



**Summary of Initial Public Input on Produced Water
Implementation of the Produced Water Act
New Mexico Environment Department**

Released: September 2, 2020

EXECUTIVE SUMMARY

In the Fall of 2019, the New Mexico Environment Department (NMED) initiated and conducted public engagement activities across New Mexico (NM or State), in coordination with the Energy, Minerals and Natural Resources Department (EMNRD) and the Office of the State Engineer (OSE), to collect input from members of the public on produced water (PW) management and the roles of each state agency pursuant to NM House Bill 546, which includes the Produced Water Act. NMED sought public input to ascertain concerns and ideas regarding the use of treated PW outside of the oil and natural gas (O&G) industry, which the Produced Water Act establishes as NMED's jurisdiction. NMED will use the public input summarized in this document to inform future regulatory and research efforts related to NMED's authority to regulated treatment and use of PW outside of the O&G industry. In implementing the Produced Water Act, NMED is committed to taking all necessary steps to ensure PW management outside the O&G industry protects surface water and groundwater and the people, habitats, and economic activities that depend on those freshwater resources.

NMED prepared this *Summary of Initial Public Input on Produced Water* to document public engagement in 2019 and early 2020 and to inform future decision-making. Between October 11, 2019 and March 3, 2020, NMED received over 760 statements in response to information NMED posted to its PW webpage, <https://www.env.nm.gov/new-mexico-produced-water/>, and presented during the five public engagement meetings held in October and November 2019. Since the public meetings were not associated with a rulemaking process and were not public hearings, the meetings were not officially recorded; however, NMED made every effort to capture all input accurately and comprehensively. It is summarized in this document without attribution.

NMED received verbal input (captured by student notetakers) and written and electronic input, including input written on public input forms provided at each public meeting. NMED carefully analyzed all input to identify two main themes: (1) general context (e.g., regulation or research) and (2) general content and expressed sentiment (e.g., support, oppose, other). In total, NMED generated a public input catalogue containing 2,296 statements, each reflecting a "unique" arrangement of sentiment, context, and substantive content. Of the 2,296 statements, 1,635, or 71%, were affiliated with one or more form letters.

NMED's tabulation of the input indicates overall that public concern or opinion is roughly split between regulation needs and research needs, with slightly more focus toward regulatory matters (59% or 1,350 out of 2,296 statements). Most input (56% or 1,278 out of 2,296 statements) generally expressed concern regarding the unknowns surrounding PW use outside of O&G, how these unknowns may inhibit development of safe and effective regulation, and how these potential negative implications may affect human health and the environment, now or in the future. The remaining 44% (1,018 out of 2,296 statements) either expressed direct support (6% or 133 out of 2,296 statements) or opposition (38% or 866 out of 2,296 statements) to one or more PW topics.

NMED completed further in-depth objective evaluation of all input via a topical analysis. Through the topical analysis, NMED was better able to summarize the input in an accessible format that conveys public perception and priorities related to PW science, technology, and understanding. NMED's topical analysis identified 10 primary topics, enumerated in no particular order below, that the public perceives as priorities to address, either through future PW research or PW regulation.

1. Applicable, Appropriate, and Protective Standards for PW Use Outside of O&G
2. Toxicity, Human Health, Ecologic Exposure, and Risk
3. Component Characterization of PW Fluids
4. Water Resource Protection in Terms of Water Rights and Quantity
5. Proprietary Information/Disclosure/Confidential Business Information
6. Scientific Process/Research Integrity
7. Economic Feasibility/Financial Accountability/Legacy Costs
8. Legal Definition for PW
9. PW Management: Production, Treatment/Use, Transport, Storage, Compliance and Enforcement, and Disposal
10. Other Non-Water Quality Related Impacts

NMED and the New Mexico Produced Water Research Consortium (PWRC) have already begun utilizing public input to guide activities. For example, NMED, in coordination with EMNRD and OSE, published a Frequently Asked Questions (FAQ) document in January 2020 that draws directly on questions that came up during and after the public engagement meetings. The FAQ document provides an overview of the topic of PW and the Produced Water Act. It is available at <https://www.env.nm.gov/new-mexico-produced-water/faq-page/>. As another example, the PWRC has established a Technical Steering Committee (TSC) comprised of six work groups. The TSC work groups were selected, in large part, to cover public concerns expressed to NMED during the public engagement meetings.

The *Summary of Initial Public Input on Produced Water* will continue to be a resource to NMED, the PWRC, other state officials and the general public as research and policy initiatives related to PW proceed. NMED invites ongoing input from the public on the important topic of produced water treatment and use outside the oil and gas industry. Find more information about how to contact NMED at <https://www.env.nm.gov/new-mexico-produced-water/>.

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ACRONYM GLOSSARY

Acronyms	Meaning
C&E	compliance and enforcement
CBI	confidential business information
PWRC	New Mexico Produced Water Research Consortium
EJ	environmental justice
EMNRD	New Mexico Energy, Minerals and Natural Resources Department
FA	financial assurance
HB	House Bill
NM	New Mexico
NMED	New Mexico Environment Department
NMSU	New Mexico State University
NORM	naturally occurring radioactive material
O&G	oil and natural gas
OCD	EMNRD Oil Conservation Division
OSE	New Mexico Office of the State Engineer
PFAS	Per- and polyfluoroalkyl substances
PW	produced water
Q&A	question and answer
TENORM	technologically enhanced NORM
TSC	Technical Steering Committee
WQCC	New Mexico Water Quality Control Commission

BACKGROUND

On July 1, 2019, HB 546, including the Produced Water Act, became effective. NMSA 1978, Section 74-6-2(S) defines produced water (PW) as “a fluid that is an incidental byproduct from drilling for or the production of oil and gas.” The intention of the Produced Water Act is to reduce the demand for freshwater in oil and natural gas (O&G) production. Among other provisions, it clarifies state jurisdiction over PW and liability for PW on transfer, sale, or conveyance from one entity to another. In addition, the Produced Water Act requires the New Mexico Water Quality Control Commission (WQCC) to adopt regulations specific to PW use and management *outside* of the O&G field, as provided in the Water Quality Act (NMSA 1978, §§ 74-6-1 to -17). Any PW rules adopted by the WQCC will be administered by the New Mexico Environment Department (NMED). Future WQCC PW rules will be in addition to and independent of activities or rules currently administered by the New Mexico Energy, Minerals and Natural Resources Department (EMNRD) Oil Conservation Division (OCD), which regulates PW *within* the O&G field.

The *Summary of Initial Public Input on Produced Water* (Report) provides NMED’s tabulation and corresponding topical analysis of more than 760 statements NMED received, either verbally or in writing, from outside entities and stakeholders between October 11, 2019 and March 3, 2020. The public submitted statements in response to information presented during the NMED public engagement activities initiated in Fall 2019. NMED, along with sibling agencies, EMNRD and the New Mexico Office of the State Engineer (OSE), hosted five public engagement meetings in October and November 2019 to share information about House Bill (HB) 546, which includes the Produced Water Act, and gather public input on PW management in the state of New Mexico (State or NM).

NMED’s decision to hold public engagement meetings in the Fall of 2019 was voluntary and not mandated by law. Consequently, NMED’s Fall 2019 public engagement process does not represent part of any formal rulemaking process and was not a solicitation for formal public comment. Rather, NMED sought public input to help better understand concerns or ideas the public may have regarding HB 546 and the topic of using treated PW outside of the O&G field. NMED will use this information to further assist current and future regulation development.

To evaluate and assess over 760 statements, NMED generated an electronic catalogue to identify common themes and sub-themes. NMED subsequently organized statements around these themes. This analysis provided NMED with a representative cross-section of the main topics that the public expressed in relation to HB 546 and PW use outside of the O&G field. The analysis also enabled NMED to tabulate how many statements were in support or opposition of each topic.

In this Report, NMED:

- Provides an overview of the types of public input NMED received between October 11, 2019 to March 3, 2020, in direct response to the public engagement process;
- Describes NMED’s data collation process, including context analysis, to distill key themes and sub-themes used for the public input tabulation and topical analysis; and
- Presents the results of the NMED topical analysis, which summarize the regulation and research concepts that appear to dominate public opinion and concern about current or future PW management and use in NM.

A transcript of all original statements NMED received is available to the public upon request. A listing of useful links to information referenced in this Report is provided in **Appendix A**. Throughout the development of this Report, NMED endeavored to maintain the specificity and intent of each individual

statement. Furthermore, NMED considered all statements equal in any subsequent tabulation or analysis, regardless of message, level of detail, or affiliation of the issuer.

THE NMED PUBLIC ENGAGEMENT PROCESS OF FALL 2019

Between October 15 and November 25, 2019, NMED, along with representatives from EMNRD and OSE, hosted a total of five public engagement meetings at various locations throughout NM. **Table B-1**, provided in **Appendix B**, lists the locations and times of the Fall 2019 public engagement meetings.

Objectives of the fall 2019 NMED public engagement process:

1. Gather information from the public and answer questions about PW prior to initiating rulemaking,
2. Discuss opportunities to increase environmental and human health protection in NM, and
3. Review key provisions of the Produced Water Act and clarify state agencies' roles and responsibilities regarding implementation.

As stated by NMED Cabinet Secretary, James Kenney, "Our goal is to create regulations that are protective of human health and the environment, reduce industry reliance on freshwater, and encourage science-based and innovative solutions." NMED started each meeting with a presentation that introduced the Produced Water Act and NMED's plans to address Produced Water Act requirements. A state interagency panel consisting of representatives from NMED, OSE, and EMNRD presented the material specific to each agency. In general, the panel presented the same information at each meeting; however, the panel updated the presentation after the first two meetings (Albuquerque and Santa Fe) to better achieve meeting objectives. A copy of each public engagement meeting presentation is available in English and Spanish at <https://www.env.nm.gov/new-mexico-produced-water/public-meeting-materials/>.

At each meeting, the public had the opportunity to provide input both verbally and in writing. On conclusion of the presentation, the panel directly addressed questions from the audience during a 30-minute question and answer session, followed by an open public input forum. For the public input forum, the presenters gave the audience the floor and any person who signed up to speak at the start of the meeting had two minutes to address the panel. The public input forum ordered speakers on a first-come-first-serve basis. If time allowed, any additional person(s) wishing to make a statement, but who did not sign up, could do so on conclusion of all other statements. NMED collaborated with New Mexico State University (NMSU) to transcribe all verbal statements made during each public input forum.

For written input, NMED distributed a "Written Input Form" at the beginning of each meeting. Any member of the public could fill out a Written Input Form in real-time and leave it with NMED on conclusion of the meeting or could submit it to NMED later through email or regular mail. To facilitate receipt of email, NMED established a public email box at pw.environment@state.nm.us. NMED reviewed all information sent to this address and, when appropriate, forwarded to one or more NMED affiliates. Any email received up through March 3, 2020 is accounted for in this Report.

NMED's target audience for the Fall 2019 public engagement process was any interested member of the public. **Table B-1** presents the approximate public attendance count of each meeting along with the corresponding total number of verbal public statements transcribed during the public input session and any submitted Written Input Forms. NMED provided Spanish interpretation at all five meetings, Diné interpretation at the Farmington meeting, and, by request, sign language interpretation at the Santa Fe meeting.

In September 2019, NMED Cabinet Secretary Kenney sent a letter to leaders of each NM tribe, nation, and pueblo to share details about NMED's Fall 2019 public engagement process and invite leaders to a targeted tribal government meeting with NMED to discuss PW. This Report accounts for all input NMED received from members of NM tribes, nations and pueblos at the Fall 2019 public engagement meetings (including any email received up through March 3, 2020) but does not incorporate the input NMED received during subsequent targeted tribal government meetings.

In addition to the public engagement meetings, NMED's Produced Water Act implementation efforts involve investing in scientific research to fill critical science and technology gaps related to treatment of PW for uses outside of O&G. In September 2019, NMED and NMSU signed a Memorandum of Understanding that led to creation of the New Mexico Produced Water Research Consortium (PWRC). The PWRC is actively working to develop and implement a framework to fill scientific and technical knowledge gaps necessary to support development of science-based regulations and policies for the treatment and use of PW that protect human health and the environment. The information in this Report will assist PWRC efforts as well as NMED regulatory development efforts. For more information about the PWRC, visit <https://nmpwrc.nmsu.edu>.

DATA COLLATION: THEME IDENTIFICATION

This section describes the different types of public input NMED received along with the metrics used to facilitate input tabulation and topical analysis. NMED's objective in tabulating and analyzing public input through representative themes and sub-themes was to identify potential additional topics in the field of PW regulation or research that may need further assessment. Equity and consistency were fundamental to the analysis; therefore, NMED evaluated all statements using the same metrics, independent of statement style or affiliation.

Between October 11, 2019 and March 3, 2020, NMED received a total of 761 statements about HB 546 and PW. NMED catalogued each statement as verbal, written, or electronic according to the classification described below; **Table B-2** provides a high-level summary of all public input received during this time.

1. "Statement Type: Verbal" - Verbal public statements transcribed during the public engagement meeting public input sessions. Total: 101 out of 761 statements.
2. "Statement Type: Written" - Written statements received (through March 3, 2020) either on the pre-published Written Input Form distributed at a public engagement meeting or another hard-copy written communication received in the mail (e.g. letters, postcards). Total: 94 out of 761 statements.
3. "Statement Type: Email" - Email and attachments received between inception of the *pw.environment* email address and March 3, 2020. Total: 566 out of 761 statements.

NMED further catalogued statements by context of submission as follows:

1. "Individual" - Letter or statement containing unique input expressed by an individual with no specified affiliation to a greater organization or community. Total: 285 out of 761 statements
2. "Form Letter" - Standardized letter or statement written by an organized group, forwarded and individually signed by an individual member of the group. Total: 476 out of 761 statements

3. **“Solicitation”** - Letter or statement providing contact information and offering of ideas, items, or personnel to participate in either regulation or research development as related to PW management. Total: 14 out of 761 statements.

NMED tracked this information because it provided another set of parameters by which to evaluate the results of subsequent analyses, particularly since form letters comprised a significant portion of the overall input received. As shown in **Table B-2**, 71% of the input was associated with one or more form letters; two via email and one via postcard. Each form letter contained multiple statements; many also included personalized statements from the individual sender in addition to form letter text. Receipt of a form letter resulted in significant repetition of any one topic expressed; however, because each form letter came individually signed, NMED gave each form letter received from an individual, though often identical in content, equal weight in the overall public input evaluation. If an individual sent the same form letter to NMED multiple times, NMED logged the statements only once. In this way, NMED maintained consistency through the analytical process to decipher what statements constitute “unique” versus duplicative content.

As stated above, NMED endeavored to maintain the specificity and intent of an individual’s statement(s) throughout the public input analysis. Statements varied in both length and content and covered multiple topics. Almost every statement communicated some level of concern, directly or indirectly, for one or more issues surrounding HB 546 and PW use in NM. Many statements also expressed specific support or opposition to one or more topics. To capture all topics or points expressed by each statement, NMED divided the 761 statements into multiple components, as appropriate, so that each component represented only one single or unique “Theme” and “Sub-theme.” On completion of dividing the original 761 statements into Themes and Sub-themes, NMED had a public input catalogue containing 2,296 statements, each reflecting a “unique” arrangement of sentiment, context, and substantive content.

To determine the most suitable metrics for organizing statements around themes, NMED reviewed the range of subjects the public presented. Based on this review, NMED established the following two general “Themes.”

Theme: General Context of Statement Content

- Regulation
- Research

Theme: General Content and Expressed Sentiment

- 1.1 – General, In Support of
- 1.2 – General, In Opposition to
- 1.3 – General, Health and Contamination Concerns
- 1.4 – General, Solicitations

NMED further evaluated each statement to capture specific substantive content and applied up to two of the following “Sub-themes,” as applicable and appropriate.

Sub-themes Specific to Content Directly Related to PW Management and Use in NM

- 2.1 – Water quality regulations including safe levels or standards
- 2.2 – Potential uses outside the oil field including, agriculture, dust control, etc.

- 2.3 – Recycling in the O&G field
- 2.4 – PW management - storage/transport/infrastructure/disposal
- 2.5 – Treatment technology
- 2.6 – Science gaps/research/risk assessment
- 2.7 – Water quality concerns - methods/chemicals/naturally occurring radioactive material (NORM)/toxicity

Sub-themes Specific to Content Indirectly Related to PW Management and Use in NM

- 3.1 – Regulation development including HB 546 and approach to public meetings, etc.
- 3.2 – O&G production/fracking issues
- 3.3 – Proprietary information/disclosures
- 3.4 – Compliance and enforcement (C&E) including spill response
- 3.5 – Byproducts /resource recovery
- 3.6 – Financial assurance (FA)/environmental justice (EJ)
- 3.7 – Water rights/quantity
- 3.8 – Alternate/renewable energy pursuits

PUBLIC INPUT: TABULATION BY THEME

This section summarizes the results of NMED’s tabulation by Theme of 2,296 public statements NMED received between October 11, 2019 and March 3, 2020. Tables referenced in the following discussion are provided in **Appendix B**.

THEME: GENERAL CONTEXT OF INPUT CONTENT - RESEARCH OR REGULATION

Table B-2 provides a summary of the 2,296 statements by *Theme, general context of input content - research or regulation*. As illustrated in **Figure 1**, public concern or opinion was roughly split on this Theme, with slightly more emphasis placed on regulatory matters (59% or 1,350 out of 2,296 statements) and less on specific research needs (41% or 946 out of 2,296 statements).

THEME: GENERAL CONTENT AND EXPRESSED SENTIMENT

Most public input (56% or 1,278 out of 2,296 statements; **Table B-2**) did not contain a declaration in direct support or opposition of HB 546 and PW use in NM; rather, most input expressed a general overall concern regarding the unknowns surrounding PW use outside of O&G, how these unknowns may inhibit development of safe and effective regulation, and how these potential negative implications may affect human health and the environment, now or in the future (**Theme 1.3**). **Figure 2** presents the relative distribution of *Theme, general content and expressed sentiment*, for the 2,296 statements. **Table B-3** lists

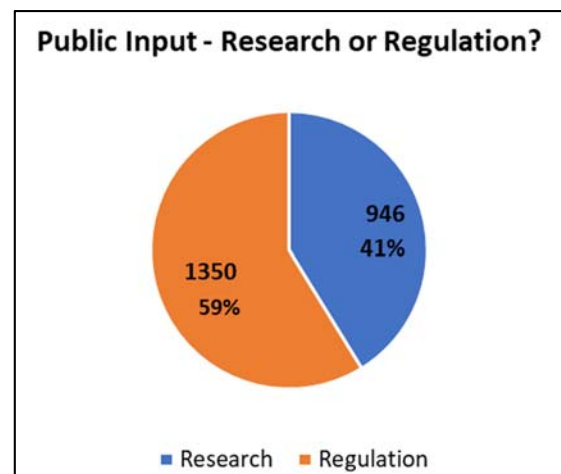


Figure 1. *Distribution of Theme, Research or Regulation, in Public Input Received.*

the main topics NMED identified as expressed by the public for the Themes depicted in **Figure 2** (Themes 1.1 – 1.4).

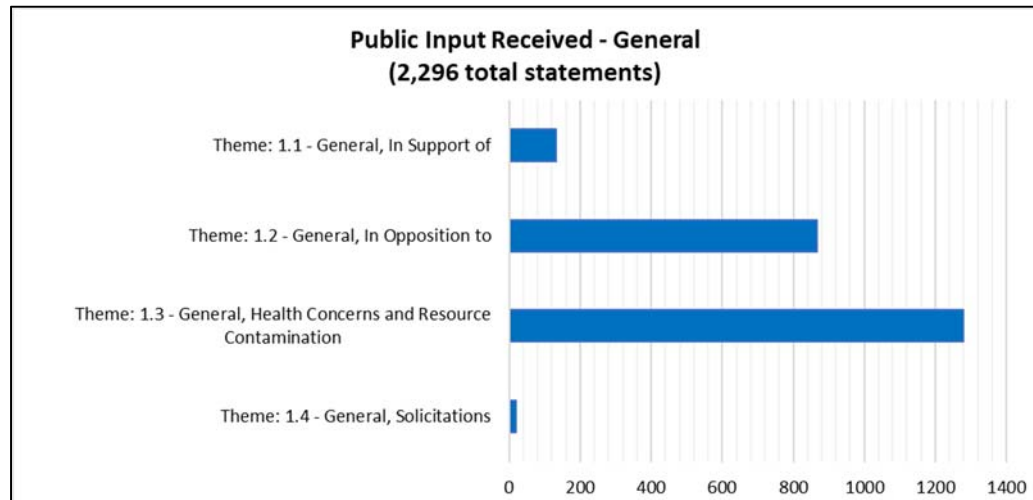


Figure 2. Distribution of Statements by Theme 1.1 – 1.4, in Public Input Received.

NMED presents a further breakdown of Themes 1.1 through 1.4 into topics and Sub-themes in the following subsections.

THEME 1.1: GENERAL, IN SUPPORT OF

Only six percent (133 out of 2,296 statements; **Table B-3**) of the public expressed support of one or more topics related to HB 546 and future PW use in NM. Topics that received a declaration of public support, in decreasing order of popularity (**Table B-4**), included:

1. Better PW management in/around oil field with emphasis on water use minimization (including recycling): 44%, 58 statements
2. Pursuit of alternate forms of sustainable/renewable energy: 17%, 22 statements
3. Pursuit of PW use outside the oil field: 14%, 18 statements
4. Stricter regulations for resource protection and compliance and enforcement: 12%, 16 statements
5. Advancement of treatment technology: 6%, 8 statements
6. O&G exploration and development (including fracking): 5%, 7 statements
7. Public engagement/involvement: 3%, 4 statements

Figure 3 presents the relative distribution of these topics under Theme 1.1. Most of these topics did not directly support HB 546 and off-field PW use; rather, supporting statements focused on pursuing change or improvement to current practices, including taking advantage of opportunities in implementing HB 546, to minimize impacts on human health, other resources, or the environment. Some examples of the more popular public statements included in Theme 1.1:

1. Adopt stricter regulations to include a more comprehensive list of water quality standards or better support compliance and enforcement programs;
2. Drastically limit or abolish freshwater use in current O&G operations by encouraging recycling of PW in the O&G field;

- Pursue alternate energy sources and infrastructure in lieu of promoting continued O&G development.

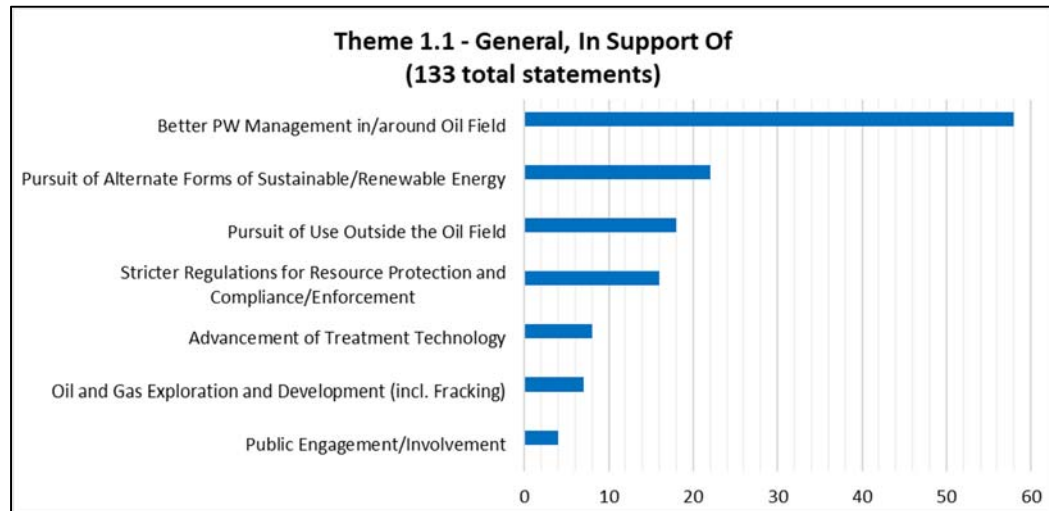


Figure 3. Distribution of Statements by Topic, Theme 1.1.

THEME 1.2: GENERAL, IN OPPOSITION TO

A greater percentage of public input (38% or 866 out of 2,296 statements; **Table B-3**) directly opposed one or more topics related to HB 546 and PW use in NM. As illustrated by **Figure 4**, the primary topics directly opposed by the public, in decreasing order of popularity, included:

- Pursuit of PW use outside the oil field: 66%, 572 statements
- O&G exploration and development (including fracking): 28%, 245 statements
- Use of public resources/assimilation of liability: 3%, 30 statements
- Current/projected PW management practices (including generation): 2%, 19 statements

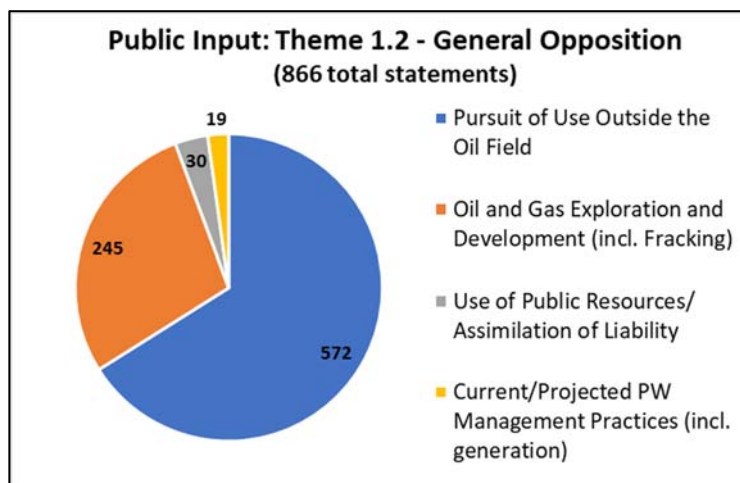


Figure 4. Distribution of Topics, Theme 1.2.

A dominant driver of public opposition was the concept of using PW for any reason outside of O&G (**Table B-5**). **Figure 5** illustrates the Sub-themes identified with this concept and the number of statements affiliated with each Sub-theme.

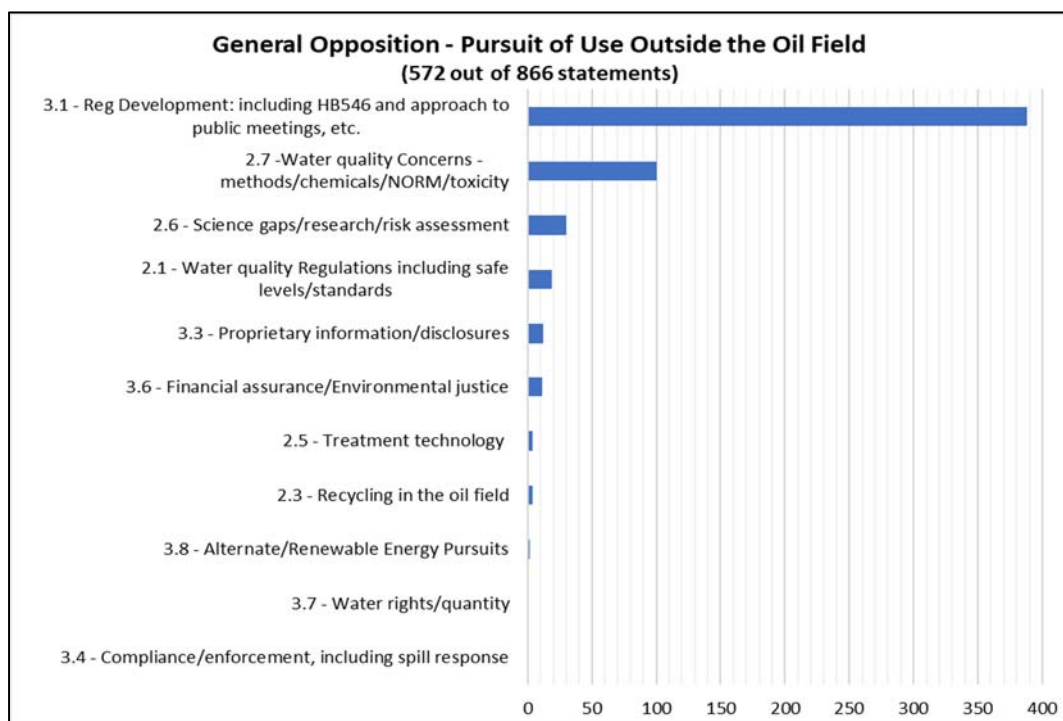


Figure 5. Distribution of Statements by Sub-theme, Theme 1.2.

The underlying reasons (i.e., Sub-themes) the public opposed the use of PW outside of O&G were numerous; however, NMED’s tabulation efforts indicated most public opposition was directed toward PW regulation development pursuant to HB 546 (**Table B-5; Figure 5**). It is also important to note that eighty-four percent (84%) of oppositional statements NMED catalogued were derived from one or more form letters (345 out of 412 statements were from form letters; **Table B-5**).

THEME 1.3: GENERAL, HEALTH AND CONTAMINATION CONCERNS

As previously stated, most public input did not declare support or opposition to HB 546 and the Produced Water Act; most statements NMED received expressed a general overall concern regarding PW and its use outside of O&G (**Tables B-3 and B-6**). The main topics of public concern was the presence, or lack, of the following (**Table B-6**):

1. Proprietary information/disclosure/confidential business information (CBI)/research integrity: 30%, 385 statements
2. Toxicity and characterization with respect to exposure/risk: 24%, 307 statements
3. Current/projected PW management practices (incl. generation, C&E, and FA): 21%, 267 statements
4. Applicable, appropriate, and protective standards and regulations: 20%, 260 statements
5. Limits of treatment technology and associated byproducts (incl. Financial): 3%, 33 statements
6. Legacy costs: 2%, 26 statements

Figure 6 below depicts the number of statements affiliated with each topic under Theme 1.3, in decreasing order of popularity.

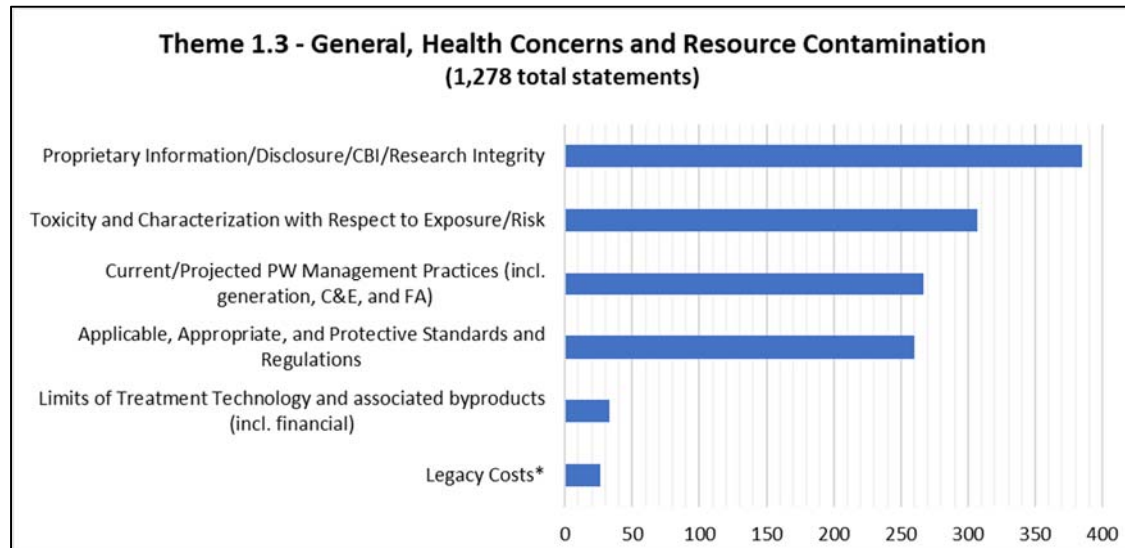


Figure 6. *Distribution of Statements by Topic, Theme 1.3.*

In addition to expressing concern in these topics, many public statements also called for NMED or other state agencies, as appropriate, to seek more information or pursue additional efforts in related areas, such as:

1. Water Quality Analysis/Methods: Advancements in this field are necessary to support effective characterization and development of safe regulation (**Table B-6**, Topic 1, Sub-themes 2.7 – Water quality Concerns and 2.1 – Water quality Regulations)
2. Collaboration and Transparency: State agencies, academic institutions, and industry must seek creative solutions together to mitigate roadblocks caused by proprietary or confidential business information (**Table B-6**, Topic 3 – Proprietary Information/ Disclosure/ CBI/ Research Integrity)

Like the oppositional statements, these topics covered numerous aspects of identified Sub-themes (**Table B-6**); however, the overriding concern expressed by the public for many of the topics was the concept that the science of PW is currently insufficient to support safe and effective regulation development for New Mexico (Sub-theme 2.6 – Science gaps; **Table B-6**). **Figure 7** shows the number of statements, in decreasing order of popularity, affiliated with each Sub-theme under Theme 1.3.

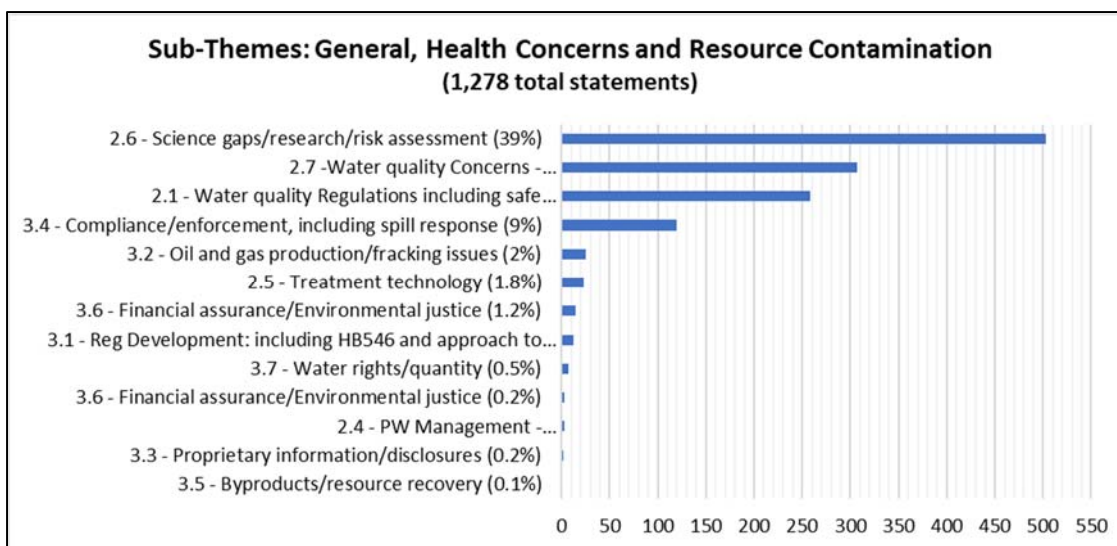


Figure 7. Distribution of Statements by Sub-theme, Theme 1.3.

THEME 1.4: GENERAL, SOLICITATIONS AND REFERENCES TO STUDIES OR REPORTS

A very small percentage (1%; **Table B-3**) of public input constituted some form of solicitation. NMED logged solicitation input under a separate general theme, *Theme, 1.4 – General, Solicitations*, to distinguish solicitation type statements from other public input received because solicitation messaging was often unique. Some solicitation correspondence provided resumes. Other solicitation correspondence provided references to articles or journals of interest. NMED forwarded any solicitation for PWRC efforts to the PWRC for review and consideration.

Table B-7 summarizes the two topics comprising solicitations:

1. PW Management/Treatment
2. Public Engagement and Regulation Development

Solicitations either emphasized the need for further inclusivity of the public and certain communities in the regulatory process or the PWRC, or requested consideration of certain ideas or knowledge, particularly in the emerging field of PW treatment.

A portion of the solicitations NMED received provided reference to one or more independent case studies, reports or documents relative to PW. A listing of these references that are publicly available is provided in **Appendix C**.

PUBLIC INPUT: TOPICAL ANALYSIS

The public input tabulation exercise informed NMED of the overall range of prevalent topics surrounding HB 546 and the Produced Water Act and the foundational concepts underlying these topics; however, specific details concerning how these topics apply to either regulation development or research needs required further assessment. To obtain such data, NMED completed an in-depth topical analysis on all received input in addition to the tabulation effort. The results of NMED’s topical analysis are summarized in this section.

NMED's objective of the topical analysis was to identify underlying causes for concern, as presented by the public, surrounding PW that may potentially require future consideration in either PW regulation or PW research. The resulting "Regulation" or "Research" topics are listed below, along with an explanation of each topic based on paraphrasing direct quotes or content that are overall representative of the public input received.

For the topical analysis NMED made concerted effort to maintain the specificity and intent of a statement; therefore, the statements herein represent the position of the individual, not of NMED. Again, this Report is a summary of what NMED has heard from members of the public; it is not a summary of NMED's response to that input. When needed to assist the reader of this Report, NMED provides clarifying information [in brackets].

1. APPLICABLE, APPROPRIATE, AND PROTECTIVE STANDARDS FOR PW USE OUTSIDE OF O&G

Regulation

- Any NM rulemaking for PW should ensure PW reuse and treatment is stringently regulated and protected. Such rulemaking should include establishing appropriate water quality standards for any use of PW outside of O&G to ensure protection of human health, the environment, and the safety of our food supply.
- Federal drinking water standards are not fully defined for one or more chemicals found in PW. Chemicals of concern noted include: propylene glycol; metals; radioactive materials, both NORM and technologically enhanced NORM (TENORM), and PFAS [Per- and Poly-fluoroalkyl substances].
- The State needs to identify toxicity data and standard analytical methods necessary to monitor and enforce any water quality standard that the WQCC may adopt. During this process, please consider all potentially applicable water quality standards as part of any evaluation. For example, several sovereign nations of New Mexico maintain their own water quality standards and these would require consideration in future rulemaking.

Research

- EPA [US Environmental Protection Agency] standards may not be stringent enough to be protective

2. TOXICITY, HUMAN HEALTH, ECOLOGICAL EXPOSURE, AND RISK

Regulation

- A rule should be adopted to state: "Until science and technology gaps no longer exist and all proper testing is completed and analyzed, no other rules shall be developed regarding the use of PW outside the industry that created it."
- NMED needs to consider the long-term impacts on current and future generations. Consider rules for the continual surveillance of soil health [to monitor accumulative toxicity] if and when it occurs that these produced fluids are ever applied to soil.

- NMED’s stated intention to implement a phased approach with research first, conducted by the PWRC, is the right step to be able to address any unknowns prior to adopting regulatory changes.
- It is important that NMED be a responsive and responsible partner with O&G, so that the State creates proper regulations and establishes authority to protect the public health, environment, and welfare of New Mexicans.

Research

- The New Mexico Department of Public Health (NMDOH) should provide input to ensure that human health, including developmental and reproductive health, is not adversely affected by using PW outside of O&G.
- NMED must have “absolute scientific proof” from the PWRC that PW is safe for human consumption, agricultural crops, livestock, road spreading, or aquifer injection.
- More data and information need to be collected to eliminate threats to air and soil, to protect human health, the environment, and NM’s agricultural industry. “We lack key toxicity data and have only standard analytical methods for less than 25% of known constituents...”
- Research initiatives should include evaluating health behaviors already being experienced in the Permian Basin and continual surveillance of soil health over time based on the potential for soil toxicity as a result of repetitive soil applications of PW.

3. COMPONENT CHARACTERIZATION OF PW FLUIDS

Regulation

- Any PW that is corrosive, toxic, or ignitable should be treated as hazardous waste.

Research

- What are the constituents in PW that are not disclosed by the O&G industry as well as naturally occurring constituents from formation contact in the subsurface?
- NM needs to develop a comprehensive testing protocol for all PW generated by the O&G industry. In particular, the testing should determine if the PW contains harmful toxicity, PFAS, and radioactive materials including TENORMS.
- Prior to rulemaking, contaminants and their concentrations should be thoroughly characterized independent of industry self-reporting.

4. WATER RESOURCE PROTECTION IN TERMS OF WATER RIGHTS AND QUANTITY

Regulation

- New Mexico has a limited supply of freshwater. House Bill 546 was passed in recognition of the O&G industry’s reliance on New Mexico’s precious freshwater and our need to reduce the O&G industry’s consumption of freshwater.

- The disposal of 60% of PW by deep-well injection is “concerning”: O&G operators should be using PW to the maximum extent practicable for O&G production, instead of relying on freshwater.
- New Mexico should raise the cost of water to the O&G industry so that they find it more profitable to recycle their own water.
- If New Mexico allows O&G to consume freshwater, New Mexico should require O&G to replace the water used with clean freshwater, not recycled frack water
- Treated PW could possibly be used to meet the requirements of the Pecos River compact if deemed safe.
- How will PW be handled with respect to water rights permitting?

Research

- New Mexico is the State in our nation most at risk from drought as a result of climate change, and we need to protect and conserve our scarce water resources.
- Research conducted by the PWRC to fill science gaps needs to answer: “what’s in the water, and is it clean enough,” and should also include a comprehensive analysis of how much potential benefit using treated PW in agriculture will provide.

5. PROPRIETARY INFORMATION/ DISCLOSURE/ CBI

Regulation

- New Mexico should require full disclosure of all chemical compounds that are in hydraulic fracturing fluids. The compounds in these mixtures are not currently fully disclosed to the public, regulatory agencies, or scientists.
- If these substances are found to be harmful to the environment, assurances must be made so that the constituents will be sequestered or treated so that no harmful substances are released into the environment.
- The data collection process around constituent characterization should be completely transparent with its findings. New Mexico should invest in developing an accessible on-line database of these constituents. While *FracFocus* [a source of constituent data] is publicly accessible, it may not be easy for all to access or understand.
- Interested stakeholders include resident sovereign nations, the business community, and the general public in addition to O&G.

6. SCIENTIFIC PROCESS/RESEARCH INTEGRITY

Research

- All PWRC research and activities must be scientifically based and upheld with the highest level of integrity and transparency.
- Research goals should be set by an impartial body and the results should be peer-reviewed; the research period should not be rushed. If all research goals are accomplished, how will the PWRC results be considered independent and reputable if the work is being funded by the O&G industry?

- Other studies relevant to the use of PW outside of the O&G industry must be researched and addressed as part of the goal to identify and fill science gaps.
- The PWRC should incorporate all stakeholder voices in identifying research priorities and to be completely transparent with its findings to show credibility in this process.

7. ECONOMIC FEASIBILITY/FINANCIAL ACCOUNTABILITY/LEGACY COSTS

Regulation

- Mandate cleanup caused by O&G and PW use from the O&G producers. O&G operators should pay for cleanup at their own expense. Idle, orphaned, and abandoned wells historically have been a burden on the State to clean up if a business goes bankrupt. O&G need to properly dispose of drilling wastes and frack fluids and pay for this disposal up front.
- Economic factors should not drive regulation development.
- Communities and future generations should not have to pay for the cleanup. The O&G industry should assume most of the costs involved in developing and deploying proper treatment, clean-up, and disposal options for PW.
- The return on any investment must allow for a good margin and longevity in the marketplace.

8. LEGAL DEFINITION FOR PW

Regulation

- State agencies need to clarify what “produced water use in the oil field” actually means.
- State agencies need to define beneficial use in the context of using PW outside of O&G.
- HB 546 gives producers of this water a “possessory right,” a term not defined in New Mexico water law. HB 546 should be amended to define a “possessory right.”

9(a). PW MANAGEMENT: PRODUCTION

Regulation

- New Mexico lacks any specific regulations on the practice of fracking.
- NMED’s proposed rulemaking process presents an opportunity to create a “best in the nation” policy for managing PW in New Mexico.
- Limiting and managing PW production must be part of the [rulemaking] process results.

9(b). PW MANAGEMENT: COMPLIANCE/ENFORCEMENT

Regulation

- New Mexico has woefully inadequate resources to sufficiently inspect, monitor and enforce regulations for the thousands of existing and new wells and all their leaks and spills.
- Should and when an accident such as a spill occurs, how will NMED ensure that needed testing is done and that the spill would remain within their jurisdiction of enforcement or regulation? Senate Bill 459 [NM 54th Legislature, First Session, 2019, <https://www.nmlegis.gov/Sessions/19%20Regular/bills/senate/SB0459.pdf>] called for the studies of these issues to make a viable plan and legislation that regulates state agencies and enforcement.
- The O&G industry should be more carefully managed to protect the State's land, water resources, and to reduce threats to agricultural areas.
- There is no way to ensure that the O&G industry will properly manage and police themselves through self-reporting during the testing, transport, and use of PW without State oversight.

9(c). PW MANAGEMENT: TRANSPORT AND STORAGE

Regulation

- O&G operators should be required to document the quantity of PW being transported to different disposal or treatment sites. OCD currently maintains a database of PW production and disposal volumes.
- Any concentrated waste streams generated from treatment of PW for recycling must be tested and safely stored, transported and disposed.
- The US Fish and Wildlife Service best management practices should also be implemented by New Mexico to protect wildlife
[available at <https://www.fws.gov/mountain-prairie/contaminants/oilPits.php>]

9(d). PW MANAGEMENT: TREATMENT/ USE

Regulation

- NMED should consider differences not only between producing areas but also between producing zones. The geology and geochemistry in the northwest part of the State compared to the southeast part of the State are markedly different. Rules and regulations associated with each region should account for these differences.
- Until more research is conducted, PW should not be used in food crops or given to animals or humans for consumption. However, possible uses could include roadway dust suppression and maintenance, growing hemp for fiber if groundwater is not affected, and industrial applications including carbon recapture.

- The first and best use of PW is in the O&G industry. The option to treat water for beneficial use and to avoid reinjection are more viable than ever due to decreasing treatment technology costs.
- The fracked water can be sold through *Sourcewater* [Sourcewater, Inc. at <https://www.sourcewater.com/>]. It doesn't have to be used to cause further contamination.
- Limiting the use of PW outside of the O&G industry would increase the value of developing renewable energy more quickly.
- PW should not be discharged into any waterways (i.e., surface waters).

Research

- Serious and rigorous scientific analysis needs to be applied before PW is allowed to be used for any purpose outside of the O&G industry. Research results must be fully approved before using treated PW to grow crops destined for livestock or human consumption, or to discharge this fluid into the Pecos River or any other waterways (i.e., surface waters).
- Various PW toxins and the treatability of these toxins are unknown. Constituents of concern include: radium, acetone, methylene chloride, and heavy metals such as uranium, cadmium, barium, lead, mercury, and vanadium.
- Also of concern are proprietary chemicals that may not be disclosed by O&G companies.
- Treatment technologies are not capable of removing sufficient amounts of these constituents to create a safe treated water stream. Differences in chemical quality exist between “frac flowback” and PW waste streams, and these differences need to be distinguished during treatment.
- Pilot treatment works need to operate continuously and successfully under careful oversight by the State for a substantial period of time, e.g., at least six months.

9(e). PW MANAGEMENT: DISPOSAL

Regulation

- PW that cannot be treated for reuse should be treated and disposed of by reinjection in a manner that doesn't threaten groundwater supplies. It is important to minimize the depletion or contamination of New Mexico's remaining water resources.

10. OTHER IMPACTS

Research

- Fracking in the Permian Basin is responsible for nearly 40% of the emissions caused by O&G development. The effects from these carbon emissions will be felt within the next 10 years.
- Impacts caused directly or indirectly by continued O&G operations include: earthquakes, desertification, reduced rainfall, social upheaval, dislocation,

hurricanes, insufficient river recharge, aquifer impacts, ice melting, and methane release.

- Climate change caused by these emissions will cause global heating, disrupting water cycle dynamics and water supplies.
- The priority should be to replenish soil moisture, regenerate soils, and keep oil “in the ground” while we [i.e., New Mexico] do a just transition to renewables “before it is too late.”

SUMMARY AND NEXT STEPS

NMED voluntarily initiated and conducted public engagement activities across the State in Fall 2019 to collect feedback from members of the public on HB 546 and the Produced Water Act. NMED plans to use the information obtained during this process to inform future public engagement and guidance and regulation development. In addition, the information will inform the work of the PWRC as it identifies and fills science and technology gaps. This Report and the underlying database of comments will continue to be used as a touchstone for future efforts related to PW at NMED.

NMED has yet to establish a date by which a formal WQCC rulemaking process, as mandated by the Produced Water Act, will commence. A phased set of activities will support future PW regulation development for New Mexico, as follows:

- **Phase 1:** Draft and petition the WQCC for initial regulations to prohibit the use of untreated PW outside O&G.
- **Phase 2:** As science and technology testing dictates (through the work of the PWRC and other experts), draft and petition the WQCC for additional regulations to satisfy all requirements of HB 546.

Public participation is essential to the success of NMED’s activities to implement the Produced Water Act. NMED’s goal for the public engagement meetings was to create a listing of important ideas and concerns gathered from a wide range of New Mexico stakeholders. NMED appreciates all the input received and summarized in this Report.

Any regulation NMED proposes to the WQCC will be subject to a formal comment period in accordance with WQCC rulemaking procedures (20.1.6 NMAC). During a formal comment period, any member of the public may provide comment on any proposed change prior to regulation adoption. In addition, after developing draft regulations and before petitioning the WQCC to adopt the regulations, NMED will provide an opportunity for public review and comment. NMED will provide notification of future public outreach on PW regulation by posting a notice on the NMED PW webpage, <https://www.env.nm.gov/new-mexico-produced-water>, and by sending an email update to the PW “interested parties” list. To join the PW “interested parties” list, send an email request to pw.environment@state.nm.us or follow the prompt to “Subscribe to Listserv” at the bottom of NMED’s PW webpage.

APPENDIX A: LINKS TO SUPPORTING DOCUMENTS

- House Bill 546 and the Produced Water Act:
<https://nmlegis.gov/Legislation/Legislation?Chamber=H&LegType=B&LegNo=546&year=19>
- New Mexico Environment Department produced water website:
<https://www.env.nm.gov/new-mexico-produced-water>
- New Mexico Environment Department Fall 2019 Public Engagement Meeting Presentations:
<https://www.env.nm.gov/new-mexico-produced-water/public-meeting-materials/>
- New Mexico Environment Department produced water public email box:
pw.environment@state.nm.us
- New Mexico Produced Water Research Consortium website: <https://nmpwrc.nmsu.edu/>
- FracFocus: <https://fracfocus.org/>

APPENDIX B: TABLES

**Table B-1
 NMED Produced Water Public Engagement Meetings, Fall 2019**

Date	City	Venue	Estimated Attendance Count	Number of Speakers (excluding Q&A)	Written Input Forms Received
10/15/2019	Albuquerque	National Hispanic Cultural Center Bank of America Theatre 1701 4th St. SW 6-8:30 PM	82	24	5
10/30/2019	Santa Fe	St. Francis Auditorium 107 West Palace Ave. 6-8:30 PM	111	27	17
11/14/2019	Carlsbad	Pecos River Village Conference Center 711 Muscatel Ave. 6-8:30 PM	73	13	1
11/19/2019	Farmington	San Juan College Little Theatre 4601 College Blvd. 6-8:30 PM	77	21	2
11/25/2019	Las Cruces	New Mexico Farm & Ranch Heritage Museum 4100 Dripping Springs Rd. 6-8:30 PM	72	16	1

NOTE: Attendance count is based on number of individuals who signed an NMED sign-in sheet provided at each meeting and is an estimate only. Actual attendance may have been greater. The Number of Speakers is the number of people who provided verbal statements during a meeting's public input forum.

Table B-2
Summary of Initial Public Input Received by Overall Theme and Type of Submission
NMED Produced Water Public Engagement, Oct. 11, 2019 – March 3, 2020

Statement Type	Date Received	Statements Received		Statement Tally							
				Total		Research		Regulation		Form Letter	
Overall		761	100%*	2296	100%	946/2296	41%	1350/2296	59%	1635/2296	71%
Verbal	10/15/2019 - 11/25/2019	101	13%	220	10%	63	7%	157	12%	0	0%
Email	09/13/2019 - 02/03/2020	566	74%	1876	82%	811	86%	1065	79%	1585	97%
Written	10/15/2019 - 12/28/2019	94	12%	200	9%	72	8%	128	9%	50	3%
Theme: 1.1 - General, In Support of:		NA	NA	133/2296	6%	32/133	24%	101/133	76%	27/133	20%
Verbal	10/15/2019 - 11/25/2019	NA	NA	60	45%	20	63%	40	40%	0	0%
Email	10/11/2019 - 02/04/2020	NA	NA	44	33%	10	31%	34	34%	10	37%
Written	10/15/2019 - 12/28/2019	NA	NA	29	22%	2	6%	27	27%	17	63%
Theme: 1.2 - General, In Opposition to:		NA	NA	866/2296	38%	87/866	10%	779/866	90%	559/866	65%
Verbal	10/15/2019 - 11/25/2019	NA	NA	72	8%	5	6%	67	9%	0	0%
Email	09/13/2019 - 03/03/2020	NA	NA	670	77%	43	49%	627	80%	526	94%
Written	10/15/2019 - 12/28/2019	NA	NA	124	14%	39	45%	85	11%	33	6%
Theme: 1.3 - General, Health Concerns and Resource Contamination		NA	NA	1278/2296	56%	822/1278	64%	456/1278	36%	1049/1278	82%
Verbal	10/15/2019 - 11/25/2019	NA	NA	79	6%	37	5%	42	9%	0	0%
Email	09/13/2019 - 03/03/2020	NA	NA	1154	90%	754	92%	400	88%	1049	100%
Written	10/15/2019 - 12/18/2019	NA	NA	45	4%	31	4%	14	3%	0	0%
Theme: 1.4 - General, Solicitations		NA	NA	19/2296	1%	5/19	26%	14/19	74%	0/19	0%
Verbal	11/19/2019 - 11/25/2019	NA	NA	9	47%	1	20%	8	57%	0	0%
Email	10/29/2019 - 02/20/2020	NA	NA	8	42%	4	80%	4	29%	0	0%
Written	10/15/2019 - 11/19/2019	NA	NA	2	11%	0	0%	2	14%	0	0%

*Percentages are rounded up.

Table B-3
General: Content and Expressed Theme of Public Sentiment and Type of Submission
NMED Produced Water Public Engagement, Oct. 11, 2019 – March 3, 2020

Theme and Topic	Statement Tally							
	Total		Research		Regulation		Form Letter	
Overall	2296	100%	946/2296	41%	1350/2296	59%	1635/2296	71%
Theme 1.1 - General, In Support of	133	6%	32	24%	101	76%	27	20%
*1. Stricter Regulations for Resource Protection and Compliance/Enforcement	16	12%	1	3%	15	15%	2	7%
*2. Better PW Management in/around Oil Field with Emphasis on Water Minimization (including Recycling)	58	44%	2	6%	56	55%	21	78%
*3. Pursuit of Alternate Forms of Sustainable/Renewable Energy	22	17%	9	28%	13	13%	4	15%
*4. Pursuit of Use Outside the Oil Field	18	14%	10	31%	8	8%	0	0%
*5. Advancement of Treatment Technology	8	6%	6	19%	2	2%	0	0%
*6. Oil and Gas Exploration and Development (including Fracking)	7	5%	3	9%	4	4%	0	0%
*7. Public Engagement/Involvement	4	3%	1	3%	3	3%	0	0%
Theme 1.2 - General, In Opposition to	866	38%	87	10%	779	90%	559	65%
*1. Pursuit of Use Outside the Oil Field	572	66%	68	78%	504	65%	412	74%
*2. Oil and Gas Exploration and Development (including Fracking)	245	28%	10	11%	235	30%	146	26%
*3. Current/Projected PW Management Practices (including Generation)	19	2%	7	8%	12	2%	0	0%
*4. Use of Public Resources/Assimilation of Liability	30	3%	2	2%	28	4%	1	0%
Theme 1.3 - General, Health Concerns and Resource Contamination	1278	56%	822	64%	456	36%	1049	82%
*1. Applicable, Appropriate, and Protective Standards and Regulations	260	20%	9	1%	251	55%	224	21%
*2. Toxicity and Characterization with Respect to Exposure/Risk	307	24%	280	34%	27	6%	247	24%
*3. Proprietary Information/Disclosure/CBI/Research Integrity	385	30%	366	45%	19	4%	344	33%
*4. Limits of Treatment Technology and associated Byproducts (including Financial)	33	3%	29	4%	4	1%	1	0%
*5. Current/Projected PW Management Practices (including generation, C&E, and FA)	267	21%	128	16%	139	30%	229	22%
*6. Legacy Costs	26	2%	10	1%	16	4%	4	0%
Theme 1.4 - General, Solicitations	19	1%	5	26%	14	74%	0	0%
*1. PW Management/Treatment	8	42%	4	80%	4	29%	0	0%
*2. Public Engagement and Regulation Development	11	58%	1	20%	10	71%	0	0%

* Topic

Table B-4
General: Public Support and Type of Submission
NMED Produced Water Public Engagement, Oct. 11, 2019 – March 3, 2020

Theme 1.1 - General, In Support of		Statement Tally							
		Total		Research		Regulation		Form Letter	
1.	Stricter Regulations for Resource Protection and Compliance/Enforcement *	16/133	12%	1/16	6%	15/16	94%	2/16	13%
**	2.1 - Water quality regulations including safe levels/standards	7	44%	1	100%	6	40%	2	100%
**	2.4 - PW management - Storage/transport/infrastructure/disposal	1	6%	0	0%	1	7%	0	0%
**	2.7 -Water quality concerns - methods/chemicals/NORM/toxicity	1	6%	0	0%	1	7%	0	0%
**	3.1 - Reg development: including HB 546 and approach to public meetings, etc.	5	31%	0	0%	5	33%	0	0%
**	3.4 - Compliance/enforcement, including spill response	2	13%	0	0%	2	13%	0	0%
2.	Better PW Management in/around Oil Field with emphasis on Freshwater Use Minimization (including Recycling) *	58/133	44%	2/58	3%	56/58	97%	21/58	36%
**	2.3 - Recycling in the oil field	43	74%	0	0%	43	77%	21	100%
**	2.4 - PW management - storage/transport/infrastructure/disposal	10	17%	2	100%	8	14%	0	0%
**	3.7 - Water rights/quantity	5	9%	0	0%	5	9%	0	0%
3.	Pursuit of Alternate Forms of Sustainable/Renewable Energy *	22/133	17%	9/22	41%	13/22	59%	4/22	18%
**	3.1 - Reg development: including HB 546 and approach to public meetings, etc.	4	18%	1	11%	3	23%	0	0%
**	3.2 - Oil and gas production/fracking issues	3	14%	2	22%	1	8%	2	50%
**	3.5 - Byproducts/resource recovery	1	5%	1	11%	0	0%	0	0%
**	3.6 - Financial assurance/environmental justice	12	55%	4	44%	8	62%	2	50%
**	3.7 - Water rights/quantity	2	9%	1	11%	1	8%	0	0%
4.	Pursuit of Use Outside the Oil Field *	18/133	14%	10/18	56%	8/18	44%	0/18	0%
**	2.4 - PW management - storage/transport/infrastructure/disposal	1	6%	1	10%	0	0%	0	0%
**	3.1 - Reg development: including HB 546 and approach to public meetings, etc.	2	11%	0	0%	2	25%	0	0%
**	3.5 - Byproducts/resource recovery	7	39%	5	50%	2	25%	0	0%
**	3.6 - Financial assurance/environmental justice	4	22%	2	20%	2	25%	0	0%
**	3.7 - Water rights/quantity	4	22%	2	20%	2	25%	0	0%

* Topic

** Sub-theme

Table B-4 (Continued)

Theme 1.1 - General, In Support of		Statement Tally							
		Total		Research		Regulation		Form Letter	
5.	Advancement of Treatment Technology *	8/133	6%	6/8	75%	2/8	25%	0/8	0%
**	2.7 -Water quality concerns - methods/chemicals/NORM/toxicity	1	13%	1	17%	0	0%	0	0%
**	3.7 - Water rights/quantity	2	25%	1	17%	1	50%	0	0%
**	3.6 - Financial assurance/environmental justice	3	38%	2	33%	1	50%	0	0%
**	3.1 - Reg development: including HB 546 and approach to public meetings, etc.	2	25%	2	33%	0	0%	0	0%
6.	Oil and Gas Exploration and Development (including Fracking) *	7/133	5%	3/7	43%	4/7	57%	0/7	0%
**	2.4 - PW management - storage/transport/infrastructure/disposal	2	29%	1	33%	1	25%	0	0%
**	3.1 - Reg development: including HB 546 and approach to public meetings, etc.	3	43%	1	33%	2	50%	0	0%
**	3.5 – Byproducts/resource recovery	2	29%	1	33%	1	25%	0	0%
7.	Public Engagement/Involvement *	4/133	3%	1/4	3%	3/4	3%	0/4	0%
**	3.1 - Reg development: including HB 546 and approach to public meetings, etc.	3	75%	1	100%	2	67%	0	0%
**	3.4 - Compliance/enforcement, including spill response	1	25%	0	0%	1	33%	0	0%

* Topic

** Sub-theme

Table B-5
General: Public Opposition and Type of Submission
NMED Produced Water Public Engagement, Oct. 11, 2019 – March 3, 2020

Theme 1.2 - General, In Opposition to		Statement Tally							
		Total		Research		Regulation		Form Letter	
1.	Pursuit of Use Outside the Oil Field *	572/866	66%	68/572	12%	504/572	88%	412/572	72%
**	2.1 - Water quality regulations including safe levels/standards	19	3%	1	1%	18	4%	15	4%
**	2.3 - Recycling in the oil field	4	1%	0	0%	4	1%	0	0%
**	2.5 - Treatment technology	4	1%	3	4%	1	0%	1	0%
**	2.6 - Science gaps/research/risk assessment	30	5%	26	38%	4	1%	15	4%
**	2.7 -Water quality concerns - methods/chemicals/NORM/toxicity	100	17%	36	53%	64	13%	30	7%
**	3.1 - Reg development: including HB 546 and approach to public meetings, etc.	388	68%	0	0%	388	77%	345	84%
**	3.3 - Proprietary information/disclosures	12	2%	2	3%	10	2%	3	1%
**	3.4 - Compliance/enforcement, including spill response	1	0.2%	0	0%	1	0%	0	0%
**	3.6 - Financial assurance/environmental justice	11	2%	0	0%	11	2%	3	1%
**	3.7 - Water rights/quantity	1	0.2%	0	0%	1	0%	0	0%
**	3.8 - Alternate/renewable energy pursuits	2	0.3%	0	0%	2	0%	0	0%
2.	Oil and Gas Exploration and Development (including Fracking) *	245/866	28%	10/245	4%	235/245	96%	146/245	60%
**	2.1 - Water quality regulations including safe levels/standards	1	0%	0	0%	1	0%	0	0%
**	2.4 - PW management - storage/transport/infrastructure/disposal	4	2%	0	0%	4	2%	4	3%
**	2.6 - Science gaps/research/risk assessment	3	1%	0	0%	3	1%	0	0%
**	2.7 -Water quality concerns - methods/chemicals/NORM/toxicity	6	2%	0	0%	6	3%	3	2%
**	3.1 - Reg development: including HB 546 and approach to public meetings, etc.	5	2%	2	20%	3	1%	1	1%
**	3.3 - Proprietary information/disclosures	1	0%	0	0%	1	0%	0	0%
**	3.4 - Compliance/enforcement, including spill response	2	1%	0	0%	2	1%	0	0%
**	3.6 - Financial assurance/environmental justice	52	21%	3	30%	49	21%	13	9%
**	3.7 - Water rights/quantity	148	60%	3	30%	145	62%	115	79%
**	3.8 - Alternate/renewable energy pursuits	11	4%	2	20%	9	4%	2	1%
**	*** Not specific	12	5%	0	0%	12	5%	8	5%

* Topic

** Sub-theme

Table B-5 (Continued)

Theme 1.2 - General, In Opposition to		Statement Tally							
		Total		Research		Regulation		Form Letter	
3.	Current/Projected PW Management Practices (including generation) *	19/866	2%	7/19	37%	12/19	63%	0/19	0%
**	2.5 - Treatment technology	5	26%	5	71%	0	0%	0	0%
**	2.6 - Science gaps/research/risk assessment	1	5%	1	14%	0	0%	0	0%
**	2.7 -Water quality concerns - methods/chemicals/NORM/toxicity	3	16%	0	0%	3	25%	0	0%
**	3.1 - Reg development: including HB 546 and approach to public meetings, etc.	6	32%	1	14%	5	42%	0	0%
**	3.4 - Compliance/enforcement, including spill response	2	11%	0	0%	2	17%	0	0%
**	3.6 - Financial assurance/environmental justice	2	11%		0%	2	17%		0%
4.	Use of Public Resources/Assimilation of Liability *	30/866	3%	2/30	7%	28/30	93%	1/30	0%
**	3.1 - Reg development: including HB 546 and approach to public meetings, etc.	29	97%	2	100%	27	96%	1	0%
**	3.3 - Proprietary information/disclosures	1	3%	0	0%	1	4%	0	0%

* Topic

** Sub-theme

Table B-6
General: Public Health Concern and Contamination and Type of Submission
NMED Produced Water Public Engagement, Oct. 11, 2019 – March 3, 2020

Theme 1.3 - General, Health Concerns and Resource Contamination		Statement Tally							
		Total		Research		Regulation		Form Letter	
1.	Applicable, Appropriate, and Protective Standards and Regulations *	260/1278	20%	9/260	3%	251/260	97%	224/260	86%
**	2.1 - Water quality regulations including safe levels/standards	256	98%	8	89%	248	99%	224	100%
**	2.6 - Science gaps/research/risk assessment	1	0%	1	11%	0	0%	0	0%
**	3.1 - Reg development: including HB 546 and approach to public meetings, etc.	3	1%	0	0%	3	1%	0	0%
2.	Toxicity and Characterization with Respect to Exposure/Risk *	307/1278	24%	280/307	91%	27/307	9%	247/307	80%
**	2.4 - PW management - storage/transport/infrastructure/disposal	1	0%	1	0%	0	0%	0	0%
**	2.5 - Treatment technology	5	2%	5	2%	0	0%	0	0%
**	2.6 - Science gaps/research/risk assessment	21	7%	21	8%	0	0%	6	2%
**	2.7 -Water quality concerns - methods/chemicals/NORM/toxicity	277	90%	252	90%	25	93%	240	97%
**	3.6 - Financial assurance/environmental justice	3	1%	1	0%	2	7%	1	0%
3.	Proprietary Information/Disclosure/CBI/Research Integrity *	385/1278	30%	366/385	95%	19/385	5%	344/385	89%
**	2.4 - PW management - storage/transport/infrastructure/disposal	2	1%	1	0%	1	5%	0	0%
**	2.5 - Treatment technology	16	4%	12	3%	4	21%	0	0%
**	2.6 - Science gaps/research/risk assessment	351	91%	350	96%	1	5%	344	100%
**	2.7 -Water quality concerns - methods/chemicals/NORM/toxicity	8	2%	1	0%	7	37%	0	0%
**	3.1 - Reg development: including HB 546 and approach to public meetings, etc.	5	1%	1	0%	4	21%	0	0%
**	3.2 - Oil and gas production/fracking issues	3	1%	1	0%	2	11%	0	0%
4.	Limits of Treatment Technology and Associated Byproducts (Incl. Financial) *	33/1278	3%	29/33	88%	4/33	12%	1/33	3%
**	2.1 - Water quality regulations including safe levels/standards	1	3%	1	3%	0	0%	0	0%
**	2.6 - Science gaps/research/risk assessment	10	30%	8	28%	2	50%	1	100%
**	2.7 -Water quality concerns - methods/chemicals/NORM/toxicity	15	45%	15	52%	0	0%	0	0%
**	3.3 - Proprietary information/disclosures	1	3%	1	3%	0	0%	0	0%
**	3.4 - Compliance/enforcement, including spill response	1	3%	0	0%	1	25%	0	0%
**	3.5 - Byproducts/resource recovery	1	3%	1	3%	0	0%	0	0%
**	3.6 - Financial assurance/environmental justice	4	12%	3	10%	1	25%	0	0%

* Topic

** Sub-theme

Table B-6 (Continued)

Theme 1.3 - General, Health Concerns and Resource Contamination		Statement Tally							
		Total		Research		Regulation		Form Letter	
5.	Current/Projected PW Management Practices (Incl. Generation, C&E, and FA) *	267/1278	21%	128/267	48%	139/267	52%	229/267	86%
**	2.1 - Water quality regulations including safe levels/standards	1	0%	0	0%	1	1%	0	0%
**	2.5 - Treatment technology	1	0%	1	1%	0	0%	0	0%
**	2.6 - Science gaps/research/risk assessment	115	43%	115	90%	0	0%	114	50%
**	2.7 -Water quality concerns - methods/chemicals/NORM/toxicity	7	3%	1	1%	6	4%	1	0%
**	3.2 - Oil and gas production/fracking issues	15	6%	7	5%	8	6%	4	2%
**	3.3 - Proprietary information/disclosures	1	0%	0	0%	1	1%	0	0%
**	3.4 - Compliance/enforcement, including spill response	118	44%	1	1%	117	84%	111	48%
**	3.6 - Financial assurance/environmental justice	2	1%	0	0%	2	1%	0	0%
**	3.7 - Water rights/quantity	7	3%	3	2%	4	3%	2	1%
6.	Legacy Costs *	26/1278	2%	10/26	38%	16/26	62%	4/26	15%
**	2.5 - Treatment technology	1	4%	1	10%	0	0%	0	0%
**	2.6 - Science gaps/research/risk assessment	5	19%	5	50%	0	0%	0	0%
**	3.1 - Reg development: including HB 546 and approach to public meetings, etc.	4	15%	0	0%	4	25%	1	25%
**	3.2 - Oil and gas production/fracking issues	7	27%	3	30%	4	25%	1	25%
**	3.6 - Financial assurance/environmental justice	9	35%	1	10%	8	50%	2	50%

* Topic

** Sub-theme

Table B-7
General: Public Solicitations and Type of Submission
NMED Produced Water Public Engagement, Oct. 11, 2019 – March 3, 2020

Theme 1.4 - General, Solicitations		Statement Tally							
		Total		Research		Regulation		Form Letter	
1.	PW Management/Treatment *	8/19	42%	4/8	50%	4/8	50%	0/8	0%
**	2.4 - PW management - storage/transport/infrastructure/disposal	3	38%	1	25%	2	50%	0	0%
**	2.5 - Treatment technology	4	50%	3	75%	1	25%	0	0%
**	3.7 - Water rights/quantity	1	13%	0	0%	1	25%	0	0%
2.	Public Engagement and Regulation Development *	11/19	58%	1/11	9%	10/11	91%	0/11	0%
**	2.1 - Water quality regulations including safe levels/standards	1	9%	0	0%	1	10%	0	0%
**	2.6 - Science gaps/research/risk assessment	2	18%	0	0%	2	20%	0	0%
**	3.2 – Oil and gas production/fracking issues	1	9%	0	0%	1	10%	0	0%
**	3.6 – Financial assurance/environmental justice	7	64%	1	100%	6	60%	0	0%

* Topic

** Sub-theme

APPENDIX C: LIST OF STUDIES AND REPORTS

These studies, reports or documents were provided to the New Mexico Environment Department (NMED) by the public during implementation of the initial public engagement process (October 2019 – March 2020) either through reference or direct incorporation into the correspondence as an attachment or hyperlink. NMED has consolidated this reference list for completeness and to provide easy access for independent review and assessment. As these references pertain to independent, third-party studies or reports, they do not represent the official opinion or position of NMED. NMED and or the New Mexico Produced Water Research Consortium are reviewing these and other resources for relevance and information.

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