Via Email
Chair Christi Craddick, Commissioner Wayne Christian, Commissioner Jim Wright
Texas Railroad Commission
P.O Box 12967
Austin, Texas 78711

Re: Proposed Modifications to SWR 8 (16 TAC, Chapters 3& 4) relating to oil and gas waste.

Dear Commissioners,

On behalf of EPEC Energy, I would like to thank you for the opportunity to discuss and comment on the proposed changes to Statewide Rule 8 (16 TAC, Chapters 3 & 4) (SWR8). I would also like to thank you for your service to the State of Texas, for promoting US energy independence and defending the right of Texas to determine its own environmental policy despite the challenges from increasingly active Federal regulatory agencies. Updates and modernization of SWR8 are needed not only for the continuation of innovation within our industry but also to allow that innovation to increase protection for Texas' most valuable resources, its people, soil, water, and minerals.

Terminology
A wide range of terminology is used for disposal units within the industry. Some refer to reserve pits as "temporary pits", this term is misleading as the waste material that is disposed of in these pits is permanent, given that they are open air for a temporary amount of time does not convey their ultimate end use, which is for disposal. For the purposes of these comments, the following names will be used to describe the different waste management units:
*Pit***,** Reserve pits that are located on lease and dispose of waste including drilling mud and or cuttings permanently.
*Temporary pits***,** Pits that are constructed to be used in conjunction with drilling operations that temporarily stage drilling waste and that prior to closure remove all waste, including fluids, liquids, muds, and cuttings except de-minimis amounts of residual waste.
Disposal cells, Pits associated with commercial disposal and used for the permanent disposal of waste.

Reserve pits
There has been a diverse amount of commentary during this process on the topic of contamination, ranging from "all pits cause pollution" to "there has never once been a documented case of pollution" The truth is, as always, somewhere in the middle. There are ways to dispose of drilling waste that do not and will not cause pollution if managed correctly, however, not every operator is a waste management expert, and unforeseen circumstances do arise, as such there have been documented instances of pollution to surface water and groundwater contamination caused by drilling waste and or reserve pit mismanagement. The Railroad Commission maintains a database for violations as a result of inspections https://webapps2.rrc.state.tx.us/PDA/ice/pdaIceHome.xhtml some of these violations are issued for waste, pollution, and pits. The following numbers are taken from that database since 2015:

- **685** The number of documented cases of groundwater or surface water pollution.
- **3,142** The number of violations issued for the unpermitted use of a pit.
- **6,418** The number of violations issued for the improper closure of pits.
- **63,437** The number of violations issued for the unpermitted disposal of waste.

Beyond the instances in Texas, unlined reserve pits have a history of failure[1,2,3,11], according to one nationwide study on oil and gas waste there was a high percentage of substantial damage cases associated with reserve pits, these were fully documented and passing "test of proof"[2] the major issue found was

groundwater contamination from unlined produced water pits and reserve pits (pgs. 157,173, IV-29,45)[2]. The reason for the damage is a plume effect that occurs due to molecular diffusion, which is when a solute mass moves from regions with high concentrations toward regions with low concentrations[9]. This movement is impacted by both the gradient and porosity of the underlying soils. This means that waste in a pit with high concentrations of chlorides, hydrocarbons and metals will seek to stabilize by breaching the confinements of the pit both vertically (towards groundwater) and horizontally (towards surface water)[11].

Waste disposal broadly and oil and gas waste management specifically is not a new industry, and there are many professionals who have spent their life designing the safest ways to manage and dispose of waste, from civil engineers to environmental scientists. It is these professionals who should be consulted by the Commissioners and their staff to understand the risk-based standards and use their input to determine the scope of what should be implemented to best achieve the commission's stated goals for protecting groundwater and soils.

Costs

When looking at Texas from a national perspective it is the last state in the country to rely on reserve pits as the primary method for solids control and waste disposal. While other states employ pits in their operations they are used mostly for support, or for staging of recovered solids, however, they differ greatly in terms of types of waste and disposal methods. Most operators in other states (including ones that also operate in Texas) use a combination of modern methods for solids control, including closed-loop systems. There are massively inflated assumptions when looking at cost comparisons between pits and closed-loop, one of the reasons for the seeming disparity in cost for closed-loop is simply how those costs are accounted. Typically, the cost of waste is spread throughout the life of a well, with some of the cost being borne by construction then drilling and others that fall under completions or production, and the off-book liability associated with the Total Cost of Risk (TCOR) is almost never fully accounted for. A cost comparison study performed by Cimarex found that using a closed-loop system actually decreased the cost of waste management[10]. The main drivers for the reduction were as follows:

- Reduction of waste created (60-70% less waste).
- Construction costs associated with a typical 1-2 acre pit.
- Mud and water cost savings. and
- Decrease in low gravity solids leading to less tripping and lost circulation (more efficient drill).

Other ancillary cost savings that were not discussed in the report were the minimization of land/ surface damages paid, price premiums for responsibly sourced gas (RSG), and the cost of risk associated with potential future remediation. While rare, the cost of remediating a pit can range into the hundreds of thousands of dollars, typically due to the increase in contaminated subsoils and thereby the volume of waste now needed to be removed. The study found that using closed-loop solids control ultimately saved the company 24% in comparison to using a reserve pit, other studies have found cost savings of $11,000 and $12,700 per well respectively. Any increment cost increases would be negligible and represent a tiny fraction of the total cost of drilling, completing, and tying in a well. Cost increases (should there be any) would account for less than ~0.3% increase in the typical drilling AFE.

Industry Best Management Practices (and why they are important)

America is now the world's leading producer of oil and natural gas, the leading exporter of natural gas and LNG, and the fifth largest exporter of oil. This abundance in natural resources coupled with the ingenuity of American workers is incredibly important to the US and global economy, without it we would quickly become dependent on foreign supplies, a precarious place indeed. The Texas energy industry should be proud of what it has accomplished. We provide millions of people domestically and worldwide with energy security, lift many more out of poverty, and are directly correlated with the increase in global lifespans[12.] With this position of leadership also comes a great responsibility to ensure that we are producing oil and gas with the best worker and environmental safety standards in mind. Just as worker

safety in the industry has changed over the past 30 years so has environmental safety, the following examples of Best Management Practices (BMP) come directly from the industry itself and should be what Texas seeks to emulate.
From the Appalachian Recommended Practices Group.[13,14] General principles and BMPs:
- "Operators often choose to conduct their operations using standards that exceed regulatory requirements, recognizing that regulations and standards are not static but evolve and improve as new information and technologies become available.
-Operators seek to follow industry standards and practices in all aspects of oil and natural gas operations, these standards are based upon generally accepted scientific and engineering principles, as well as historical and local operating experience, and should be applied with consideration for site-specific conditions, consistent with an operators primary objective, which is to conduct its operations in a safe and environmentally sound and socially responsible manner.
-Operators strive to be ethical, open, and transparent about how they operate and the impacts of their activities.
-Maximize efforts to recycle/reuse water as reasonably practicable.
-Implement measures designed to reduce their operational footprint.
-Consider hydrogeology in selecting well pad sites.
-Conduct their operations in a manner that protects water by;
    - Conducting baseline sampling of surface water.
    - Conduct baseline groundwater sampling.
    - Use third parties and recognized sampling and analytical methods.
-Identify depths to usable groundwater.
-Consider the use of closed-loop drilling fluid management systems
-Follow the International Petroleum Environmental Conservation Association (IPIECA) environmental reporting standards.
-Report waste volumes, characteristics, and disposal methods guided by IPIECA standards."

The following BMPs arise from a joint task force collaboration between IPIECA and the International Association of Oil & Gas Producers (IOGP)[15]
- "No uncontrolled release of drilling waste to the environment
-Consider the use of closed-loop drilling fluids management systems to reduce the risk of.
    -Pit liner leakage, surface spills, waste volume, and pad size.
-Injection of fluids and cuttings into a dedicated disposal well where feasible.
-Appropriate disposal at licensed treatment facilities".[16]

These BMPs originate from the Intermountain Oil and Gas BMP Project:
- "Avoid the discharge of oil-based drilling mud into reserve pits and handle such occurrences appropriately
The operator will exercise extreme caution to avoid discharging oil-based drilling mud into the reserve pit. Should an event occur where it is necessary the operator should initiate the following:
    -Secure the pit to prevent birds and other wildlife from getting into the oil-contaminated cuttings, fluids, and mud, and
    -Submit a plan describing how the pit will be managed".[17]

Protection of regulatory primacy
One of the most important and pivotal amendments to US law was authored by Texas Senator Lloyd Bentsen and adopted in 1980.[4] Known as the Bentsen Bevill amendments, it was and is one of the most important chapters in the story that became the US energy revolution, as it stated that oil and gas waste was exempt from the federal program created to manage hazardous waste (RCRA subtitle C)[4] and gave authority to the states to develop regulations that fit their unique needs. However, this exemption is not permanent. At the conclusion of an 8-year study on E&P waste the EPA stated it would implement a

three-pronged strategy to address the ongoing issues posed by the waste stream[5], this approach would (1) lean on the Clean Water Act (CWA), (2) work with states to encourage changes in their regulations and (3) work with Congress to develop additional authority. The report went on to reiterate the EPA's authority to promulgate new criteria, if warranted, under Subtitles C and D, or to use the Clean Water Act or the Safe Drinking Water Act to create new standards. At the conclusion of the report Congress, in Section 2002(b), burdened the EPA with the task of reviewing and, where necessary, revising the exemption no less than every three years[6]. This Congressional mandate places oil and gas waste at unique risk to federal intervention since, unlike the Clean Air Act, it would answer the major questions doctrine.

What the RCRA Exemption prescribes

When adopting the RCRA exemption, Congress gave two prescriptive requirements that they envisioned would serve as a baseline for the development of regulatory programs. Condensed, they said to identify and record the location of waste disposal and sample the waste prior to closure. They envisioned both the results and locations to be available in some sort of public database.

"It is the sense of the Congress that such State or Federal programs should include, for waste disposal sites which are to be closed, provisions of at least the following:"

"(i) The identification through surveying, platting, or other measures, together with recordation of such information on the public record, so as to assure that the location where such wastes are disposed of can be located in the future; however that no such surveying, platting, or other measure identifying the location of a disposal site for drilling fluids and associated waste shall be required if the distance from the disposal site to the surveyed or platted location to the associated well is entirely less than two hundred lineal feet; and"

"(ii) A chemical and physical analysis of a produced water and a composition of a drilling fluid suspected to contain a hazardous material, with such information to be acquired prior to closure and to be placed on the public record."[4]

Instances where primacy has been revoked

The danger of Federal intervention in oil and gas waste, both nationally and state specific, is not without merit or precedent. The Bentsen amendment wasn't alone in excluding waste from regulation under RCRA, it is known as the Bentsen – Bevill amendment because another Senator, Thomas Bevill of West Virginia, sponsored an exemption for coal waste which was adopted simultaneously[4]. These two waste streams shared an analogous and RCRA-exempt regulatory status in the US for nearly 35 years. However, in 2012 several environmental groups sued the EPA over the coal industries RCRA exemption and the failure of the EPA to review the exemption in the preceding 3 years[7]. This suit was settled in favor of the plaintiffs and as a result, the RCRA exemption for coal waste was essentially eliminated in 2015 with the promulgation of national rules under Subtitle D[8].

The other major episode involving the primacy of regulatory authority was concerning E&P waste: For nearly 40 years the Utah Division of Oil, Gas, and Mining provided regulatory oversight of oil and gas wastes throughout the state. These wastes were formerly excluded from the Utah Solid and Hazardous Waste Act, which is administered by the Utah Department of Environmental Quality. However, changes were made to the Solid and Hazardous Waste Act in response to a U.S. EPA intervention.

EPA activity: In 2018 the EPA conducted a review of E&P waste in Utah under RCRA. This overlapped with a separate study that was being undertaken by the EPA in response to ozone and air violations that had occurred in the Uintah Basin. Part of their findings were that drilling waste in the area was contributing to elevated ozone levels in the basin. As a result of this and the lack of definitions within the Utah solid waste act, the EPA mandated changes.

*EPA action***:** Following the review, EPA sent a letter directing Utah to move oversight of solid E&P waste to the DEQ or the EPA would take direct control of the regulation of E&P waste within the state.

*Result***:** Utah complied with the EPA enforcement. Oil, Gas, and Mining retained the oversight of UIC and produced water management (including evaporation and recycling ponds) and all other solid wastes

including drilling muds and cuttings now fall under the oversight of the DEQ. All landfarming activity is now banned and the DEQ will require all commercial E&P waste facilities to apply for a landfill permit.[18] The main theme of these two actions by the federal government was simply inaction on the part of the regulatory authority, widespread inaction in the case of coal and specific inaction on the part of Utah.

This is a once-in-a-generation opportunity to defend the state and bolster Texas's primacy over rulemaking. It will also allow us to implement industry-led best management practices that will again prove Texas is the leader in all things energy.

Recommended Changes
Please consider changes to the following

Division 2

- Oil and Gas Wastes (65)(B) pg.15 *includes salt water, brine, sludge, drilling mud, and other liquid, semiliquid, or solid waste material,…* Please add "Cuttings" to the list of oil and gas wastes
- Recycle (76) pg16. *To process and/or use or re-use oil and gas wastes as a product for which there is a legitimate commercial use. This term also includes the actual use or re-use of oil and gas wastes. For the purpose of this chapter, the term "recycle" does not include injection pursuant to a permit issued under §3.46 of this title*. Please add language from Natural Resources Code Sec.123.001(4) " means a manufacturing, mechanical, thermal, or chemical process other than sizing, shaping, diluting or sorting."
- Exceptions. §4.109. Please Add new (f) If applicant is the operator and owner of real property of an undivided interest, they may apply for exclusions from 4.114 provided the following: The results of sampling in accordance with the table, and a legal description of the surveyed location of the pit used for disposal be filed with the county clerk in the county where the disposal occurs.

Division 3

- §4.111 (c)(10) *immediately after landfarming the waste, the waste-soil mixture has a total petroleum hydrocarbon content of one percent or less by weight.* Please Add When sampled using EPA SW-846 418.1 or equivalent.
- §4.111(e) *Completion/workover pit wastes. A person may, without a permit, dispose of in an authorized pit specified in §4.113 of this title the following materials: solids from spent completion fluids, workover fluids, drilling fluid, silt, debris, ~~water~~, brine, paraffin, and the materials cleaned out of the well bore of a well being completed, worked over, or plugged, and reservoir fluids removed during wellbore cleanup. The disposal is authorized provided:*
  (1) the wastes are disposed of at the same well site where they were generated;
  (2) the wastes have been dewatered;
  (3) ~~the burial complies with the closure requirements for authorized pits in §4.114(e) of this title~~; and Please consider striking water as an allowed waste to

disposed as it conflicts with (2) that the waste should be dewatered. Please consider striking (3) and replacing with a closure requirement consistent with §4.114 (f)(3)(D).

- §4.114 (a)(5) *The operator of an authorized pit shall register the pit with the Commission once the Director has established a registration system for authorized pits.* Please add a timeline for when such a registration system must be created by. Example "that shall be created no later than 180 days after the effective date".
- §4.112 (g)(2) The operator shall stabilize or solidify the remaining authorized pit contents to a physical state sufficient to support the final cover of the authorized pit. The operator shall not mix the remaining pit contents with soil or other material at a mixing ratio of greater than 3:1, soil or other material to remaining pit contents. The resulting waste mixture must pass the paint filter liquids test (EPA SW-846, Method 9095). Please retain this rule, it has been common practice in Wyoming for 20 plus years and can be accomplished without damaging the integrity of the liner floor. WOGCC Ch.4 Environmental Rules sec.1 https://rules.wyo.gov/Search.aspx
- §4.114 (f)(3)(C)(ii)-(iii) ~~*(i) The operator may then conduct additional sampling and analysis to document the magnitude and extent of the release.*~~

  ~~*(ii) The operator shall excavate additional soil in 1-foot increments from the pit floor and sidewalls if the results of the native soil sampling and analysis indicate that the limits in the Figure in this subsection are exceeded*~~. 21 (~~*iii) All excavated soil must be disposed at a facility permitted for disposal by the Commission.*~~ Please strike sections ii and iii as any waste that will be placed in the pit will be temporary. The only time extra material should be removed is if the baseline sampled prior to use is exceeded.
- §4.114 (g)(3)(C) please add the following "*(iv)If the concentration of the constituents exceeds the limits in the Figure in this subsection or the concentrations determined from background sampling and analysis, the operator shall notify the District Director within 24 hours of discovery of the concentration.*

  (v) The operator may then conduct additional sampling and analysis to document the magnitude and extent of the release.

  (vi) The operator shall excavate additional soil in 1-foot increments from the pit floor and sidewalls if the results of the native soil sampling and analysis indicate that the limits in the Figure in this subsection are exceeded.

  (vii) All excavated soil must be disposed at a facility permitted for disposal by the Commission.

  (viii) The operator may seek additional direction from the District Director on a case-by-case basis. If background concentrations are exceeded prior to waste being added, an operator should not compound the problem by adding more waste. Constituent limits in the underlying soil won't be diluted by the new waste, it will only serve to concentrate salts and metals. Furthermore, the use of term background here is misleading. Background is meant to convey something that is naturally occurring; however, this is written to endorse a prior release. It would incentivize pollution by allowing for additional waste to be added to already compromised areas under the guise of background. A background

reference area should have the same physical, chemical, geological, and biological characteristics as the site being investigated, but has not been affected by activities on the site. The ideal background reference area would have the same distribution of concentrations of the chemicals of concern as those which would be expected on the site if the site had never been impacted. Background refers to constituents or locations that are not influenced by the releases from a site, and is usually described as naturally occurring or anthropogenic (US EPA, 1989; US EPA 1995a): https://semspub.epa.gov/work/HQ/100001657.pdf

- §4.114 (g)(6) *Treated waste material that meets the constituent limits in the Figure in this subsection based on the distance from the bottom of the pit to the* ~~*shallowest groundwater*~~ *may be buried in the pit. Liners in the pit may be removed from the pit or disposed of in the pit upon closure*. Please replace the word groundwater with "subsurface water" in order to remain consistent with §4.114 (c)(3)
- §4.114(h)(3)(B) *the authorized pit has a liner and an active life of less than one year*. Please add the word "natural" before liner. The only other place where the new definition "active life" is used in this proposed rule is in §4.114 (c)(6)(D)(i) please update 4.114(h)(3)(B) for consistency of use.

Division 11

- Figure: 16 TAC §4.111(a), Figure: 16 TAC §4.114(f), Figure: 16 TAC §4.114(g), Please retain all of these figures within the standards. When operational benchmarks such as these are placed into guidance it hampers operational certainty and allows for non-transparent arbitrary rulemaking. These figures are the backbone of a permit by rule structure, should someone want to dispose of waste outside of these parameters a solution exists through the minor permit process that is well established.

Note: I attended the Oct 27th virtual meeting and registered to speak, but was unable to do so as there were technical difficulties, thank you for accepting these written comments.

[1] Ramirez, Pedro, Jr., Reserve pit management: Risks to migratory birds, September 2009 https://www.researchgate.net/profile/Pedro-Ramirez-14/publication/280946626_Reserve_Pit_Management_Risks_to_Migratory_Birds/links/55ce0a9b08ae502646a70adc/Reserve-Pit-Management-Risks-to-Migratory-Birds.pdf

[2] Report to Congress, Volume 1 of 3, oil and gas, management of waste from E&P, December 1987 https://archive.epa.gov/epawaste/nonhaz/industrial/special/web/pdf/530sw88003a.pdf

[3] Polluting water well and pit, Madeline Dillner, March 2022 https://storymaps.arcgis.com/stories/a75c5b80fafe4fd2aaabfce52fd180e0

[4] Solid Waste Disposal Act Amendments of 1980 (P.L. 96-482) §3001(b)(2) https://www.govinfo.gov/content/pkg/STATUTE-94/pdf/STATUTE-94-Pg2334.pdf

[5] EPA 53 FR 25447, "Management of waste from exploration development and production of crude oil natural gas and geothermal energy" https://archive.epa.gov/epawaste/nonhaz/industrial/special/web/txt/ogreg88.txt

[6] EPA March 29, 2023 Management of oil and gas wastes – 2019 review https://www.epa.gov/hw/management-oil-and-gas-exploration-and-production-waste

[7] Environmental Integrity Project et al v. Lisa P. Jackson, Administrator US EPA, 2012 https://www.law360.com/cases/4f831e12e7d4b82432000001/articles

[8] Appalachian Voices, et al., v. Gina McCarthy, Administrator US EPA, Case Nos. 12-0585(RBW) & 12-0629(RBW) https://ecf.dcd.uscourts.gov/cgi-bin/show_public_doc?2012cv0523-40

[9] Charles R. Fitts, in Groundwater Science (Third Edition), 2024
https://www.sciencedirect.com/topics/earth-and-planetary-sciences/landfill-liner
[10] Rogers, Smith, Fout, and Marchbanks, closed-loop drilling: a viable alternative to reserve waste pits, December, 2006
https://worldoil.com/magazine/2006/december-2006/features/closed-loop-drilling-system-a-viable-alternative-to-reserve-waste-pits
[11] Bonetti P, Leuz C, Michelon G. Large-sample evidence on the impact of unconventional oil and gas development on surface waters. Science. 2021 Aug 20;373(6557):896-902. doi: 10.1126/science.aaz2185. PMID: 34413233.
https://pubmed.ncbi.nlm.nih.gov/34413233/
[12] International Energy Agency, August 2023
https://www.iea.org/areas-of-work/energy-security
[13] Paula Dittrick, Appalachian basin producers recommend shale operating standards, May 2012 Oil& Gas Journal
https://www.ogj.com/general-interest/hse/article/17275013/appalachian-basin-producers-recommend-shale-operating-standards
[14] Appalachian Shale Recommended Practices Group, Recommended Standards and Practices, April 2012
https://www.ourenergypolicy.org/resources/appalachian-shale-recommended-practices-group-recommended-standards-and-practices/
[15] International Association of Oil & Gas Producers, Ipieca
https://www.iogp.org/ https://www.ipieca.org/
[16] Ipieca, IOGP, Environmental management in the upstream oil and gas industry, August 2020
https://www.ipieca.org/resources/environmental-management-in-the-upstream-oil-and-gas-industry
[17] Intermountain oil and gas bmp project bmp id 2971, pg.A-3
https://www.oilandgasbmps.org/viewpub.php?id=191
[18] Utah Department of Environmental Quality, Waste Management & Radiation Control, solid waste October 2023
https://deq.utah.gov/waste-management-and-radiation-control/e-and-p-waste-management

Sincerely,

Luke Bross, President
EPEC
luke@epecenergy.com
4209 McKinney Ave.,
Dallas, Tx 75205