of known and unknown constituents in produced water (Jiang et al. 2022b, Wollin et al. 2020, Hoelzer et al. 2016).

Academic and government studies have shown that concentrations of known chemical constituents in process water can vary greatly (Danforth et al. 2020, US EPA 2020, Folkerts et al. 2020). I already discussed previously the variability of salt concentrations in produced water, but concentrations of other constituents besides salts can vary considerably as well. For example, barium and strontium concentrations in produced water based on data from the U.S. Geological Survey (USGS) National Produced Waters Geochemical Database ranged from less than 10 micrograms per liter (µg/L) to more than 10 grams per liter (g/L). Similarly, radium activities

ranged from less than 0.1 picocuries per liter (pCi/L) to greater than 10,000 pCi/L (US EPA 2020). The study from five locations in the Permian Basin I mentioned above showed radium activities in a slightly narrower range from less than 1 pCi/L to greater than 1,000 pCi/L (Jiang et al. 2022a).

So, assessing the environmental risks associated with produced water is very difficult because there is no single standard makeup of produced water. The very nature of its highly variable constituents means that produced water from one well may pose a significantly different risk than produced water from another well. Nevertheless, researchers have aimed to tackle this question.

Investigations of the composition of produced water indicate that metal concentrations can be orders of magnitude above US EPA acute and chronic criteria for the protection of aquatic life, and that pH can range from 3.4 to 10.1, which is well outside the range of natural freshwaters (Folkerts et al. 2020). Those metals concentrations and extreme pH values would be expected to cause toxicity to biological organisms living in freshwater systems. Another recent meta-analysis by Danforth et al. (2020) of the literature on chemical constituents of produced water found maximum concentrations observed in produced water were 0.035 milligrams per liter (mg/L) for benzo(a)pyrene, 860 mg/L for benzene, and 16,800 mg/L for toluene (Danforth et al. 2020). For reference, ambient freshwater quality criteria for the protection of aquatic life developed by the US EPA for benzene and toluene are 5.3 mg/L and 17.5 mg/L, respectively (US EPA 1980a, 1980b). The federal maximum contaminant levels (MCLs) for drinking water for these three chemicals are 0.0002, 0.005, and 1 mg/L, respectively (US EPA 2024). These thresholds are multiple orders of magnitude lower than the observed concentrations. Both benzene and benzo(a)pyrene are carcinogenic (ATSDR 1995, 2007) and their maximum

contaminant level goals are both zero (US EPA 2024). Since there is no threshold for effects of carcinogenic compounds, this means that any exposure to these constituents would be expected to increase one's risk of developing cancer.

The Danforth et al. (2020) meta-analysis I mentioned previously is one of the most recent and comprehensive evaluations of the relative toxicity of the chemical constituents of produced water available. That study ultimately found that of the 1,198 chemicals identified in the literature as present in produced water, only 167 had corresponding toxicity information suitable for risk assessment available. Of those 167, a list of 23 chemicals was highlighted as being of particular toxicological concern, based on their maximum observed concentrations in produced water and toxicological information on lower bound effects thresholds. Those thresholds came from laboratory- and field-based ecological toxicity studies as well as toxicological screening assays. The authors also identified 36 chemicals as occurring on US EPA's Priority Pollutant List (Danforth et al. 2020). This means that out of only the small fraction of produced water constituents about which we know something of their potential hazards and concentrations, dozens would be expected to pose a risk to human or environmental receptors if those receptors were exposed to produced water.

Researchers have also published studies of the direct toxicity of produced water constituents or of produced water itself to ecological receptors. For example, a review by Folkerts et al. (2020) first identified specific adverse toxicological effects to aquatic organisms caused by individual produced water constituents including salts, metals, and organics such as polycyclic aromatic hydrocarbons at concentrations observed in produced waters. The authors then synthesized studies of the toxicity of produced water tested directly on aquatic organisms or of the toxicity of laboratory-generated "reconstituted" produced water containing mixtures of

some of the known constituents of produced water. Observed toxicological responses included immunological, endocrine, metabolic, developmental, and mortality responses in aquatic organisms (Folkerts et al. 2020). Finally, a recent study of Permian Basin produced water taken from near Carlsbad, New Mexico, which was funded by the New Mexico Water Resources Research Institute, showed that even diluted and treated produced water induced toxicity in three toxicity screening assays. The authors of that study highlighted that salinity was the primary driver of toxicity but that organic constituents may play a role in the observed toxicity, and raised the possibility that produced water constituents may cause synergistic toxicity (Hu et al. 2022). So, based on these studies, we know that specific known constituents in produced water, as well as raw produced water itself, may pose a risk to human health and the environment.

Q: What technologies are being used to treat produced water?

A: Different technologies are effective at removing different contaminants from water. For example, chemicals can be added to water to react with contaminants and cause them to precipitate out of solution, bioreactors can address high levels of organic carbon, carbon filtration can be used to filter out hydrophobic organic contaminants, and irradiation with ultraviolet light can be used to remove bacteria.

Given the wide variety of contaminants in produced water, multiple treatment technologies have been documented to address different needs. Treatment technologies generally can be organized based on the classes of contaminants they are meant to target. For example, hydrocyclones, oil-water separators, floatation, and coagulation and flocculation have been used to remove suspended particles and oil droplets; adsorption and cation and anion exchange membranes have been used to remove metals; and activated sludge, advanced oxidation, and ozonation have been used to address organic contaminants (Amakiri et al. 2022, Igunnu and

Chen 2014).

Although many of the traditional approaches can remove upwards of 80, 90, or even 95 percent of oil, grease, suspended solids and metals, the reality is that most approaches are not 100 percent effective at removing even targeted contaminants, may not address non-targeted contaminants, and are subject to failure. One particular problem is the complete removal of aromatic compounds such as BTEX, which may not be completely removed in industrial water treatment settings (Amakiri et al. 2022, Igunnu and Chen 2014). To ensure removal of the various constituents that may be present in produced water, a more thorough and complete understanding of what constituents are included in produced water needs to be developed so treatment techniques targeting the specific contaminants may be employed. Further, multiple treatments in series may be necessary, and treatment train effluents should be tested to confirm removal.

Q: How effective are these technologies in treating produced water to meet water quality standards, such as drinking water standards or surface and ground water standards?

A: Under limited circumstances, dischargers have demonstrated success with treating produced water to meet specific permit requirements, for example, in Pennsylvania, Colorado, and Wyoming (Jiang et al. 2022b). However, I don't believe these few specific examples demonstrate that treatment of all types of produced water in a typical industrial setting would result in effluents that meet ground or surface water quality standards in New Mexico (20.6.2 *et seq.* and 20.6.4 NMAC *et seq.*, respectively). For example, where discharge has been permitted, it has been limited to produced water from conventional oil and gas or coalbed methane wells

(Jiang et al. 2022b) where hydraulic fracturing fluids have not been used.[2] There are also documented cases of contaminants in effluents from wastewater treatment plants treating produced water exceeding MCLs and ambient water quality criteria (Ferrar et al. 2013) and causing mutagenicity in screening assays (McLaughlin et al. 2020). As I stated previously, treatment trains would be needed in most cases to effectively address the variable contaminants that may be present in produced water (Amakiri et al. 2022, Igunnu and Chen 2014) and treatment trains should be designed to address the specific suite of contaminants present in the produced water. Comprehensive testing of produced water to ascertain specifically what constituents are present and what chemicals persist in the effluent should be an integral part of any demonstration projects assessing the efficacy of produced water treatment.

Q: Please describe the human and ecological health hazards and risks associated with contamination that may be present in treated produced water.

A: The same types of risks I discussed previously about untreated produced water are relevant to treated produced water. Treatment only reduces the concentrations of produced water constituents. It therefore may reduce the level of risk, but it does not necessarily eliminate it.

Lingering risk stems from two key factors. First, we know that treatment does not equate to complete removal of a contaminant from a wastewater stream. This is particularly problematic from a risk perspective for hazards such as carcinogens that do not have a safe level of exposure. But it is also relevant to non-carcinogenic compounds because they may accumulate in the environment downstream of wastewater treatment facilities or may not be removed to below levels of concern. Second, as I stated previously, treatment trains must be designed to address the

[2] By contrast, "unconventional" wells generally refers to hydraulically fractured or "fracked" wells.

specific suite of contaminants that are present, and even then, some contamination may still pass through the treatment process. Since we do not know the full suite of contaminants that may be present in produced water, is it possible, if not likely, that unknown hazards may be passing through treatment facilities. Residual contamination from a given treatment train will ultimately be dictated by the specific treatment technologies used and the characteristics of the contaminants (e.g., size, polarity, solubility, resistance to breakdown).

This challenge—that water treatment is not 100 percent effective, particularly against non-target compounds—is not unique to the petroleum industry. It was most strikingly shown by two USGS studies published in the early 2000s, which first documented numerous pharmaceuticals and personal care products in U.S. streams and led to widespread public health concern regarding the persistence of these chemicals in drinking water (Kolpin et al. 2002, Stackelberg et al. 2004). The first study by Kolpin et al. (2002) documented potentially hazardous substances in streams throughout the U.S. This was followed by a study that documented that a wide variety of contaminants were found to pass through the treatment train in a drinking water facility (Stackelberg et al. 2004). These two studies, together, were revealing in the field of environmental health specifically because they demonstrated that measurable quantities of known hazards were passing through our wastewater and drinking water treatment facilities.

I have similar concerns about substances expected to be in produced water in New Mexico. For example, radium is a known contaminant in produced water from the Permian Basin in New Mexico (Thakur et al. 2022). Studies of stream sediments in Pennsylvania near centralized waste treatment facilities demonstrated that, even with treatment, managed wastewater from oil and gas facilities led to increased radium at the facility outfalls and

downstream of the outfalls relative to upstream (Lauer et al. 2018, Van Sice et al. 2018).

Contaminants that pass through wastewater treatment facilities therefore may still pose a risk to any exposed human or ecological receptors that come into contact with the wastewater treatment facility discharges. If wastewater-receiving streams or aquifers are hydrologically connected to or used themselves as a source of drinking water, any contaminants that subsequently pass through the drinking water treatment process may then pose a risk to the public consuming that water. Although the magnitude of that risk is dependent on the actual dose and route of exposure, as I discussed previously, given the uncertainties in the makeup of produced water and its treatment, I think it is unlikely to go to zero.

Therefore, to the extent that produced water is effectively treated and the hazardous constituents removed, or their concentrations substantially reduced, the risks posed by the known constituents in treated water would undoubtedly be reduced. However, they may not be fully eliminated.

Q: Please describe the uncertainty associated with human and ecological health risks associated with unknown constituents that may be present in treated and untreated produced water or with known constituents but for which information on their potential human and ecological toxicity is lacking.

A: Risk characterization is the final step in risk assessment. Most of what I have discussed so far relates to the characterizable risks associated with untreated and treated produced water. The first three steps of risk assessment—hazard identification, dose-response evaluation, and exposure assessment—all are predicated on existing scientific studies into the nature, toxicity, and behavior of specific, known stressors. However, the US EPA's Risk Characterization Handbook states that, "Risk characterization is not only about science—it is also about making

clear that science doesn't tell us certain things and that policy choices must be made" (US EPA 2000, p. 11). I, therefore, would be remiss if I neglected to mention uncharacterizable risks. Two considerable sources of uncertainty, when it comes to the risks of produced water, stem from (1) unknown constituents and (2) the lack of toxicological information available for many of the known constituents.

Of the 1,198 chemicals identified as being present in produced water based on the literature reviewed by Danforth et al. (2020), only 290, or 24 percent, can be identified using standard analytical methods. Further, most of these constituents have not been evaluated to determine whether they are hazardous or not: 56 percent of the known chemical constituents in produced water had no corresponding dose-response data available, and, as stated previously, only 167 constituents, or 14 percent, had known toxicity data suitable for risk assessment available (Danforth et al. 2020). Another study reviewed the available toxicity information for chemicals in produced water and hydraulic fracturing fluids, which may be a contaminant in produced water. Yost et al. (2016) found that 62 percent of the 134 chemicals reported as being present in produced water and only eight percent of the 1,072 chemicals reported in hydraulic fracturing fluids had chronic oral reference values. Oral slope factors, which describe the carcinogenicity of a chemical, were almost universally unavailable (Yost et al. 2016). Without information on whether a contaminant is present in produced water, or without information about whether a contaminant is a hazard, one cannot assess risk at all.

Q: Are you familiar with the rule at 20.6.8 NMAC, relating to the discharge and reuse of produced water, proposed by the New Mexico Environment Department (NMED) in this proceeding as set forth in its First Amended Petition?

A: Yes, I have reviewed NMED's First Amended Petition and the proposed rule.

Q: What is your understanding of NMED's proposal regarding discharge of treated and untreated produced water to state waters?

A: NMED proposes to prohibit discharge of treated and untreated produced water to surface and ground water in the state at 20.6.8.400.A NMAC. NMED could not permit or otherwise authorize such a discharge.

At 20.6.8.400.B and C NMAC, NMED proposes to authorize "demonstration projects or industrial projects" that "will not discharge in a manner that may directly or indirectly affect ground or surface water". Any person who wants to engage in such a project must submit a "notice of intent" to NMED, providing certain information and meeting certain conditions to carry out the project.

Q: Dr. Lewis, have you reviewed other states' regulatory requirements for the handling and discharge of produced water?

A: I reviewed readily available literature on the regulatory environments for produced water in individual states as they relate to the handling and discharge of produced water to surface and ground water. Jiang et al. (2022b) reviewed state policies in major oil- and gas-producing regions for the New Mexico Produced Water Research Consortium and determined that most produced water is disposed of through underground injection and only one to two percent of produced water is reused outside of the oil and gas industry nationwide. Further, such reuse appears to be concentrated in only several states. Wyoming was the state with the highest proportion of produced water reused outside of the oil and gas industry, at 37 percent in the year 2017; however, the authors noted that most of that water was from coalbed methane wells, which tend to generate produced water with lower salinity and higher quality than other types of wells. Only a limited number of states have permitted the discharge of treated produced water or untreated

produced water meeting permit-specific water quality requirements, but to varying and limited degrees. For example, most of the states that allow discharge to surface water exclude produced waters from unconventional oil and gas wells (Jiang et al. 2022b).

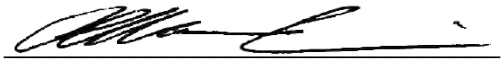
Q: Is a prohibition on the discharge of produced water to surface and ground water consistent with other states' requirements?

A: To my knowledge, yes; principally because the few states that allow for discharge to surface or ground water only do so very sparingly and appear to pose significant restrictions on such practices—for example, excluding discharge of produced water from unconventional oil and gas development to surface or ground water, requiring dischargers to obtain permits, and requiring effluents meet certain testing and water quality criteria—suggesting regulators in those states are also aware of the environmental and human health risks associated with produced water and are similarly taking steps to minimize those risks.

Q: Based on the human and ecological health risks of treated and untreated produced water and current technologies for treating produced water, do you support a prohibition against the discharge of treated and untreated produced water to surface and ground water?

A: Based on my understanding of the hazards and potential risks associated with ambient discharge of untreated or treated produced water, the technologies available for treating produced water, and the basic lack of information on the precise constituents that are in produced water and on the human health and ecological toxicity of many constituents of produced water, in my opinion, a prohibition on discharge of treated and untreated produced water to ground and surface water is prudent and warranted in order to protect human health and the environment.

This concludes my testimony, which is accurate to the best of my knowledge.



Christopher Lewis, D.Sc.

April 9, 2024

Date

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AB-SC EXHIBIT 5

CHARLES de SAILLAN

25 Wildflower Way
Santa Fe, New Mexico 87506
(505) 819-9058 (Mobile)

EXPERIENCE

July 2022 to present — **NEW MEXICO COALITION FOR CLEAN AFFORDABLE ENERGY**
Santa Fe, New Mexico

Attorney
Represented coalition of clean energy organizations in rulemaking proceedings before the N.M. Environmental Improvement Board on motor vehicle zero-emission standards (Advanced Clean Cars II, Advanced Clean Trucks, NOx Omnibus) and emission standards for electric generating facilities; represented coalition in administrative proceedings before the N.M. Public Regulation Commission on approval of public utility transportation electrification plans, grid modernization projects, triennial energy efficiency plans, battery storage projects, and rate cases involving time-of-use rates.

June 2018 to June 2022 — **NEW MEXICO ENVIRONMENTAL LAW CENTER**
Santa Fe, New Mexico

Staff Attorney
Represented environmental organizations in State rulemaking proceedings on adoption of California motor vehicle emission standards (Advanced Clean Cars I), air emission standards for oil and gas production facilities, and revision of surface water standards (triennial review); represented community organizations and State legislators in action against the U.S. Air Force seeking injunctive relief for cleanup of bulk fuel spill at Kirtland Air Force Base; represented community organizations and acequia association in action against U.S. Environmental Protection Agency challenging 2020 rulemaking on "waters of the United States" under the Clean Water Act; represented ranching and ecotourism businesses and environmental organizations in opposing permits for the Copper Flat Mine under the N.M. Water Quality Act, the N.M. Mining Act, and the N.M. Water Code, including several administrative hearings and appeals; drafted and promoted legislation on various environmental issues including citizen suits under environmental laws, State regulatory authority, and the scope of groundwater protection; member of the Governor's Methane Advisory Panel that made recommendations on regulation of methane emissions from oil and gas production; represented conservation organization in advocating for funding for electric school buses under the Volkswagen settlement.

January 2014 to May 2018 — **NEW MEXICO INTERSTATE STREAM COMMISSION**
Legal Bureau
Santa Fe, New Mexico

Attorney
Represented the Commission in administrative and civil litigation and advised the Commission on matters involving compliance with interstate river compacts, transfer of water rights, and protection of endangered aquatic and riparian species; drafted and negotiated funding agreements to implement the Taos Pueblo Indian water rights settlement; oversaw implementation of the N.M. Strategic Water Reserve and drafted regulations; co-authored a preliminary report on the effects of climate change on water resources in the Pecos River Basin.

December 1999 to December 2013

NEW MEXICO ENVIRONMENT DEPARTMENT
Office of General Counsel
Santa Fe, New Mexico

Assistant General Counsel
Represented the Department in enforcement and permitting actions under State environmental laws: served as lead Department counsel in administrative adjudicatory hearings on the hazardous waste permit for Los Alamos National Laboratory under the N.M. Hazardous Waste Act, and the groundwater discharge permits for the Molycorp, Chino, and Tyrone mines under the N.M. Water Quality Act; briefed and argued the Tyrone appeal before the N.M. Court of Appeals; briefed and argued the State designation of outstanding national resource waters before the N.M. Supreme Court; prepared, litigated, and negotiated imminent endangerment orders for comprehensive investigation and clean up of pollution at Los Alamos National Laboratory, Sandia National Laboratories, and Giant Bloomfield Refinery under the Hazardous Waste Act; handled the bankruptcy litigation in *Mark IV Indus. v. New Mexico* (S.D.N.Y.), successfully arguing that the State's injunctive action for cleanup of groundwater pollution at an industrial site was not discharged in bankruptcy; prepared and litigated more than 25 administrative compliance orders and civil complaints for violations of the N.M. Air Quality Control Act, N.M. Water Quality Act, N.M. Hazardous Waste Act, and N.M. Radiation Protection Act; negotiated and prepared administrative or judicial settlements in most of these cases.

September 1993 to September 1999

NEW MEXICO OFFICE OF THE ATTORNEY GENERAL
Environmental Enforcement Division
Santa Fe, New Mexico

Assistant Attorney General
Headed a National Association of Attorneys General workgroup on Superfund reauthorization including preparation of extensive comments on proposed amendments in the 103rd, 104th, and 105th Congresses, and presentation of testimony in U.S. Senate and House committee hearings on five occasions; helped start a new State program for bringing natural resource damage claims under CERCLA and the Oil Pollution Act; negotiated several settlements for such claims; represented the State in *New Mexico v. Sparton Technology* (D.N.M.) seeking injunctive relief under RCRA to abate an imminent endangerment from groundwater contamination; represented the State in enforcement actions under the N.M. Water Quality Act; negotiated compliance agreements with the U.S. Department of Energy under the Federal Facility Compliance Act for disposal of stored radioactive waste; prepared and filed *amicus curiae* briefs in several significant federal appellate cases.

August 1991 to September 1993

UNITED STATES DEPARTMENT OF JUSTICE
Environmental Enforcement Section
Washington, D.C.

Special Trial Attorney
Conducted the litigation in *United States v. Butte Water Co.* (D. Mont.) seeking injunctive relief and civil penalties under the Safe Drinking Water Act, including discovery, summary judgment motions, and garnishment of company assets; negotiated a partial settlement for the construction of filtration plants and other injunctive relief totaling $14 million, and a final settlement for a $900,000 civil penalty. The settlement

imposed the largest penalty ever obtained under the public water supply provisions of the Safe Drinking Water Act.

September 1985 to September 1993

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement
Washington, D.C.

Senior Attorney
Handled all aspects of environmental enforcement litigation under CERCLA, RCRA, the Clean Water Act, and the Safe Drinking Water Act, including pleadings, motions, written discovery, depositions, witness preparation, and trial of several significant cases; negotiated more than 30 settlements under these statutes, including a CERCLA prospective purchaser agreement and a CERCLA "*de minimis*" settlement involving 177 parties and $11 million; helped prepare the *Exxon Valdez* (D. Alaska) case for litigation; worked with Congressional staff on the 1986 CERCLA reauthorization and drafted proposed amendments; helped develop national enforcement policy under CERCLA, RCRA, and the Safe Drinking Water Act; recognized as a national expert on CERCLA liability, the public water system provisions of the Safe Drinking Water Act, petroleum and used oil issues, and the litigation of imminent endangerment cases.

March to October 1984

MASSACHUSETTS EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
Boston, Massachusetts

Assistant General Counsel
Represented the Executive Office on the Special Legislative Commission on Liability for Releases of Hazardous Material and Oil established to report on the adequacy of the legal system in compensating victims of hazardous waste exposure and to recommend legislative reform; worked on the subcommittee that drafted the Commission's Interim Report; helped draft and coordinated the promulgation of amendments to the state "Bottle Deposit Law" regulations and represented the Office in hearings on those amendments.

PUBLICATIONS

United States Court Upholds Regulation of Greenhouse Gas Emissions, 22 EUROPEAN ENERGY & ENVIRONMENTAL LAW REVIEW 116 (2013) (Netherlands).

The Disposal of Spent Nuclear Fuel in the United States and Europe: A Persistent Environmental Problem, 34 HARVARD ENVIRONMENTAL LAW REVIEW 461 (2010).

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United States Supreme Court Rules EPA Must Take Action on Greenhouse Gas Emissions: Massachusetts v. EPA, 47 NATURAL RESOURCES JOURNAL 793 (2007).

Superfund Reauthorization: A More Modest Proposal, 27 ENVIRONMENTAL LAW REPORTER (ELI) 10201 (May 1997).

CERCLA Liability for Pre-Enactment Disposal Activities: Nothing Has Changed, NATIONAL ENVIRONMENTAL ENFORCEMENT JOURNAL, Oct. 1996, at 3.

In Praise of Superfund, ENVIRONMENT, Oct. 1993, at 42.

Acid Rain, Canada, and the United States: Enforcing the International Pollution Provision of the Clean Air Act, 1 BOSTON UNIVERSITY INTERNATIONAL LAW JOURNAL 151 (1982).

AWARDS

New Mexico Environment Department and EPA, State-EPA Strategic Partnership Award, Molycorp Mine Remediation, 2003.

U.S. Department of Justice, Environment and Natural Resources Division, Certificate of Commendation, 1997.

EPA Bronze Medal for Commendable Service: *United States v. Butte Water Co.*, 1994.

U.S. Department of Justice, Environment and Natural Resources Division, Certificate of Commendation, 1991.

EPA Bronze Medal for Commendable Service: *United States v. Sanders Lead Co., et al.*, 1991.

EPA Bronze Medal for Commendable Service: *United States v. Hardage, et al.*, 1990.

ADMISSIONS & PROFESSIONAL ACTIVITIES

Admitted: U.S. Supreme Court; U.S. Courts of Appeals for the Fourth, Ninth, Tenth, Eleventh, and D.C. Circuits; U.S. District Court for the District of New Mexico; Supreme Court of New Mexico; Supreme Judicial Court of Massachusetts (inactive).

Member American Bar Association, Section on Environment, Energy, and Resources; New Mexico Bar Association, Section on Natural Resources, Energy, and Environmental Law.

Board member and past Board President, Conservation Voters New Mexico; Secretary, Conservation Voters New Mexico Education Fund.

Served on N.M. Governor-Elect Michelle Lujan Grisham's Transition Team for the Environment Department (2018).

EDUCATION

KATHOLIEKE UNIVERSITEIT
Leuven, Belgium
Degree: LL.M. *magna cum laude*, July 2009
Master in Environmental and Energy Law
Internship at ClientEarth, Brussels, Belgium, April-May 2009

BOSTON UNIVERSITY SCHOOL OF LAW
Boston, Massachusetts
Degree: J.D., May 1982
Associate Editor, *Boston University International Law Journal*

BOSTON UNIVERSITY COLLEGE OF LIBERAL ARTS
Boston, Massachusetts
Degree: B.A. *cum laude* with Distinction, May 1979
Major: Political Science
Senior Distinction research project identified as one of the year's two best projects: "Law, Politics, and the Supreme Court: *United States v. Nixon.*"

HOBBIES & INTERESTS

Bicycling, skiing, hiking and backpacking, photography, scuba diving, woodworking, world travel.

References and writing sample available on request.

AB-SC EXHIBIT 6

STATE OF NEW MEXICO
BEFORE THE WATER QUALITY CONTROL COMMISSION

IN THE MATTER OF PROPOSED NEW
RULE 20.6.8 NMAC – *Ground and Surface Water Protection - Supplemental Requirements For Water Reuse* No. WQCC 23-84(R)

NEW MEXICO ENVIRONMENT DEPARTMENT,
WATER PROTECTION DIVISION,

Petitioner.

DIRECT TESTIMONY OF CHARLES DE SAILLAN

Introduction

Q: Please state your name.

A: Charles de Saillan.

Q: What is your current employment?

A: I am an environmental lawyer. I currently work full-time, under a contract, for Coalition for Clean Affordable Energy. But I am also working for a number of other clients, as I am in this proceeding.

Q: What is your educational background?

A: I have a Bachelor of Arts degree with distinction in political science, *cum laude*, from Boston University College of Liberal Arts in Boston, Massachusetts. I have a *Juris Doctor* from Boston University School of Law. And I have an *LL.M.*, or Master of Laws, degree in environmental and energy law, *magna cum laude*, from Katholieke Universiteit (sometimes called the University of Leuven) in Leuven, Belgium.

Q: Would you please briefly describe your work background, with particular attention to your work reviewing and drafting regulations and legislation, and your experience before New Mexico state administrative agencies in rulemakings?

A: I have been practicing environmental law for 40 years. After law school, I worked briefly for the Massachusetts Executive Office of Environmental Affairs in Boston. I then worked for about eight years at the United States Environmental Protection Agency (EPA), in the Office of Enforcement, in Washington, D.C. And I also worked in the Environmental Enforcement Section at the United States Department of Justice. In 1993, I moved to New Mexico and worked in the Environment Division at the New Mexico Office of the Attorney General (now the New Mexico Department of Justice). Then I worked for 14 years at the New Mexico Environment Department in the Office of General Counsel. Starting in 2014, I worked for four and a half years at the New Mexico Interstate Stream Commission (ISC). I then worked for four years at the New Mexico Environmental Law Center, a non-profit, public interest law firm. I started working for Coalition for Clean Affordable Energy almost two years ago. CCAE is also a non-profit organization.

I have worked on the drafting of regulations and legislation throughout my legal career. For example, while at EPA, although I was in the enforcement office, I was a member of several work groups that drafted some of the federal hazardous waste regulations under RCRA.[1]

At the New Mexico Office of the Attorney General, I worked on amendments to the State Mining Act regulations, and I testified before the Mining Commission. I also led a National Association of Attorneys General workgroup on Superfund[2] reauthorization. We drafted comprehensive amendments to the Superfund statute, and I testified before congressional committees five times.

While at the Department, I worked with the Surface Water Quality Bureau in drafting

[1] The Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901 to 6992k.

[2] The Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601 to 9675.

regulations for state certification of federal permits, which this Commission adopted.[3] At the ISC, I drafted amendments to the regulations on the Strategic Water Reserve.[4] Those amendments stalled at the time, but I have recently been asked to resurrect them.

While I was at the Environmental Law Center, I worked on several administrative proceedings for the adoption of regulations: the methane waste rules before the Oil Conservation Commission,[5] in which I testified; the hazardous waste fee regulations before the Environmental Improvement Board (EIB);[6] the 2021 Triennial Review of State surface water standards before this Commission;[7] the ozone precursor rule before the EIB[8]; and the advanced clean cars I rule before the EIB and the Albuquerque-Bernalillo County Air Quality Control Board.[9] I also drafted and testified in support of a half-dozen bills before the New Mexico Legislature, including proposed amendments to the Water Quality Act, the Air Quality Control Act, the Hazardous Waste Act, the Mining Act, and the Oil and Gas Act. And I drafted comments on several proposed federal rules, most notably the proposed lead and copper rule[10] under the Safe

[3] 20.6.2.2001, 20.6.2.2002, 20.6.2.2003 NMAC.

[4] 19.25.14 NMAC. The Strategic Water Reserve is a program established by legislation in 2005. NMSA 72-14-3.3 (2007). It is administered by the Interstate Stream Commission. It allows the ISC to acquire water rights and set them aside to assist with compliance with interstate stream compacts, and to assist with protection of threatened and endangered species. It should not be confused with the Strategic Water *Supply*, a different program recently proposed by the Administration.

[5] 19.15.27 NMAC.

[6] 20.4.2 NMAC.

[7] 20.6.4 NMAC.

[8] 20.2.50 NMAC.

[9] 20.11.104 NMAC (superseded).

[10] 84 Fed. Reg. 61684 (Nov. 13, 2019).

Drinking Water Act, and the 2019 proposed rule[11] and 2021 proposed rule[12] to amend the definition of "waters of the United States" under the Clean Water Act. I represented several organizations, including Amigos Bravos and the New Mexico Acequia Association, in challenging the 2020 (final) definition in federal district court.[13]

More recently, I represented Coalition for Clean Affordable Energy in the advanced clean cars II, advanced clean trucks, and nitrogen oxides omnibus rules,[14] which the EIB and the Albuquerque-Bernalillo County board adopted in November 2023. Currently, on behalf of CCAE, I am rewriting the Public Regulation Commission (PRC) procedural rules.[15] I am also drafting amendments to several other PRC rules to address emissions of greenhouse gases.

Q: Is AB-SC Exhibit 5 an accurate copy of your resume?

A: Yes. AB-SC Exhibit 5 is my resumé. It is accurate and up-to-date.

Summary of Testimony and References

Q: On whose behalf are you presenting testimony today?

A: I am testifying on behalf of Amigos Bravos and the Sierra Club. I should mention that I am not testifying on behalf of Coalition for Clean Affordable Energy, which is not a party in this proceeding.

Q: Have you reviewed any documents in preparing the testimony you will be giving today?

[11] 84 Fed. Reg. 4154 (Feb. 14, 2019).

[12] 86 Fed. Reg. 69372 (Dec. 7, 2021).

[13] *N.M. Cattle Growers' Ass'n v. U.S. Envtl. Prot. Agency*, No. 1:19–CV–00988–RB–SCY (D.N.M. Complaint in Intervention filed June 30, 2020).

[14] 20.2.91 NMAC.

[15] 1.2.2 NMAC.

A: Yes, I have. I reviewed the initial Petition and Statement of Reasons that the Department filed with the Water Quality Control Commission (Commission) on December 27, 2023, including the proposed new Part 8 of Title 20, Chapter 6, New Mexico Administrative Code. I also reviewed the First Amended Petition and Statement of Reasons that the Department filed with the Commission on March 20, 2024, including the proposed new Part 8.

Q: Can you please summarize the testimony and opinions you will give in your testimony?

A: Yes. I will provide testimony and opinions on the rule that the Department is proposing at 20.6.8 NMAC in its First Amended Petition. I have reviewed the proposed rule from a legal drafting perspective, and recommend a number of revisions. Specifically, I will cover four general areas:

First, several of the provisions of the proposed rule lack clarity – they are vague or ambiguous, and sometimes both. For example, I think it needs to be made crystal clear that produced water must not be reused for any sort of potable application – that is, used for drinking water – under any circumstances. I believe that should be more clearly stated in the proposed rule. While this clarification is most prominent, several other provisions of the proposed rule need clarification. Other provisions of the rule serve no regulatory purpose and are unnecessary. I recommend changes to the proposed rule to address these issues.

Second, the Department has proposed more than 20 definitions that are unnecessary and therefore should not be included in the proposed rule. Many of these definitions are not used anywhere in the proposed rule; others are used only in other definitions. It is poor drafting practice – and nonsensical – to define terms not used in a rule. The proposed rule also includes several other proposed definitions that are unnecessary because they are circular, redundant, or

merely state the obvious. I recommend deleting all unnecessary definitions.

Third, in a few places I recommend revisions to correct substantive errors in the proposed rule.

Fourth, I recommend several non-substantive revisions to address formatting of citations, cross-references, and numbering.

In sum, my recommendations are intended to make the proposed rule clearer, easier to interpret and enforce, and consistent with accepted style and formatting practice. My goal is to make a better rule. My recommended revisions are provided in a "redline" version of proposed 20.6.8 NMAC in AB-SC Exhibit 1 and in a "clean" version of proposed 20.6.8 NMAC in AB-SC Exhibit 2.[16]

Q: Are there any New Mexico rules that govern the drafting of state rules?

A: Yes, section 1.24.10 NMAC, issued by the New Mexico State Records Center and Archives, governs the format and style of State rules and applies to rules issued by all State agencies, including the Commission. 1.24.10.1 to 1.24.10.26 NMAC. Section 1.24.10.12.A NMAC, governing style, provides that, "Style shall be guided by relevant portions of the current edition of the legislative drafting manual of the New Mexico legislature published by the New Mexico legislative council service." Therefore, the Commission should look to the *Legislative Drafting Manual* prepared by Legislative Council Service (LCS) for guidance on style in drafting 20.6.8 NMAC. A copy of relevant portions of the current *Legislative Drafting Manual* is AB-SC Exhibit 7.

Q: In addition to your own knowledge and expertise developed over your practice of

[16] The redline version in AB-SC Exhibit 1 does not change the subsection numbers in the definition section at 20.6.8.7 NMAC; those subsection numbers are changed in the clean version in AB-SC Exhibit 2.

law for four decades, did you consult any treatises, books, or articles to prepare your testimony?

A: Yes, I did. I consulted a number of references on legislative and rule drafting. In general, guidance for drafting legislation applies to drafting rules. My references are listed at the end of my testimony. The guidance I consulted comports with my understanding of good rule and legislative drafting.

Guidance on Use of Definitions in Rule

Q: What is the basis of your recommendation not to include unnecessary definitions in 20.6.8 NMAC?

A: Good legal drafting should be clear and concise, and not contain unnecessary words. There is no point in defining terms that are not used in a rule or other legal document. The authorities on legal writing that I consulted support my view. For example, according to Mr. Dickerson, "The first thing to remember about definitions in legal instruments is that they should be used only when necessary." Dickerson, p. 137. The LCS *Legislative Drafting Manual* says: "Use definitions sparingly." LCS, p. 4. There are good reasons for not encumbering a rule with definitions that are not used in the rule.

First, defining unused terms is simply unnecessary. It needlessly makes the rule longer and more complex. If anything, we should be trying to make New Mexico's rules shorter and simpler.

Second, definition of unused terms lacks meaningful context. It is difficult, if not impossible, to assess and analyze the proposed definitions for accuracy, applicability, and completeness without any regulatory context. This principle applies with special force to technical terms, such as many of those in the proposed rule. Without regulatory context, parties

like Amigos Bravos and Sierra Club cannot evaluate the definitional wording or make recommendations for revisions on an informed basis. Likewise, the Commission cannot adopt those definitions on an informed basis.

Third, defining unused terms makes the proposed rule very confusing. With no regulatory context or purpose for many of the definitions, it is difficult to follow the proposed rule, to grasp what the defined terms mean, or to understand why the defined terms are in the rule in the first place. As the U.S. General Services Administration states, defining terms that are not used "can be very confusing for users." US GSA.

The confusion is exacerbated in the proposed rule by the large number of definitions of unused terms. Although the proposed rule is relatively short at six pages, it includes 52 defined terms. Of those 52 defined terms, approximately 15 are not used in the proposed rule. Moreover, approximately eight of the definitions are used only in other definitions, which creates a needlessly complex and convoluted structure. If one or two definitions of unused terms can make the rule confusing, more than 20 such definitions make the rule utterly baffling. For example, needlessly inserting definitions for terms like "agricultural application," "irrigation application," and "food crop irrigation" into this rule, which governs reuse of produced water, gives the impression that produced water can be land applied for agricultural, irrigation, and food crop uses. However, the proposed rule allows no such uses.

Finally, definition of unused terms is an indication of poor drafting. Many people reading the rule – if it were to be adopted as currently written – would reasonably conclude that substantial material had been deleted from the rule in the rulemaking process, but that the drafters had neglected to remove the corresponding definitions. That would not reflect well on the Department, or the Commission.

The Department's rationale for including definitions of unused terms in the proposed rule, as I understand it, is not persuasive. Department staff have indicated that the Department intends to use these terms in future rulemakings. But that is not a satisfactory reason for including the definitions in today's proposed rulemaking. Although the Department may intend to define these terms now for the future, agency priorities change over time. The presumed future rules might never be developed, or they might ultimately be adopted in a form that is very different from what the Department now anticipates. But assuming future rules are developed and proposed, the definitions can and obviously should be added in that rulemaking, when the terms are actually used, their context is clear, and an informed analysis of their content is possible.

Indeed, the Commission confronted a very similar issue in the most recent Triennial Review of surface water standards.[17] The Department had proposed definitions for two terms – "baseflow" and "effluent dominated" – that were not used in the rules to be amended, 20.6.4 NMAC.[18] Amigos Bravos, a party in that proceeding, objected to inclusion of those two definitions, in part, because the terms were not used in 20.6.4 NMAC and therefore "served no regulatory purpose."[19] During deliberations, the Commission agreed, and voted unanimously

[17] WQCC No. 20-51 (R).

[18] *See* N.M. Env't Dep't, Notice of Amended Petition 2-3, *In re: Proposed Amendments to Standards for Interstate and Intrastate Surface Waters, 20.6.4.NMAC*, WQCC No. 20-51 (R) (filed Mar. 12, 2021), *available at* https://www.env.nm.gov/water-quality-control-commission/wp-content/uploads/sites/27/2020/08/2021-03-12-OPF-WQCC-20-51-R-NMED-Notice-of-Amended-Petition-finalpj.pdf.

[19] *See* Amigos Bravos, Notice of Intent to Present Direct Testimony 11, *In re: Proposed Amendments to Standards for Interstate and Intrastate Surface Waters, 20.6.4.NMAC*, WQCC No. 20-51 (R) (filed May 3, 2021), *available at* https://www.env.nm.gov/water-quality-control-commission/wp-content/uploads/sites/27/2020/08/2021-05-03-WQCC-20-51R-Amigos-Bravos-Notice-of-Intent-Direct-Testimony-pj.pdf.

against including the two definitions in rule because they were not used elsewhere in 20.6.4 NMAC.[20] A copy of the cited pages of the transcript of the Commission's deliberations is AB-SC Exhibit 8.

A few of the statements that commissioners made during the deliberations are worth highlighting. During discussion on the definition for "baseflow," Commissioner Dominguez queried whether it is "good practice for us to start branching out and defining things or placing things within definitions that are not actually utilized within the NMAC?"[21] Commissioner Certain stated, "I think I have to agree with Commissioner Dominguez. My contracts analyst, who I've worked with for 13 years would have my head if she – if she knew I was supporting putting a definition in a rule when the word doesn't even exist in the rule."[22] During the deliberations on the definition for "effluent dominated," Commissioner Certain reiterated that he "oppose[d] including this definition in the surface water quality standards because the term 'effluent dominated' is not used anywhere else outside of potentially the definition section of this rule."[23] Commissioner McWilliams opposed including the definition for the same reasons as Commissioner Certain.[24] Chair Stringer concluded that, "for consistency sake, given how we ruled earlier, I think it's appropriate that we do not adopt a definition into the standards that is not actually used in the standards."[25] I believe that the Commission made the correct decision by not

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[20] Mar. 1, 2022 Transcript of Deliberations 27:1 to 31:25 (Commission deliberations on "baseflow"), 47:1 to 49:15 (Commission deliberations on "effluent dominated"), *In re: Proposed Amendments to Standards for Interstate and Intrastate Surface Waters, 20.6.4.NMAC*, WQCC No. 20-51 (R).

[21] *Id.* at 27:15-18.

[22] *Id.* at 28:5-9.

[23] *Id.* at 47:10-13.

[24] *Id.* at 47:22-23.

[25] *Id.* at 47:25 to 48:3.

including in the amended rule definitions of terms that are not used in the rule.

In proposing deletion of certain definitions and revision of others, I relied upon a number of generally accepted principles for drafting rules and statutes, including several I have already mentioned. Here is a partial list of those principles:

1. **Do not define terms not used in the rule.** LCS, pp. 53, 55, 56; US GSA.

2. **Use definitions only when necessary.** LCS, p. 4; Temple-Smith, p. 325; Dickerson, pp. 137, 148. "Definition for its own sake has no place in legal instruments." *Id.* at 148. "Unnecessary or superfluous definitions cloud meaning." Temple-Smith, p. 207.

3. **Do not define words that are being used in their normal dictionary meaning.** LCS, p. 53; Kuney, p. 93; Dickerson, p. 145; Temple-Smith, pp. 207, 325-26; US GSA; OFR. Terms in a legal document are assumed to have their ordinary dictionary meaning unless the drafter stipulates otherwise. Temple-Smith, p. 325.

4. **Do not define terms in a way that is contrary to their ordinary meaning.** Kuney, p. 93; Martineau, pp. 70-71; Temple-Smith, pp. 333-34; OFR. A definition that "departs too far from the ordinary meaning of a term . . . strains the reader's willing to accept" the definition. Temple-Smith, p. 334.

5. **Use a definition only when the meaning of the word is important.** Martineau, p. 70.

6. **Do not put substantive law in a definition.** LCS, p. 53; Kuney, p. 93; Martineau, p. 71; Temple-Smith, p. 333; Dickerson, pp. 151-52; US GSA; OFR. Substantive provisions belong in separate, substantive provisions of law. Dickerson, pp. 151-52.

7. **Do not define terms solely to use them in another definition.** LCS, pp. 53, 55.

8. **Do not include the word defined in the definition.** Martineau, p. 71.

9. **Use a definition only if it is used more than once in the relevant section of the rule or statute.** Martineau, p. 70; Dickerson, p. 150; OFR; *accord* Temple-Smith, p. 330.

<u>Amigos Bravos and Sierra Club's Proposed Amendments to 20.6.8 NMAC</u>

Q: Mr. de Saillan, would you please walk the Commission through your proposed language and formatting changes to 20.6.8 NMAC?

A: Yes, I will start at the beginning of the proposed rule, 20.6.8 NMAC, describe my recommendations with revisions shown in redline, and discuss the rationale for the changes I

propose.

> **20.6.8.2 SCOPE:** This rule applies to all ~~All~~ persons subject to the Water Quality Act, ~~NMSA 1978,~~ Sections 74-6-1 through 74-6-17 NMSA 1978, and specifically to persons intending to reuse wastewater in their operations.

The first phrase, "This rule applies to," completes the first sentence. The revised citation is a rather minor formatting change to 20.6.8.2 NMAC. The LCS *Legislative Drafting Manual*, which as discussed is to be used as guidance for State rules, requires New Mexico statutes to be cited to the applicable section or subsection, followed by the year of compilation in the New Mexico Statutes Annotated or NMSA (with no comma in between), *e.g.*, Section 74-6-1 NMSA 1978. LCS, pp. 26, 184, & *in passim.* While various Commission regulations have varying formats for the NMSA, recently amended Commission rules use this format consistently. *E.g.*, 20.6.4 NMAC. So do other recently promulgated rules the Department has proposed. *E.g.*, 20.2.50 NMAC (ozone precursor rule). I recommend using this format throughout the rule, and specifically at 20.6.8.2, 20.6.8.3, 20.6.8.400, and 20.6.8.400.B(1)(a) and (g). I make this formatting recommendation at other places in the proposed rule, but I do not repeat the explanation. Finally, in the last line of this provision the word "and" should probably be "in."

> **20.6.8.3 STATUTORY AUTHORITY:** Standards and regulations are adopted by the commission under the authority of the Water Quality Act, ~~NMSA 1978,~~ Sections 74-6-1 through 74-6-17 NMSA 1978, and the Produced Water Act, ~~NMSA 1978,~~ Subsection B of Section 70-13-3 and Subsection D of Section 70-13-4 NMSA 1978.

The revised citation format is consistent with the guidance from the *Legislative Drafting Manual*, as discussed above for 20.6.8.2 NMAC.

> **20.6.8.7 DEFINITIONS:** The following terms as used in this ~~p~~Part shall have the following meanings.~~:~~ ~~t~~Terms defined in the Water Quality Act, but not defined in this ~~p~~Part, shall ~~will~~ have the meaning given in the act.

When specific parts, sections, subsections, and the like in the rule at hand are referred to

in the rule, they are capitalized; therefore "Part" is capitalized here. Capitalization of these terms used in this context is consistent with other provisions in 20.6.8 NMAC. *E.g.*, 20.6.8.D(1), 20.6.8.R(4) NMAC. Dividing the sentence into two sentences is clearer, and using the term "shall" instead of "will" is consistent with usage in the rule.

I propose to delete or revise the following definitions. Terms in 20.6.8.7 NMAC that are defined but not used in the rule, or that are used only in other definitions, are highlighted, as in AB-SC Exhibit 1.

20.6.8.7 DEFINITIONS

~~**A(1) "Agricultural application"** means the application of reuse water for cultivating the soil and growing crops or irrigating pasture for livestock grazing. Agricultural application includes the use of water in connection with the operation or maintenance of feedlots or animal feeding operations ("AFOs"), but not those activities defined as livestock application.~~

The term "agricultural application" is not used in the proposed rule. It should be deleted. If the Commission retains this definition, it should delete the acronym in parentheses, ("AFOs"), because the acronym is not used elsewhere in the proposed rule.

A(2) "Application" means a final disposition of a treated wastewater for reuse. Applications include~~, but are not limited to~~ industrial, agricultural, direct potable, indirect potable, recreational turf, rangeland, or ecological restoration water reuse. ~~Applications may have effluent criteria to protect ground water, surface water, and aquatic health.~~

The qualifier "but are not limited to" is not necessary because the term "include" or "includes" is not limiting. In the last few years, the Legislative Council Service has been deleting the words "but not limited to" where it appears after the word "including" (or similar wording) in new laws and amended laws. *See* LCS, p. 187. The last sentence is not definitional, but is regulatory, and therefore should not be in a definition. Also, the last sentence – applications "may have effluent criteria" – is indeterminate such that it is meaningless.

~~**C(1) "Commercial application"** means the application of reuse water in connection with any activity that provides, or offers to provide, goods or services for incidental use, such as but not limited to car washes, laundry facilities, window washing, chemical mixing, where public access is not restricted or limited.~~

The term "commercial application" is not used in the proposed rule. It should be deleted.

~~**D(3) "Direct potable application"** means the delivery of purified water to a drinking water plant or a drinking water distribution system without an environmental buffer. Additional treatment, monitoring, or an engineered buffer would be used in place of an environmental buffer to provide equivalent protection of public health and response time if the purified water does not meet specifications.~~

Replace with:

P(4) "Potable application" means the delivery to a drinking water plant or a drinking water distribution system of reuse water that has been purified to remove all contaminants.

The Department's proposed definition for "direct potable application" is problematic in several respects. It needs to be revised.

First, there does not seem to be a meaningful or useful distinction between "direct" and "indirect potable application" in the context in which they are used, *i.e.*, in feasibility studies for domestic wastewater in 20.6.8.201 NMAC. The two definitions distinguish between water delivered without an "environmental buffer" but perhaps with "additional treatment, monitoring, or an engineered buffer" (direct potable application) and reclaimed wastewater delivered with "an intermediary environmental or constructed buffer." The water entering the water system must be purified, regardless whether the water is applied directly or indirectly, or whether there is an environmental buffer, an engineered buffer, or no buffer at all. The term "buffer," moreover, while partially defined in the proposed definition of "environmental buffer," 20.6.8.7.E(1) NMAC, remains quite vague. It is also not clear what an "engineered buffer" or a

"constructed buffer" is because the terms are not defined. Thus, I propose replacing the definitions of "direct potable application" and "indirect potable application" with one definition of "potable application," which would be moved to 20.6.8.7.P NMAC, and I propose using the term "potable application" wherever the terms "direct" and "indirect potable application" occur. I also propose deleting the references to buffers. I therefore propose a new definition for "potable application."

Second, the Department proposes defining "direct potable application" as delivering "purified" water to a drinking water plant or distribution system. The word "purified" is not defined, and its meaning is unclear. The dictionary definition of "purify" means "to make pure" such as "to clear from material defilement or imperfection."[26] Accordingly, I propose clarifying the word "purified" by adding the phrase "to remove all contaminants." That phrase is consistent with the dictionary definition, and uses terminology from the water quality rules.

Third, the "water" that is to be "purified," I believe, is reclaimed wastewater, referred to in the Department's proposed definition for "indirect potable application." That point needs clarification, as I have suggested.

Fourth, the last sentence in the Department's proposed definition of "direct potable application" is not a definition at all. It is – or appears to be – a substantive regulatory requirement, albeit a vague one. It should not be used in a definition. *See* LCS, p. 53; Kuney, p. 93; Martineau, p. 71; Temple-Smith, p. 333; Dickerson, p. 15-52; US GSA; OFR. Moreover, the last sentence of the proposed definition is also vague and difficult to understand. It is not clear what is meant by "equivalent protection of public health." Presumably, it means the water must be "purified," but that is already stated in the first sentence, so the last sentence is at best

[26] MERIAM WEBSTER'S COLLEGIATE DICTIONARY 1010 (11th ed. 2004).

redundant, at worst confusing. The term "response time" in the context of a "potable application" is also unclear and particularly puzzling. And it is not clear what is meant by "purified water" not meeting "specifications." If the "purified water does not meet specifications," it has not been "purified" in the first place. For all these reasons, I recommend deleting the last sentence of the definition.

The definition of "direct potable application" is very unclear and laden with confusing terms. It would be most difficult if not impossible to interpret, apply, and enforce. The definition should be revised, following my recommendations, to be clear and concise.

~~**D(5) "Discharge plan"** as defined in 20.6.2 NMAC.~~[27]

The term "discharge plan" is not used in the proposed rule. Throughout the proposed rule, the Department most often uses the term "discharge permit," and correctly so, not "discharge plan." For example, proposed 20.6.8.201.A NMAC states that the Department shall not "approve a discharge permit or a discharge permit modification". "Discharge permit" is defined in 20.6.8.7.D(4) NMAC as "in 20.6.2 NMAC," which in turn defines "discharge permit" as "a discharge plan approved by the department." 20.6.2.7.D(3) NMAC. As these terms are generally used, the applicant submits a discharge plan, and the Department then approves and issues a discharge permit. The term "discharge permit" is thus the more accurate and appropriate term as it is used in the proposed rule, preferable to "discharge plan."

In the proposed rule, the Department also uses the anomalous term "discharge permit plan." Proposed 20.6.8.400.A(3) NMAC states, "The department shall not approve a discharge permit plan or a discharge permit plan modification that includes the discharge of untreated

[27] Section 20.6.2.7.D(6) NMAC defines "discharge plan" as "a description of any operational, monitoring, contingency, and closure requirements and conditions for any discharge of effluent or leachate which may move directly or indirectly into ground water."

produced water." The Department proposes the same sentence in 20.6.8.400.A(4) NMAC, which applies to treated produced water. The term "discharge permit plan" is not used in the Water Quality Act and, to my knowledge, it is not used anywhere in the Commission's regulations.

I recommend that the term "discharge permit" should be used consistently throughout the proposed rule. The definition of "discharge plan" in proposed 20.6.2.7.D(5) NMAC should be deleted. And the third term, "discharge permit plan," used in the proposed rule at 20.6.8.400.A(3) and (4) NMAC, should be replaced with "discharge permit."

~~**D(6) "Discharge site"** as defined in 20.6.2 NMAC.~~

This term "discharge site" is not used in the proposed rule. It should be deleted.

~~**E(1) "Environmental buffer"** means any ground water, streams, lakes, or impoundments used for reuse water storage or conveyance purposes related to an indirect potable application.~~

The term "environmental buffer" is not used in the proposed rule, except in the definition of "direct potable application" at 20.6.8.7.D(1) NMAC. Terms are usually not defined solely for use in another definition. *See* LCS, pp. 53, 55.

As alluded to previously, the significance of the term "environmental buffer" is unclear. The word "buffer" suggests that an "environmental buffer" would serve to help protect the water system from contaminants, but the definition does not indicate that is the case. Moreover, since water delivered to a drinking water system must be "purified," the significance of a buffer is puzzling. Another similarly enigmatic term that is used in the proposed rule, but which is not defined, is "engineered buffer." These terms are confusing and, so far as I can tell, unnecessary.

I recommend deleting the terms "environmental buffer" and "engineered buffer" from the proposed rule. This deletion would also render the distinction between "direct potable

application" and "indirect potable application" meaningless. As I stated earlier I recommend that the definitions of "direct potable application" and "indirect potable application" be replaced with a single term, "potable application."

> **F(1) "Feasibility study"** means a study conducted by a person to determine if a new or modified domestic wastewater treatment technology will be technically, economically, or financially viable for use in a ~~direct or indirect~~ potable application.

I recommend using "potable application" instead of "direct or indirect potable application" for the reasons I explained previously in the discussion of "direct potable application" at 20.6.8.7.D(3) NMAC.

> ~~**F(2) "Flood irrigation application** means land application of reuse water by ditches, furrows, pipelines, low flow emitters, and other non-sprinkler methods.~~

This term "flood irrigation application" is not used in the proposed rule. It should be deleted.

> ~~**F(3) "Flowback water"** means the fluid returned after the hydraulic fracturing process is completed, where the internal pressure of the rock formation causes fluid to return to the surface through the wellbore. Flowback water is a component of produced water.~~

The term "flowback water" is not used in the proposed rule, except in the definition of "produced water" at 20.6.8.7.P(5) NMAC. Terms are usually not defined solely for use in another definition. *See* LCS, pp. 53, 55. Moreover, the precise meaning of this term is unimportant to the definition of "produced water" and to the overall proposed rule. The definition is therefore not necessary and should be deleted. *See* Martineau, p. 70.

> ~~**F(4) "Food crop application"** means application of reuse water to domestic plants which are produced for the purpose of or may be used in whole or in part for, consumption by people or livestock, including, but not limited to nursery, root, seedstock to be used for the production of food crops.~~

The term "food crop application" is not used in the proposed rule. It should be deleted.

~~**F(5) "Formation water"** means water that occurs naturally within the pores of rock.~~

The term "formation water" is not used in the proposed rule, except in the definition of "produced water" at 20.6.8.7.P(5) NMAC. Again, terms normally should not be defined solely for use in another definition. *See* LCS, pp. 53, 55. Moreover, the precise meaning of this term is unimportant to the definition of "produced water" and to the overall proposed rule. The definition is therefore not necessary and should be deleted. *See* Martineau, p. 70.

H(1) "Hydraulic fracturing" means a technique that fractures a rock formation by pumping large quantities of fluids at high pressure down a wellbore and into the target rock formation, which ~~that~~ stimulates the flow of natural gas or oil, increasing the volumes that can be recovered. ~~Fractures are created. Hydraulic fracturing fluid, also referred to as fracking fluid, commonly consists of water, proppant, and chemical additives that open and enlarge fractures that can extend several hundred feet away from the wellbore. This technique is generally used in unconventional oil and gas production.~~

The definition of "hydraulic fracturing is awkwardly worded. The last two sentences are unnecessary to the definition.[28] I recommend rewording the definition and deleting the last two sentences.

~~**I(1) "Indirect potable application"** means the application of water for drinking water purposes with an intermediary environmental or constructed buffer.~~

As I explained previously, the distinction between "direct potable application" and "indirect potable application" turns on the existence or nonexistence of a "buffer" – an

[28] It is well understood that the fractures created through use of hydraulic fracturing in horizontal drilling can extend much longer than "several hundred feet away from the wellbore," but can extend thousands of feet. That explanatory reference should be deleted as inaccurate. Indeed, in the Permian Basin, horizontal wells with 3-mile-long laterals are becoming routine. Stephen Rassenfoss, The Trend in Drilling Horizontal Wells Is Longer, Faster, Cheaper, JPT, https://jpt.spe.org/the-trend-in-drilling-horizontal-wells-is-longer-faster-cheaper, retrieved April 11, 2024.

"environmental buffer" an "engineered buffer," or a "constructed buffer." The distinction is elusive. Any potable application, whether buffered or not, must be "purified," that is, all contaminants must be removed. Moreover, this definition uses the term "constructed buffer," whereas the proposed definition of "direct potable application" uses the term "engineered buffer." 20.6.8.7.D(3) NMAC. Presumably, these terms have the same meaning, but neither term is defined, and the varying terminology compounds the lack of clarity. Again, I suggest eliminating the distinction between "direct" and "indirect potable application," as I do not believe this is a meaningful distinction. A definition of "potable application" should suffice. And I suggest deleting the references to buffers – "environmental buffers," "engineered buffers," and "constructed buffers" – as the terms are confusing, vague, and serve no real purpose in the proposed rule.

~~**I(2) "Industrial application"** means the application of reuse water in any activity that is used in connection with industrial processes, such as alternative energy, hydrogen production, cooling water, process/boiler feeds, utility power plants, chemical plants, and metal working facilities where at a minimum, public access is restricted or limited.~~

The term "industrial application" is not used in the proposed rule. It should be deleted.

I(3) "Industrial project" means a reuse water project that does not discharge to ground or surface water and that is used in connection with industrial processes, such as alternative energy, hydrogen production, cooling water, process/boiler feeds, utility power plants, chemical plants, and metal working facilities where ~~at a minimum,~~ public access is restricted or limited.

I recommend clarifying the "discharge" referred to in the definition of "industrial project" is a discharge "to ground or surface water" since "discharge" is not a defined term. The qualifier "at a minimum" serves no relevant purpose in the definition or the rule. There is no explanation of other requirements that would apply. I recommend removing the qualifier.

~~**I(4) "Injection"** as defined in 20.6.2 NMAC~~

The only time the word "injection" is used in the proposed rule is in 20.6.8.400.B(1)(h)

NMAC. That provision specifies several options for the disposal of produced water from a demonstration project or an industrial project, one of which is "discharge to a produced water disposal well permitted pursuant to the oil conservation commission's regulations for oil and gas *injection* at 19.15.26 NMAC." 20.6.8.400.B(1)(h) NMAC (emphasis added). Thus, 20.6.8.400.B(1)(h) NMAC effectively "defines" or explains the term "injection" in place. It does so by referencing specific Oil Conservation Commission rules, not the more general definition at 20.6.2.7.I(2) NMAC A formal definition, referencing the water quality rules at 20.6.2 NMAC – or, more precisely, 20.6.2.7.I(2) – is both unnecessary and confusing. I recommend that the definition of "injection" be deleted.

~~**I(5) "Irrigation application"** means application of reuse water to land areas to foster plant growth.~~

The term "irrigation application" is not used in the proposed rule. It should be deleted.

~~**L(1) "Land application"** means the application of reuse water to the ground surface in which no other application has been assessed and to which the application or run-off does directly or indirectly enter a surface or ground water of the state.~~

The term "land application "is not used in the proposed rule. It should be deleted.

~~**L(2) "Livestock application"** means the application of reuse water for the consumption of water for the care and feeding of domestic animals such as cattle or horses. Livestock application does not include the use of water in connection with the operation or maintenance of feedlots or agricultural application of water.~~

The term "livestock application" is not used in the proposed rule. It should be deleted.

~~**N(1) "National Pollutant Discharge Elimination System"** means the federal program for issuing, modifying, revoking, and reissuing, terminating, monitoring, and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 318, 402, and 405 of the federal Clean Water Act. The NPDES program is administered by the United States Environmental Protection Agency (EPA) in the State of New Mexico.~~

The proposed definition of "National Pollutant Elimination System" is unnecessarily long

and complex. Moreover, the term "National Pollutant Discharge Elimination System" is used only in the proposed definition of "NPDES permit" at 20.6.8.7.N.3 NMAC. A term generally should not be defined if it is used only in another definition. *See* LCS, pp. 53, 55.

Because the second term, "NPDES permit," is used only once in the proposed rule, at 20.6.8.201.B(1)(d) NMAC, the better drafting approach is simply to define or explain the term in place. *See* Martineau, p. 70; Dickerson, p. 150; US GSA. I suggest that 20.6.8.201.B(1)(d) NMAC be rewritten to provide that a discharger obtain approval for a feasibility study from the Department for a discharge permit or "from the U.S. Environmental Protection Agency through a national pollutant discharge elimination system permit pursuant to section 402 of the Clean Water Act." This phrasing, fewer than 25 words, adequately and concisely substitutes for the cumbersome definitions of "National Pollutant Discharge Elimination System" and "NPDES permit." Indeed, NPDES permits are referred to with some frequency in both 20.6.2 and 20.6.4 NMAC, but are not defined. *E.g.*, 20.6.2.2001, 20.6.2.2003, 20.6.2.3105.F, 20.6.2.4105.C, 20.6.4.12.G, 20.6.4.13.F(5), 20.6.4.16, 20.6.4.126, 20.6.4.319.C NMAC. The meaning of NPDES permits in those two parts is clear and unambiguous, and neither the Department nor the Commission has ever seen a need to define the term.

~~**N(2) "NTU"** means nephelometric turbidity units, measured by a nephelometer.~~

The term "NTU" is not used in the proposed rule. It should be deleted.

~~**N(3) "NPDES permit"** means a national pollutant discharge elimination permit which is an authorization, license, or equivalent control document issued by the authorized permitting entity to implement the requirements of the federal program as identified in 40 C.F.R. Sections 122, 123, and 124.~~

I discussed my recommendation to delete "NPDES permit" as a defined term previously in the context of the term "National Pollutant Elimination Discharge System" at 20.6.8.7.N(1)

NMAC.

P(3) "Potable" means ~~describes~~ water that meets state water quality standards at 20.7.10 NMAC and is otherwise suitable for human consumption.

It is unclear why the Department proposes to use the word "describes" instead of "means" to introduce the definition of "potable." The word "means" is used for all the other definitions in the proposed rule. To be consistent and to avoid any confusion, the word "means" should be used. Moreover, water that is "suitable for human consumption" must, at a minimum, meet applicable drinking water standards. I therefore recommend adding that clarification.

P(4) "Potable application" means the delivery to a drinking water plant or a drinking water distribution system of reclaimed wastewater that has been purified to remove all contaminants.

I recommend adding a definition for "potable application" instead of using the definitions of "direct or indirect potable application" for the reasons above in the discussion of "direct potable application" at 20.6.8.7.D(3) NMAC.

~~**P(4) "Pretreatment"** means the reduction, elimination, or alteration of pollutants in wastewater prior to or in lieu of discharging into a publicly owned treatment works (POTW) or other wastewater treatment facility. The reduction or alteration may be obtained by physical, chemical, or biological processes, process changes, or by other means. Appropriate pretreatment technology includes control equipment, such as equalization tanks or facilities, for protection against volumetric or pollutant surges or load variations that might interfere with or otherwise be incompatible with the treatment facility.~~

The term "pretreatment" at 20.6.8.7.P(4) NMAC is used only in the definition of "National Pollutant Elimination System." Again, terms should usually not be defined if they are used only in another definition. LCS, pp. 53, 55. Further, the term is not important or relevant in the context of the proposed rule, and the proposed definition is unnecessarily complicated. I therefore recommend that it be deleted.

P(5) "Produced water" means a fluid ~~(wastewater)~~ that is an incidental byproduct from drilling for or the production of oil and gas, and includes

formation water, flowback water, and any chemicals added downhole during drilling, production, or maintenance processes during the life cycle of an oil or gas well. Produced water includes known and unknown water pollutants.

The proposed definition of "produced water" includes a parenthetical, "(wastewater)," inserted after the word "fluid," which may create some confusion. I suggest simply using the word "fluid," which is consistent with the definition in the Water Quality Act: "a fluid that is an incidental byproduct from drilling or the production of oil and gas." NMSA 1978, § 74-6-2(S) (2019).[29]

~~**R(2) "Recycled produced water"** means produced water that is reconditioned by a recycling facility permitted or registered with the oil conservation division of the energy, minerals, and natural resources department, and is reused within the oil and gas industry for the exploration, drilling, production, treatment or refinement of oil and gas.~~[30]

The term "recycled produced water" is not used in the proposed rule. It should be deleted.

~~**R(3) "Restoration application"** or **"ecological application"** means the use of water for the implementation of ecological or environmental restoration activities permitted under applicable state and federal regulations.~~

The terms "restoration application" and "ecological application" are not used in the proposed rule. The definition should thus be deleted. Aside from that, the rule should not use two terms with the same definition.

R(4) "Reuse water" means a treated wastewater originating from domestic, industrial, or produced water sources that has undergone a level of treatment appropriate for an application such as agriculture, irrigation, potable water supplies, aquifer recharge, industrial processes, or environmental restoration. Reuse water has a water quality, based on application, determined to be protective of the environment and human health. For purposes of this Part,

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[29] The Produced Water Act contains an identical definition. NMSA 1978, § 70-13-2(B).

[30] Note that the Produced Water Act defines "recycled produced water" as "produced water that is reconditioned by a recycling facility permitted or registered with the oil conservation division of the energy, minerals, and natural resources department." NMSA 1978, § 70-13-2(C).

reuse is categorized by the source of the water. ~~(e.g., "domestic reuse" is wastewater originated from domestic sources following appropriate treatment that may be used for various applications such as irrigation).~~

The parenthetical at the end of the definition refers to terms and concepts not used in the proposed rule. I suggest deleting it.

~~**T(1) "Transference"** means the distribution, temporary storage, or disposal of reuse water.~~

The term "transference" is only used in the definitions of "treatment" at 20.6.8.7.T(4) NMAC and "wastewater" at 20.6.8.7.W(4) NMAC. A term, generally should not be defined if it is used only in another definition. *See* LCS, pp. 53, 55. Rather, the phrase "distribution, temporary storage, or disposal" should be incorporated into the definitions of "treatment" and "wastewater."

Additionally, the definition of "transference" is confusing because it is defined contrary to its common meaning, which is not good drafting practice. *See* Kuney, p. 93; Martineau, pp. 70-71; Temple-Smith, pp. 333-34. "Transference" means "an act, process, or instance of transferring: conveyance, transfer."[31] However, the Department proposes that "transference" take on contrary meanings -- of "temporary storage" and "disposal."

~~**T(3) "Treated wastewater"** means wastewater that has undergone treatment.~~

The term "treated wastewater" is only used in the definitions of "application" at 20.6.8.7.T(2) NMAC and "reuse water" at 20.6.8.7.R(4) NMAC. Again, a term should not be defined if it is used only in another definition. LCS, pp. 53, 55. Moreover, the definition is circular: treated wastewater means wastewater that has been treated. It is a tautology that provides no useful information. It should be deleted.

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[31] Error! Hyperlink reference not valid. MERIAM WEBSTER'S COLLEGIATE DICTIONARY 1328 (11th ed. 2004).

T(4) "Treatment" means a process in which wastewater has been reconditioned by biological, mechanical, or chemical processes to remove or eliminate contaminants, creating an effluent that can be returned to the water cycle either through discharge, transfer, temporary storage, disposal, ~~transference,~~ or reuse.

As I explained previously, in discussing the proposed definition of "transference" at 20.6.8.7.T(1) NMAC, the words "transfer, temporary storage, [and] disposal" should be substituted for the word "transference in the definition of "treatment." I also recommend using the word "transfer" instead of "transference" as it is clearer and simpler.

~~**U(1) "Untreated produced water"** means produced water that has not undergone treatment.~~

A definition of "untreated produced water" is unnecessary for much the same reasons a definition of "treated wastewater" is unnecessary. It is circular, tautological, and provides no useful information. It should be deleted.

~~**U(2) "Untreated wastewater"** means wastewater that has not undergone treatment.~~

The term "untreated wastewater" is only used in the definitions of "domestic wastewater" at 20.6.8.7.D(8) NMAC. A term should not be defined if it is used only in another definition. *See* LCS, pp. 53, 55. Moreover, as with the proposed definitions of "treated wastewater" and "untreated produced water," the definition of "untreated wastewater" is circular, tautological, and provides no useful information. It should be deleted.

W(1) "Water contaminant" means any substance that, if discharged or spilled, could alter the physical, chemical, biological or radiological qualities of water. "Water contaminant" does not mean source, special nuclear or by-product material as defined by the Atomic Energy Act of 1954, but may include all other radioactive materials, including ~~but not limited to~~ radium ~~and accelerator-produced isotopes~~.

There is some confusion in the definition of "water contaminant." Both the Water Quality Act and 20.6.2.7 NMAC define "water contaminant" as:

> . . . any substance that, if discharged or spilled, could alter the physical, chemical, biological or radiological qualities of water. "Water contaminant" does not mean source, special nuclear or by-product material as defined by the Atomic Energy Act of 1954 . . . .

NMSA 1978, § 74-6-2(B); 20.6.2.7.W(3) NMAC. The definition in 20.6.4.7 NMAC adds the phrase "but may include all other radioactive materials, including but not limited to radium and accelerator-produced isotopes." 20.6.4.7.W(2) NMAC. The Department proposes using that same definition, from 20.6.4 NMAC, in 20.6.8 NMAC. However, both the existing definition of "water contaminant" at 20.6.4.7.W(2) NMAC, and the Department's proposed definition at 20.6.8.7.W(1) NMAC, incorrectly refer to "accelerator produced isotopes" as subject to state regulation. In the Energy Policy Act of 2005, Congress amended the definition of "byproduct material" in the Atomic Energy Act of 1954 to include "any material that has been made radioactive by use of a particle accelerator."[32] Consequently, accelerator-produced isotopes are now regulated under the Atomic Energy Act, and state regulation is pre-empted. To address this problem, the Commission could adopt the definition of "water contaminant" as the Department has proposed it in 20.6.8.7.W(1) NMAC, but delete the words "and accelerator produced isotopes." Or the Commission could adopt the definition of "water contaminant" in 20.6.2.7 NMAC, which is accurate, but does not expressly state that "all other radioactive materials" including "radium" are subject to state regulation.

As discussed earlier, the qualifier "but not limited to" is not necessary.

> **W(2) "Water pollutant"** as defined in 20.6.4.7 NMAC. ~~means a water contaminant in such quantity and of such duration as may with reasonable probability injure human health, animal or plant life or property, or to unreasonably interfere with the public welfare or the use of property.~~

The term "water pollutant" is defined at 20.6.4.7.W(3) NMAC as the Department

[32] 42 U.S.C. § 2014(e)(3)(B) (2024).

proposes here. When defining terms in proposed 20.6.8 NMAC that are already used in Commission regulations, the Department's practice is to refer to that existing definition. This is acceptable practice and ensures consistency within Commission regulations. Therefore, I recommend for consistency with the rest of 20.6.8 NMAC that the definition of "water pollutant" also refer back to the existing definition at 20.6.4 NMAC.

> **W(4) "Wastewater"** means water or other fluids associated directly with sewerage systems, industrial processes, or produced water that is disposed of, or undergoes treatment for discharge, transference, or reuse. Wastewater in this Part does not include dairy "wastewater" as defined in 20.6.6 NMAC.

The defined term in 20.6.6.7.B(29) NMAC is "wastewater," not "dairy wastewater." The term should be placed in quotation marks to accurately identify the cross-reference.

> **20.6.8.100 GENERAL PROVISIONS:** Unless otherwise required by this Part, all persons are subject to the state's Ground and Surface Water Protection Regulations at ~~(~~20.6.2 NMAC~~)~~. ~~This includes, but is not limited to, regulations relating to spills, notices of intent, permitting, fees, penalties, compliance orders, and abatement.~~

There is no need to refer to specific topic areas in 20.6.2 NMAC, which includes more topic areas than identified. This superfluous sentence should be deleted, and so should the unnecessary parentheses.

> **20.6.8.101 UNAUTHORIZED APPLICATIONS OF PRODUCED WATER:** The department shall not approve a discharge permit or a discharge permit modification that includes the discharge to ground or surface water of produced water for potable applications.

Although the proposed rule clearly states that produced water may not be discharged so that it might move directly or indirectly into groundwater or surface water, 20.6.8.400.A NMAC, the proposed rule is not as clear that produced water may not be used in potable applications, although that appears to be the Department's intent. I therefore recommend adding a new section 101 to 20.6.8 NMAC to make that prohibition clear.

20.6.8.201 ~~DIRECT AND INDIRECT~~ POTABLE APPLICATIONS FOR DOMESTIC WASTEWATER:

A. Unauthorized applications. The department shall not approve a discharge permit or a discharge permit modification that includes the discharge of reuse water for ~~direct or indirect~~ potable applications except for those authorized applications identified in Subsection B of 20.6.8.201 NMAC.

B. Authorized applications.

(1) Feasibility studies: Persons proposing to conduct a feasibility study for ~~direct or indirect~~ potable applications for domestic wastewater shall:~~;~~

(a) Comply with all applicable permitting requirements in 20.6.2 and 20.6.4 NMAC.

(b) Ensure there is no connection between a potable water system and the water being studied and no cross connections exist between feasibility study-water and a community's potable water supply.

(c) Ensure that all ~~direct and indirect~~ potable reuse feasibility studies are conducted in a manner that does not interfere with ongoing operations at the wastewater and drinking water facilities.

(d) Obtain approval from the department~~,~~ through ~~either~~ a discharge permit or from the U.S. environmental protection agency through a national pollutant discharge elimination system permit pursuant to section 402 of the Clean Water Act ~~NPDES permit~~ and comply with all conditions therein.

I recommend four changes to proposed 20.6.8.201 NMAC. First, I recommend revising the provision to clarify that it only authorizes feasibility studies using domestic wastewater, and that it does not authorize feasibility studies using produced water. This limitation is not clear as 20.6.8.201 NMAC is currently written. I recommend adding the words of "domestic wastewater" to the title of the section and in 20.6.8.B(1) NMAC. Second, consistent with my previous recommendation, I recommend using the term "potable applications" and deleing the terms "direct" and "indirect potable applications." Third, I recommend adding a phrase to define in place "NPDES permit," for the reasons I discussed previously for the definition of "National Pollutant Discharge Elimination System" at 20.6.8.7.N(1) NMAC. Fourth, this provision, as proposed, reads that the Department approves NPDES permits. But the Department does not approve NPDES permits, at least not until New Mexico receives delegation of the NPDES

permit program. Until that happens, EPA issues NPDES permits in New Mexico and the Department certifies compliance of those permits with State and federal water quality standards. *See* 20.6.2.2001, 20.6.2.2002 NMAC.

> **20.6.8.400 PRODUCED WATER REUSE:** As provided in the Water Quality Act, Subsection P of Section 74-6-4 NMSA 1978, and the Produced Water ~~Oil and Gas~~ Act, ~~NMSA 1978,~~ Subsection B of Section 70-13-3 NMSA 1978, the following provisions apply to the discharge of produced water for activities unrelated to the exploration, drilling, production, treatment, or refinement of oil or gas.

Both the Water Quality Act and the Produced Water Act define the extent of the Commission's authority with respect to produced water as "unrelated to the exploration, drilling, production, treatment, or refinement of oil and gas." I recommend adding a citation to the Water Quality Act and revising the citation to the Oil and Gas Act to correctly cite the Produced Water Act.[33]

> **20.6.8.400.A(3) Untreated produced water discharge to ground water:** No person shall cause or allow untreated produced water to discharge so that it may move directly or indirectly into ground water. The department shall not approve a discharge permit ~~plan~~ or a discharge permit ~~plan~~ modification that includes the discharge of untreated produced water.

I recommend deleting the word "plan" in this paragraph for the reasons I explained in my previous discussion of the proposed definition of "discharge plan" at 20.6.8.2.D(5) NMAC.

> **20.6.8.400.A(4) Treated produced water discharge to ground water:** No person shall cause or allow treated produced water to discharge so that it may move directly or indirectly into ground water. The department shall not approve a discharge permit ~~plan~~ or a discharge permit ~~plan~~ modification that includes the discharge of treated produced water. ~~without development and adoption of standards specific to treated produced water (Subsection D of 20.6.8.400 NMAC). Demonstration projects or industrial projects submitted to the department through the notice of intent process in Subsection C of 20.6.8.400 NMAC are authorized to operate, following the determination of no discharge permit required issued by~~

[33] *See* NMSA 1978, § 70-13-1 (2019) ("Sections 1 through 5 [70-13-1 to 70-13-5 NMSA 1978] of this act may be cited as the 'Produced Water Act'.").

~~the department.~~

I recommend deleting the last phrase of the second sentence of proposed 20.6.8.400.A(4) NMAC. While 20.6.8.400.A(4) NMAC would generally prohibit the Department from issuing a ground water discharge permit for treated produced water, this phrase would allow the Department to do so upon "the development and adoption of standards specific to treated produced water." This provision is problematic for a number of reasons. Most importantly, it is entirely speculative. It is possible that the Department might at some point develop standards governing treated produced water and that the Commission might adopt such standards, but it is by no means certain. No such standards have yet been developed, proposed, or adopted. Moreover, because this provision references standards that do not exist – and may never exist – it is likely to create confusion if it is included in a final rule. And the provision is completely unnecessary; it is surplusage that adds to the length and complexity of the proposed rule while serving no regulatory purpose.

I also recommend deleting the last sentence of proposed 20.6.8.400.A(4) NMAC. This sentence simply reaffirms that demonstration projects and industrial projects approved through the notice of intent process in 20.6.8.400.C NMAC are authorized. As such, the sentence is redundant and unnecessary. Subsections B and C of 20.6.8.400 NMAC are clear, specific, and detailed as to the requirements that demonstration and industrial projects must meet. Such projects may not discharge to ground or surface water. 20.6.8.400.B(1) NMAC. Applicants must provide detailed information ranging from the water quality of the produced water to how the produced water will be transported, stored, treated, and disposed of. *Id.* The applicant must file a notice of intent with the Department detailing how the produced water will be handled, how spills will be prevented, and the financial assurance in place to cover the cost of any

cleanup. 20.6.8.400.C NMAC.

For all these reasons, I recommend that this superfluous language in 20.6.8.400.A(4) NMAC should be deleted.

In addition, I recommend deleting the word "plan" in this paragraph for the reasons set forth in the discussion of deleting the definition for "discharge plan" at 20.6.8.2.D(5) NMAC.

20.6.8.400.B Authorized applications.
20.6.8.400.C Notice of intent.

I have a few minor suggestions for proposed 20.6.8.400.B and C NMAC. I recommend that the word "demonstration" in "demonstration projects" not be capitalized, as it is throughout that subsection. And I make noted formatting changes to citation of NMSA at 20.6.8.400.B.(1)(a) and (g) NMAC, along with a deletion of parentheses at 20.6.8.400.B.(1)(h) NMAC.

20.6.8.400.C(1)(a) Notice of intent.

(1) Any person intending to use produced water for an authorized application under Subsection B of 20.6.8.400 NMAC shall submit to the ground water quality bureau of the department a produced water notice of intent prior to use.

(a) Notices shall be on a form provided by the department and shall include the following information:

(i) the name and address of the person intending to conduct the demonstration project or industrial project;

(ii) the location of the intended ~~D~~demonstration project or industrial project;

(iii) an estimate of the concentration of water contaminants in the produced water used in the demonstration project or industrial project;

(iv) the quantity of produced water used in the produced water used in the demonstration project or industrial project;

(iii) the ~~D~~demonstration project or industrial project research plan and objectives;

(iv) documentation that the ~~D~~demonstration project or industrial project design is consistent with the approved applications in Subsection B of 20.6.8.400 NMAC;

(v) the storage, secondary containment and spill prevention methods that will be used to prevent accidental discharges;

(vi) a plan to transport in and transport out any untreated produced water or treated produced water in a safe manner, in accordance with state and federal regulations;

(vii) plans for safe handling and proper disposal of produced water and any materials that come into contact with untreated produced water or treated produced water, including soils, plant material, treatment equipment, and containment area materials;

(viii) the health and safety considerations that minimize the risk of human exposure to produced water via any exposure pathway; and

(ix) financial assurance in place to cover the cost of cleanup and remediation in the event of failure during operation and closure of the ~~D~~demonstration project or industrial project.

I recommend making a clarification to proposed 20.6.8.400.C(1)(a) NMAC, which lists the requirements for a notice of intent for demonstration and industrial projects. Under proposed 20.6.8.400.B(1)(c) NMAC, persons wanting to conduct a demonstration or industrial project must submit a notice of intent to the Department "[i]n accordance with 20.6.2.1201 NMAC . . . ." Thus, as I understand it, the person would need to provide all information required in 20.6.2.2101 NMAC, including both the concentration of contaminants and the quantity of water in the potential discharge. 20.6.2.2101.C(4), (5) NMAC. Because those two pieces of information are not listed as required in proposed 20.6.8.400.C(1)(a) NMAC, but the other information required in 20.6.2.2101.C NMAC is, it is not clear whether concentration and quantity are required to be submitted to the Department. Yet the concentration and the quantity are critically important information. I therefore recommend adding these two pieces of information to clarify they must be submitted in a notice of intent to use produced water for an authorized application.

~~D. Effluent quality. [RESERVED]~~

I recommend deleting the "reserved" subsection at proposed 20.6.8.400.D. Reserved sections are used in the proposed rule to designate section numbers where there will likely be

future amendments creating new sections, especially new interstitial sections needing a "placeholder." In this case, it is uncertain whether the Department will propose "effluent quality" standards or other "standards specific to treated produced water," as suggested in proposed 20.6.8.400.A(4) NMAC. Moreover, the proposed "reserved" provision is subsection D, the final subsection of section 20.6.8.400 NMAC. There is no need for an interstitial placeholder. I recommend deletion of the "reserved" subsection entitled "effluent quality."

I declare under penalty of perjury that the foregoing testimony is true and correct.

Charles de Saillan — April 15, 2024

Charles de Saillan — Date

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AB-SC EXHIBIT 7

LEGISLATIVE DRAFTING MANUAL

AB/SC Ex. 7

Legislative Drafting Manual

Legislative Council Service

September 22, 2015

AB/SC Ex. 7

Legislative Drafting Manual

Legislative Council Service

411 State Capitol

Santa Fe, New Mexico 87501

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Legislative Drafting Manual

Legislative Council Service

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Be consistent in the arrangement of comparable provisions. Arrange provisions in the same way as provisions are arranged in sections of the bill containing similar material.

Avoid gender-based language. Use gender-neutral terms when possible, such as "worker" for "workman" or "drafter" for "draftsman". Avoid gender-based pronouns by omitting them, rewriting the sentence or repeating the noun.

Use definitions sparingly. Other than administrative terms, which are defined for ease of use, a word should be defined only if the drafter is actually adding to or subtracting from the ordinary dictionary meaning of the word, since it is superfluous to enact into law the common dictionary meaning. In constructing a definition, the drafter is cautioned against straying from the path of logical thought. Perhaps a deviation from such logic produced this definition of a new building: "any building pulled or burnt down to or within ten feet from the surface of the adjoining ground". Another example in New Mexico law defined a motor boat as "any vessel propelled, or designed to be propelled, by sail".

Take care when drafting powers and duties. A duty could be incomplete without some form of sanction. To require an act without the sanction could undercut the effectiveness of the law. Penalties should be sufficient but not excessive, and they should bear some relevance to the degree of the offense. Ensure that penalties do not duplicate or conflict with other penalties.

Write general provisions to apply in most cases. Most requests are for general legislation. It is not possible to anticipate all exceptions or to preempt all legal arguments. The drafter is urged to resist the temptation to write an answer to every possible imagined argument against the bill; it makes for tortured writing and unreadable legislation.

Consider separation of powers. The drafter who puts administrative detail in a bill may create a separation of powers problem. The New Mexico Supreme Court has ruled that the New Mexico Legislature cannot impinge on the executive management function. Thus, the drafter should avoid micromanagement in legislation. Usually, the goal of legislation is to require a state agency or an entity to dot its "I"s and cross its "T"s, not how to draw the dot and

Drafters are reminded that **amendment by reference is prohibited by the Constitution of New Mexico**. The New Mexico Supreme Court has ruled that only procedural law may be adopted by reference. This rule is not always as clear-cut as drafters would like; distinguishing between substantive and procedural provisions may be difficult in certain cases.

Drafters are also reminded that the purpose of bill drafts is to clearly inform members of the legislature, and the public, what changes to the law are proposed. Drafters should endeavor to limit the reader's need to research other statutes, or even other pages of the bill, to understand the provisions of a given section. For example, a drafter should define a term in the section in which it is used or in the definition section of the short title act to which it applies, instead of sending the reader to another act or chapter to find the defined term's meaning. (An exception to this practice would be the use of references to federal citations and defined terms.)

Cross-Reference Citations

In a cross-reference or internal citation in the text of a bill, use the Comp number without any history (being Laws). Review the following example.

Example: Citation to Comp Number — No "Being Laws"

". . .pursuant to the provisions of Section 45-6-4 NMSA 1978"

When citing an entire chapter or article of the NMSA 1978, the following form is correct:

Example: Citation to Chapter and Article

"… pursuant to Chapter 5, Article 23 NMSA 1978"

If citing to the section level, the cite is:

Example: Citation to Section

"… pursuant to Section 5-23-56 NMSA 1978"

When citing to a subdivision of a compiled section, the following example should be followed.

Example: Citation to Subdivision of a Compiled Section

"… pursuant to Subsection A of Section 5-23-56 NMSA 1978"

act" or "Sections 1 through 8 of this act" must be converted to the actual Comp numbers in order to include the new section.

For example, to add a new section to the Per Diem and Mileage Act, it is also necessary to amend the short title section to make sure that the reference will include the new section. There are two acceptable ways to change a short title. Review the following examples. The first example is preferred where possible because it is a broader reference, which alleviates the need for future amendment, and it does not require the assignment of a Comp number to the new section. Its use, of course, depends on how the short title act fits in the Comp.

Example: Short Title Conversion — All-Inclusive Reference — Preferred

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      SECTION 1.  Section 10-8-1 NMSA 1978 (being Laws 1963,
Chapter 31, Section 1, as amended) is amended to read:
      "10-8-1.  SHORT TITLE.--[~~Sections 10-8-1 through 10-8-8~~]
Chapter 10, Article 8 NMSA 1978 may be cited as the "Per Diem
and Mileage Act"."
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Example: Short Title Conversion — Specific Reference — Narrow

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      SECTION 1.  Section 10-8-1 NMSA 1978 (being Laws 1963,
Chapter 31, Section 1, as amended) is amended to read:
      "10-8-1.  SHORT TITLE.--Sections 10-8-1 through [~~10-8-8~~]
10-8-9 NMSA 1978 may be cited as the "Per Diem and Mileage
Act"."
```

Short Title and Application of Definitions

Once a section is made part of a short title act, the definitions of the act apply to that section. Conversely, an act's definitions do not apply to sections of law outside the confines of that act.

Definition Sections

A definition section should be drafted when certain terms used in an act need to be defined or when it is desirable to substitute a single word for a long phrase that will be used many times. If a term is used in only one section, it may be defined in that section. The following guidelines should be used when drafting definitions.

Do not define words that are being used in their normal dictionary meaning. Unnecessary or superfluous definitions cloud meaning.

Do not put substantive law in a definition section. The problems caused by having substantive law in the definition section are both immediate and long lasting. The most obvious problem with legislating in the definition section is that no one will think to look for it there. This can cause unnecessary problems with amendments, as well as enforcement of the law.

List defined terms alphabetically. When creating a definition section, the drafter should resist the temptation to list definitions hierarchically; the drafter will find that, more often than not, other people will not agree with or even understand such a schema. Drafters are encouraged to maintain the alphabetical order of existing definition sections even when adding definitions by amendment. However, they must be sensitive to highly litigious areas of law, heavily amended definition sections and overly cross-

Definition Drafting Key Points

- ♦ Do not define words that are being used in their normal dictionary meaning.
- ♦ **Do not put substantive law** in a definition section.
- ♦ List defined terms alphabetically.
- ♦ Enclose defined terms in quotation marks.
- ♦ Place each definition in its own subdivision.
- ♦ Use the verb "means" and "includes" in the singular.
- ♦ If the definition is restrictive, use the word "means".
- ♦ If the definition is extensive, use the word "includes".
- ♦ Do not use "but is not limited to".
- ♦ Do not define "act" or "federal act".
- ♦ Do not define acronyms or abbreviations.
- ♦ Define administrative terms.
- ♦ Do not define terms that are not used in the bill.
- ♦ Do not define terms solely to use them in another definition.

referenced acts to ensure that they are not causing more harm than good when opting to reorder an existing definition section.

Enclose defined terms in quotation marks. Whatever is within the quotation marks must be the **precise** term that will be used in the bill. A different grammatical form of the defined term is allowed if the sentence structure requires, but if the precise term is not used predominantly, the drafter needs to rewrite the term.

Place each defined term in its own subdivision. Usually, each defined term occupies its own subdivision, that is subsection or paragraph, in a single definition section, but there are rare exceptions. Extensive codifications may have individual sections for each definition or series of definitions, particularly when a single definition section is several pages long and is frequently amended. The Motor Vehicle Code, which has close to 150 defined terms, has 21 definition sections, based on alphabetical order, to make it easier to change or add definitions.

Use the verb "means" and "includes" in the singular. Whether the defined word is singular, plural or collective, the verb "means" or "includes" always remains singular.

If the definition is restrictive, use the word "means"; if the definition is extensive, use the word "includes". If it is necessary to exclude a meaning from an extensive definition, add the phrase "but does not include".

Do not define "act" or "federal act". It is not acceptable drafting style to define "act" or "federal act" to avoid using a long short title.

Do not define acronyms or abbreviations. It is not acceptable drafting style to define acronyms or use other abbreviations in the law, except for "a.m.", "p.m." and "NMSA" and, in certain sections, "DWI".

Define administrative terms. For example, define "department", "division", "board", "commission", "fund" and similar terms. Beware of defining a word that crosses governmental

lines. For example, defining "agency" to mean both a state agency and a municipal agency can cause untold — and unnecessary — problems in future amendments. Similarly, the drafter must ensure that a definition of "agency" does not inadvertently encompass legislative or judicial agencies if the scope of the term is intended to include executive agencies only; such an oversight can create separation of powers issues.

Do not define terms that are not used in the bill. This sometimes occurs when a drafter defines terms in the beginning of the drafting process that the drafter believes will be used in the act, but are not actually used in the completed bill draft or are subsequently removed from the bill. The drafter must remember to remove such terms from the definition section.

Do not define terms solely to use them in another definition. A defined term may be used in another definition; this is particularly prevalent with administrative terms. Do not use circular definitions.

Context of Defined Terms

The definition section does not need to state that the definitions "control unless the context requires otherwise"; that is understood.

Rules of Statutory Construction

The drafter must be familiar with the definition of "person" in the Uniform Statute and Rule Construction Act. "Person" will need to be defined in the bill if the drafter wants a definition other than that in the statutory construction act. Unlike the old statutory construction act, the new law is not permissive. The usual definitions of "person" include both natural (individuals) and artificial (corporate) persons; therefore, the drafter should not try to distinguish individuals from entities in the text. This is one of the best examples of the admonition against using synonyms in the law. There may be rare occasions when there is a legitimate reason to differentiate between person and individual, but the drafter would have to change the normal definition of person to accommodate the differentiation. Every drafter should be familiar with all of the terms defined in the Uniform Statute and Rule Construction Act.

Example: Definition Section

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      SECTION 3.  [NEW MATERIAL] DEFINITIONS.--As used in the
Fish Act:
          A.  "department" means the department of game and
fish;
          B.  "fingerling" means a fish shorter than six inches
in length;
          C.  "fish" includes both game fish and nongame fish,
but does not include carp;
          D.  "fund" means the fish replenishment loan fund;
          E.  "hatchery" means a fish farm licensed by the
department and the federal department of the interior; and
          F.  "poaching" means the taking of fingerlings from a
lake or stream in the state by someone other than a department
representative.
```

Like the title of the bill, it is a matter of personal preference whether the definition section is drafted first or last. Perhaps the easiest way is to write the common or known definitions first, then leave the section open to revise, add or delete defined terms as the bill is drafted.

If a bill draft is conformed before introduction, the drafter should check to see if the revisions have necessitated the removal of a definition because it is no longer used or if the material added by revision requires a new defined term. The same is true of a bill that is amended after introduction. An amendment to strike an existing defined term or insert a new defined term may be necessary.

"Herein", "Hereinbefore", "Hereinafter", "Above" and "Below"

Words and phrases such as "herein", "hereinbefore", "hereinafter", "above", "below", "the preceding section", "the following section" and the like will lose meaning even quicker than "this act". Absent a direct order from the requester, there is no instance when these words are acceptable in bill drafting.

"Including, But Not Limited To"

There is no need to write "including but is not limited to"; the word "including" implies an incomplete listing. Put another way, "including" or "includes" includes the concept of "not limited to".

Commonly Misused Words

There are a number of words that are commonly misused.

Examples: Misused Words

"Utilize" means to use something in a new and different way; most times, "use" is the correct word.

"Presently" means future; "at present" or "currently" means now.

"Insure" means insurance; "ensure" means to make certain.

The phrase "ex officio" indicates only that a person holds one office by virtue of holding another office. A law saying that "the governor is ex-officio president of the state board of finance" is unnecessary and simply means that any person holding the office of governor automatically becomes president of the State Board of Finance.

The phrase does not restrict any powers or duties of an officer while serving in the officer's ex-officio capacity; in particular, the phrase has nothing to do with the ability to vote. The drafter must specify that the ex-officio member cannot vote if that is the intent. Often, the phrase is not needed, because it is a given that the person serves ex officio — if the *governor* is president of the State Board of Finance, it is obvious that the *person* changes with who holds the office of governor.

British Spelling

Avoid the use of British spelling. "Canceled", "traveler" and the like should be spelled with one "l". "Judgement" should be spelled "judgment" without the middle "e".

Use quotation marks on new sections that are being assigned Comp numbers or new sections that are being inserted in an existing short title act or a chapter or article of the NMSA 1978. **That is, use quotation marks on sections if the lead-in ends with a colon.**

Example: New Material Lead-In and Quotation Marks

```
21        SECTION 23.  A new section of the Drafting Act is enacted
22   to read:
23        "[NEW MATERIAL] QUOTATION MARKS--WHEN USED.--
```

Use quotation marks when defining or referring to a term in a definition section or other section if there is no definition section.

Example: Defined Term and Quotation Marks

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1              D.  "shopper" means all persons who shop within the
2    exterior boundaries of the state, but "shopper" does not
     include residents of the state who shop by catalogue;
```

Use quotation marks in first stating the short title of an act or the name of a department, board, commission, program, position, fund or other thing created by an act.

Examples: Creations and Quotation Marks

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13        SECTION 1.  [NEW MATERIAL] SHORT TITLE.--This act may be
14   cited as the "Good Examples Act".
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 7        SECTION 10.  [NEW MATERIAL] PROBATE CODE COMMITTEE
 8   CREATED.--The "Probate Code committee" is created as a joint
 9   interim committee of the legislature.
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 7        SECTION 11.  [NEW MATERIAL] INSURANCE PUBLICATIONS
 8   REVOLVING FUND CREATED.--The "insurance publications revolving
 9   fund" is created in the state treasury.
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AB-SC EXHIBIT 8

STATE OF NEW MEXICO
WATER QUALITY CONTROL COMMISSION

No. WQCC 20-51(R)

In the Matter of:

PROPOSED AMENDMENTS TO
STANDARDS FOR INTERSTATE AND
INTRASTATE SURFACE WATERS,
20.6.4 NMAC

TRANSCRIPT OF PROCEEDINGS

BE IT REMEMBERED that on the 1st day of March, 2022, this matter, Triennial Review, came on for Deliberations and Decision at the New Mexico State Capitol, 490 Old Santa Fe Trail, Room 322, before STEPHANIE STRINGER, Chairperson for the Water Quality Control Commission, commencing at the hour of 9:00 a.m.

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A P P E A R A N C E S

For the Water Quality Control Commission:

STEPHANIE STRINGER, Chairperson
GABRIEL WADE, Vice-Chairperson
KEITH CANDELARIA, Commissioner
DAVID CERTAIN, Commissioner
LARRY DOMINGUEZ, Commissioner
KRISTA McWILLIAMS, Commissioner
KIRK PATTEN, Commissioner
KELSEY M. RADER, Commissioner
DAVID M. SYPHER, Commissioner
BRUCE THOMSON, Commissioner (via WebEx)
EDWARD VIGIL, Commissioner

For the Commission:

ROBERT SANCHEZ, Commission Counsel
Office of the Attorney General

PAMELA JONES, Commission Administrator
MADAI CORRAL, Commission Administrator

Okay. The next item is including the definition of "baseflow." Any comments or deliberations on this proposed definition?

Commissioner Dominguez?

COMMISSIONER DOMINGUEZ: Madam Chair, more of a question, and I'm going to pose it to the Commission again. This term was proposed and as it was pointed out by some of the parties, the definition that's being proposed is not actually used within this particular NMAC.

When you go to the state record center's guidelines on developing NMAC's, definitions are stipulated for words that are used within a rule. So my question for the Commission, although I know there gets to be overlap with NMAC's the Environment Department and this Commission oversees, my question is, is it a good practice for us to start branching out and defining things or placing things within definitions that are not actually utilized within the NMAC?

So it's more of a question comment that we're -- we're somewhat butting heads with state rule center's policy on NMAC development.

(Phone ringing.)

COMMISSIONER DOMINGUEZ: Sorry.

CHAIRPERSON STRINGER: Did that conclude your comment?

COMMISSIONER DOMINGUEZ: Yes.

CHAIRPERSON STRINGER: Thank you, Commissioner.

Commissioner Certain?

COMMISSIONER CERTAIN: Madam Chair, I -- in this instance, I think I have to agree with Commissioner Dominguez. My contracts analyst, who I've worked with for 13 years would have my head if she -- if she knew I was supporting putting a definition in a rule when the word doesn't even exist in the rule. We're being technical here. I'm just not sure the Environment Department made a good enough case for how adding the definition will help -- will help with implementation of the water quality standard. Maybe we needed to go into more detail about that, but I just -- I just can't get past putting this definition in when it doesn't really help clarify water quality standards.

CHAIRPERSON STRINGER: Thank you, Commissioner Certain.

Any other comments?

I looked into this matter as well, and I do agree that technically speaking, including a definition that is not used in the regulations is somewhat problematic. I think it brings clarity to the application of how we determine compliance with water quality standards, but that doesn't necessarily mean it's appropriate to include

in the regulations.

I think there are other alternatives to incorporate it into the water quality management plan, continuing planning process. As well as, as NMED noted, they've incorporated the definition into the document that describes how it's applied. So I -- I agree that technically speaking this is not the appropriate place for it; although, again, I want to comment that it would bring clarity and consistency to how the term is used across the broad spectrum of implementing the water quality standards.

With that, do I have a motion?

COMMISSIONER SYPHER: I don't know who -- Madam Chair, I don't know who I'm actually asking this question of, but is there a place that would be a much better placement of this in a definition section or appendix?

CHAIRPERSON STRINGER: Commissioner, so the proposal is to incorporate it into the definitions of the water quality standard. I might be misunderstanding your question.

COMMISSIONER SYPHER: Yes. With no reference to this section it's intended to effect? Is that -- do I understand that correctly?

I mean, there's no place to refer to this specifically.

CHAIRPERSON STRINGER: Correct. It is not used anywhere else in the water quality standards.

COMMISSIONER SYPHER: Okay. Thank you.

CHAIRPERSON STRINGER: Thank you.

COMMISSIONER THOMSON: Madam Chair, this is Commissioner Thomson.

CHAIRPERSON STRINGER: Yes, Commissioner Thomson.

COMMISSIONER THOMSON: I agree with you, that I think this would be much more appropriate in the water quality management plan or the CPP. And so, therefore, I would make a motion that we do not include the definition of baseflow into the water quality standards.

VICE-CHAIR WADE: Commissioner and Madam Chair, I would second that motion, and only modify it to the extent that the numbering does get affected later because of this proposal. So I would second that we reject this, as well as the renumbering within the section.

CHAIRPERSON STRINGER: Okay. So that's a modified motion. Do I have a second for the revised motion?

COMMISSIONER DOMINGUEZ: Second.

CHAIRPERSON STRINGER: Okay.

Pam, shall we have a roll-call vote, please.

ADMINISTRATOR JONES: Uh-huh. Commissioner Candelaria?

COMMISSIONER CANDELARIA: Yes.
ADMINISTRATOR JONES: Commissioner Certain?
COMMISSIONER CERTAIN: Yes.
ADMINISTRATOR JONES: Commissioner Dominguez?
COMMISSIONER DOMINGUEZ: Yes.
ADMINISTRATOR JONES: Commissioner McWilliams?
COMMISSIONER McWILLIAMS: Yes.
ADMINISTRATOR JONES: Commissioner Mody?
Commissioner Musharrafieh?
Commissioner Patten?
COMMISSIONER PATTEN: Yes.
ADMINISTRATOR JONES: Commissioner Rader?
COMMISSIONER RADER: Yes.
ADMINISTRATOR JONES: Commissioner Sypher?
COMMISSIONER SYPHER: Yes.
ADMINISTRATOR JONES: Commissioner Thomson?
COMMISSIONER THOMSON: Yes.
ADMINISTRATOR JONES: Commissioner Timmons?
Commissioner Vigil?
COMMISSIONER VIGIL: Yes.
ADMINISTRATOR JONES: Vice-Chair Wade?
VICE-CHAIR WADE: Yes.
ADMINISTRATOR JONES: Chair Stringer?
CHAIRPERSON STRINGER: Yes.
ADMINISTRATOR JONES: The motion passes.

threats to our water quality, such as climate change, and we need to make sure we're very clear in that purpose and the standards. Thank you.

Okay. The next item up for consideration is 20.6.4.7 (E) NMAC, effluent dominated. And it's adopting the definition of effluent dominated. (E) 2, I should say. Open the floor for deliberations.

Commissioner Certain?

COMMISSIONER CERTAIN: Thank you, Madam Chair. I oppose including this definition in the surface water quality standards because the term "effluent dominated" is not used anywhere else outside of potentially the definition section of this rule. Further, there was concern by other parties, including Amigos Bravos, that including this definition could somehow lead to lesser protections.

I think there are a variety of reasons for not including this definition, and I oppose it. Thank you.

CHAIRPERSON STRINGER: Thank you, Commissioner Certain.

Commissioner McWilliams?

COMMISSIONER McWILLIAMS: I also opposes this definition for the same reasons.

CHAIRPERSON STRINGER: Thank you.

I think for consistency sake, given how we ruled

earlier, I think it's appropriate that we do not adopt a definition into the standards that is not actually used in the standards. And I open the floor for a motion on this item.

COMMISSIONER CERTAIN: Madam Chair, I move to reject including the definition for effluent dominated in the rule.

VICE-CHAIR WADE: Madam Chair, I would second that motion.

CHAIRPERSON STRINGER: Thank you.

Pam, roll-call vote, please.

ADMINISTRATOR JONES: Yes. Commissioner Candelaria, how do you vote?

COMMISSIONER CANDELARIA: Yes.

ADMINISTRATOR JONES: Commissioner Certain?

COMMISSIONER CERTAIN: Yes.

ADMINISTRATOR JONES: Commissioner Dominguez?

COMMISSIONER DOMINGUEZ: Yes.

ADMINISTRATOR JONES: Commissioner McWilliams?

COMMISSIONER McWILLIAMS: Yes.

ADMINISTRATOR JONES: Commissioner Mody?

Commissioner Musharrafieh?

Commissioner Patten?

COMMISSIONER PATTEN: Yes.

ADMINISTRATOR JONES: Commissioner Rader?

COMMISSIONER RADER: Yes.
ADMINISTRATOR JONES: Commissioner Sypher?
COMMISSIONER SYPHER: Yes.
ADMINISTRATOR JONES: Commissioner Thomson?
COMMISSIONER THOMSON: Yes.
ADMINISTRATOR JONES: Commissioner Timmons?
Commissioner Vigil?
COMMISSIONER VIGIL: Yes.
ADMINISTRATOR JONES: Vice-Chair Wade?
VICE-CHAIR WADE: Yes.
ADMINISTRATOR JONES: Chair Stringer?
CHAIRPERSON STRINGER: Yes.
ADMINISTRATOR JONES: Madam Chair, the motion passes.
CHAIRPERSON STRINGER: Thank you.

Okay. The next item up for consideration is incorporating the definition of emerging contaminants. This one is somewhat related to an item further -- further in the text of the standards, and so I think we can proceed with having the discussion on the definition, but it is related to the other item, so this one is a little bit harder to manage, but we'll proceed with deliberating the definition first, and see how it intersects with the other proposal. So I open the floor for deliberation.

Commissioner Dominguez?