



July 15, 2022

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Attn: DEP Docket Number: 03-22-03  
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**Re: Underground Storage Caverns, Proposed New Rules: N.J.A.C. 7:1F. DEP Docket Number: 03-22-03; Proposal Number: PRN 2022-060.**

Dear Ms. Abatemarco,

Delaware Riverkeeper Network (DRN) appreciates the opportunity to submit the below comments to the New Jersey Department of Environmental Protection (DEP) regarding its proposed rulemaking concerning the storage of any natural or artificial gas, or any petroleum product or derivative of any petroleum product, in underground storage caverns ("the Rule").

DRN attended the Stakeholder Meeting that DEP held in July 2019. An impressive number of gas and oil industry representatives attended the meeting, demonstrating an interest in the use of underground cavern storage of petroleum products. This is evidence that there may be investments made by business interests in underground storage caverns in New Jersey, attracted by the state's permitting of these facilities. Statements made by stakeholders at the DEP meeting also showed that there is interest in continuing the use of, and possible expansion or change of use of, existing caverns. DRN submitted written comment to DEP on October 24, 2020. A copy of our 2020 comment is attached to this submission.

DRN is aware that N.J.S.A. 58:10-35.1. through 35.4 ("the Act") was enacted in 1951 and that no regulations have been created despite the allowance of underground storage caverns for petroleum products in two locations. This makes the proposed rulemaking long overdue. Existing caverns in use are located at the Bayway Refinery in Linden, Union County, 5 holding butane and propane, and one at the former DuPont Repauno Works that stored anhydrous ammonia, now Gibbstown Logistics Center in Gibbstown, Gloucester County, currently holding butane. The need

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for New Jersey to enact government regulations to protect the environment, community assets, and public health and safety is clear.

The storage of natural or artificial gas, or any petroleum product or derivative of any petroleum product, which is the subject of the proposed rule, carries grave risks that cannot be mitigated. As stated in DRN's October 24, 2020 comment to DEP, these substances are hazardous substances that, under existing regulations and laws, cannot be released to the environment because of their toxicity, volatility, flammability, and other properties. The caverns will be within the same underground environment as groundwater and aquifers that supply drinking water. Additionally, groundwater can express to surface water, and if contaminated can adversely impact water supplies from surface water sources and the water quality of our streams, lakes, and rivers. The release of these substances to the air contributes hazardous pollution and threatens public health, especially for communities that are already disproportionately enduring the brunt of air and water pollution, imposing additional environmental injustice.

These materials are highly flammable and can cause explosion or fire. They can leak from a cavern, with dangerous consequences; "LPG may leak as a gas or a liquid. If the liquid leaks it will quickly evaporate and form a relatively large cloud of gas which will drop to the ground, as it is heavier than air. LPG vapours can run for long distances along the ground and can collect in drains or basements. When the gas meets a source of ignition it can burn or explode. Cylinders can explode if involved in a fire. LPG can cause cold burns to the skin and it can act as an asphyxiant at high concentrations."<sup>1</sup> According to the proposed rule, many are "extremely toxic". (page 65).

These caverns require venting and/or flaring, which release hazardous air pollution. For instance, the air permit for Delaware River Partners' Gibbstown Logistic Center includes the butane underground storage cavern. The permit covers surface activities as well as the cavern and includes emissions from butane and propane. Continuous emissions of pollutants include methane, volatile organic compounds (VOC), Nitrogen Oxide, Carbon Monoxide, Carbon Dioxide, Total Suspended Particulate Matter, Particulate Matter 2.5, Particulate Matter 10, and Sulphur Dioxide.<sup>2</sup> Flares are used to burn vented gas; these emit carbon pollution and additional toxic co-pollutants. Because of the ill-defined mixture of components of "LPG" in the Rule, toxic and extremely toxic substances can be emitted, depending on what is actually in the mix.

Other pollutants from the substances covered by the proposed rule can include radon and sulfur dioxide. The [U.S. Environmental Protection Agency](https://www.epa.gov/radon) (EPA) has identified radon as the second leading cause of lung cancer in the United States. These pollutants will be in the air breathed by the people who live, work, travel through, go to school and/or day care, and recreate in the region around the caverns. The emissions will contribute NOx and VOC to the regional airsheds where the current caverns are located in Union County and Gloucester County, both nonattainment areas for ozone, potentially worsening smog conditions and the associated human health harms.

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<sup>1</sup> [https://www.hsa.ie/eng/topics/liquid\\_petroleum\\_gas\\_lpg/](https://www.hsa.ie/eng/topics/liquid_petroleum_gas_lpg/)

<sup>2</sup> NJDEP Air Pollution Control, Preconstruction Permit and Certificate to Operate, Revision. Permit Activity Number: PCP190002 Program Interest No: 56309. 9.14.2020.

Additionally, the greenhouse emissions will impact climate through carbon and methane emissions to the atmosphere. This issue is discussed further in this Comment.

The narrow approach to what is covered by the proposed regulations ignores serious environmental impacts by limiting the assessment of cavern impacts to the cavern and its immediate appurtenant above ground equipment. The Act that governs these rules - N.J.S.A. 58:10-35.3 - requires DEP to consider a cavern's impact on water quality and quantity, as well as impacts to public health, safety and welfare but these narrow regulations cannot accomplish this. This increases the dangers and the adverse impacts for surrounding communities and the region impacted by the cavern systems and their infrastructure. The related infrastructure includes infrastructure required to operate and use the caverns. This includes transportation by trucks, rail and/or barge and marine vessels, of the petroleum cargo to and from the cavern, the construction and use of pipelines, the transloading and transfer operations associated with cavern operations, and other needed infrastructure. Caverns are not islands and their presence brings impacts that would not occur otherwise. They exist to store products that are moved to and from markets and they require extensive infrastructure to make that happen. In terms of pollution pathways resulting from cavern use, emissions occur at every stage of transport, transloading and transferring as do leaks, accidents, and the opportunity for terroristic incidents.

New Jersey is the most densely populated state in the nation; has the highest number of superfund sites in the nation; has a legacy of environmental contamination of land, water, air and ecosystems that poses the risk of the spread of contamination if these areas are disturbed. New Jersey also has many overburdened communities in harm's way, discussed further below. Finally, we have an urgent need to reduce fossil fuel infrastructure and greenhouse gas (GHG) emissions in order to our state's part in tackling climate change.

The dangers posed to communities in the region where these underground storage caverns are located are enormous. As stated in DRN's 2020 written comment to DEP, when released to the air some of the substances proposed to be allowed can form gaseous clouds that, once ignited, can interact with obstacles such as trees and other vegetation, walls, tunnels, buildings and embankments to create turbulent conditions that can lead to detonations<sup>3</sup> that can be deadly to humans and highly destructive to building materials including metals and reinforced concrete. Releases from underground storage caverns have caused disastrous fires and explosions, including a butane leak across the river in Marcus Hook, Pennsylvania, and in Texas as detailed in DRN's 2020 comment. In the Brenham Texas incident, a storage cavern holding a mixture of gasses defined as LPG was overfilled<sup>4</sup>, causing death and \$9 million in damages. Equipment failure and human error led to the release, which caused a catastrophic unconfined vapor cloud explosion (UVCE).<sup>5</sup>

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<sup>3</sup> E.S. Oran, et al, "Mechanisms and occurrence of detonations in vapor cloud explosions", Progress in Energy and Combustion Science, 77 (2020) 100804

<https://www.sciencedirect.com/science/article/pii/S0360128519300243>

<sup>4</sup> <https://www.ogj.com/home/article/17219751/overfilling-of-cavern-blamed-for-lpg-blasts>

<sup>5</sup> [https://www.aria.developpement-durable.gouv.fr/accident/5244\\_en/?lang=en](https://www.aria.developpement-durable.gouv.fr/accident/5244_en/?lang=en)

There are an estimated 70 mined hard rock caverns in the United States.<sup>6</sup> These rely on the pressure exerted by groundwater and the overhead geologic formation to keep the pressure sufficient to prevent leakage through the unlined walls of the cavern, as discussed in this proposed rulemaking. However, leaks can and do occur. Outlined in a scientific review of risks assessed for various means of underground gas and oil storage, the causes of leaks include failures of the cap rock, cracks, faults or fissures in the sides r bottom of the cavern, and equipment failure such as valves, vents, emergency shut-offs, and seal-bypass mechanisms.<sup>7</sup> The fact is leaks and resulting effects, ranging from less severe to disastrous, will impact communities and the environment where these caverns are located.

The Rule makes some attempt to address the most hazardous of substances that will be allowed to be stored in the caverns. Stated in the proposed rule, “An owner or operator that stores an extraordinarily hazardous substance, as defined in the TCPA Program rules would also be required to perform a risk assessment pursuant to N.J.A.C. 7:31-4.2. A risk assessment quantifies the likelihood of a release and its consequences for the purpose of risk reduction.” (Page 23) The specific items that must be evaluated are described. The concluding sentence states, “If the release likelihood is greater or equal to 10 to the power of 6 per year, the owner and operator must perform an evaluation of risk reduction measures that would reduce the likelihood or consequence of a release.” (Page 23-24) There are two problems with this approach. First, the risk-based assessment implicitly accepts that adverse impacts will occur and judges the acceptable amount, which has a built-in bias that disproportionately harms overburdened communities unless existing conditions are factored in. Secondly, to provide the needed protection for the environment and communities, the goal must be prevent and avoid harms, not only mitigate the damage they are expected to inflict.

As stated in our October 24, 2020 comment to DEP, DRN strongly supports DEP’s proposed prohibition of the storage of liquefied natural gas (LNG) in underground caverns. We agree that this “extraordinarily hazardous substance”, as defined under the Toxic Catastrophe Prevention Act (TCPA) program rule, would not be approved under the TCPA regulations (NJAC 7:31). We agree with the findings presented by the New Jersey Geological and Water Survey that there is a “lack of safe and feasible underground storage method” for LNG”. Based on the evidence presented in the rule, the risk of catastrophe is too great to allow the underground storage, under any circumstances, of LNG.

DRN has concluded that the risks are too great for New Jersey to allow the storage of any and all petroleum gasses, liquids, products and/or derivatives - the applicable substances addressed by the proposed rulemaking - in underground caverns. DRN recommends that the rulemaking should prohibit underground cavern storage of all of these materials, in addition to the prohibition of LNG.

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<sup>6</sup> [https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwi-5I\\_9vez4AhVtk4kEHZ11AEwQFnoECBcQAQ&url=https%3A%2F%2Fwww.raschultzunr.net%2Fwp-content%2Fuploads%2F2017%2F07%2FEvans-Schultz\\_ARMA\\_265-1.pdf&usq=AOvVaw1Z5sTQlrdsXjlyxtpQLpjR](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwi-5I_9vez4AhVtk4kEHZ11AEwQFnoECBcQAQ&url=https%3A%2F%2Fwww.raschultzunr.net%2Fwp-content%2Fuploads%2F2017%2F07%2FEvans-Schultz_ARMA_265-1.pdf&usq=AOvVaw1Z5sTQlrdsXjlyxtpQLpjR)

<sup>7</sup> *Id.*

## **Proposed Rulemaking General Concerns**

### **Falls far short of required consideration of climate change impacts**

Climate change impacts are not given the consideration they require according to state laws, the Governor's Executive Orders and government policies. This is a grave error that will undermine efforts to reduce greenhouse gas (GHG) emissions. Scientists agree and Governor Murphy and DEP acknowledge that we must drastically reduce GHG emissions to avert the worst aspects of the increasingly devastating climate change impacts. The Rule cites Governor Murphy's Executive Order 100 (EO100)<sup>8</sup> as fundamental to the climate impact analysis that would be required for new applications.

In the section of the rule entitled Assessments of Environmental, Health, and Climate Change Impacts (N.J.A.C. 7:1F-2.4), it is stated, "The Department is proposing to include, in the list of applicable State requirements, the regulations and guidance being developed pursuant to New Jersey's Executive Order No. 100 (2020), which directs the Department to take regulatory reform actions to reduce emissions and adapt to climate change." (Page 25) There are two fatal flaws in the Rule regarding climate change: the failure to require resiliency measures to adapt to and protect from climate change impacts and the failure to require reduction of GHG emissions.

### **Resiliency**

The Rule states that EO100 requires DEP to "...integrate climate change considerations, such as sea level rise, into its regulatory and permitting programs". (Page 28) Also cited is DEP's Administrative Order #2020-01 (AO2020-01) that requires the agency to designate rules and regulatory actions that will incorporate climate change considerations and identify areas where DEP can contribute to "sustainable and resilient development".<sup>9</sup>

The Rule states that DEP has appropriately determined that this Rule is required to address climate impacts. The Rule states, "...the proposed climate change impact assessment for an underground storage cavern system would be the mechanism for owners and operators to evaluate and plan for climate change resiliency." (Page 28)

The Rule further states, "The Department is also proposing to require a climate change impact assessment to be included with a permit application for the proposed new facility, or for permit renewals submitted pursuant to proposed N.J.A.C. 7:1F-4." (Page 28)

The Rule continues to lay out the need to increase resiliency of communities and infrastructure to adapt to chronic flooding, severe storm events, and sea level rise, among other worsening climate impacts in New Jersey, based on EO100. The Rule refers a permit applicant to DEP's Climate Change website at <https://www.nj.gov/dep/climatechange>. "The website currently hosts substantial information on climate data, mitigations, and resiliency efforts that an owner and operator may refer to, such as the "2020 New Jersey Scientific Report on Climate Change" (see <https://nj.gov/dep/climatechange/docs/nj-scientific-report-2020.pdf>) all of which contain scientific

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<sup>8</sup> <https://nj.gov/infobank/eo/056murphy/pdf/EO-100.pdf>

<sup>9</sup> <https://www.nj.gov/dep/njpac/docs/dep-ao-2020-01.pdf>

information regarding climate change and data to assess how the facility might be affected by climate threats.” (Page 28) Included is a requirement to inform if a cavern system is in a flood hazard area and if not, how far the nearest is and fully assess potential impacts of flooding due to storms and sea level rise over time. (Page 29)

Remarkably, despite these provisions, DEP does not REQUIRE the incorporation of any resiliency measures. The information that must be provided is simply information to be filed away; it has NO EFFECT on the permit conditions for a cavern system. The Rule states, “It is important to note the provisions proposed at N.J.A.C. 7:1F-2.4(f), do not require an owner and operator to implement any measures described in the assessment. However, the Department believes the assessment process itself to be a valuable long-range awareness and planning tool that can be referenced to make resiliency improvements over time, as needed.” (Page 29)

There is no explanation as to why the Rule does an about-face on resiliency, particularly because the Rule recognizes the requirement to address it. This is an inexplicable fatal flaw in the Rule.

### Greenhouse Gas Emissions

The need to address GHG emissions reduction is not a stated requirement in the Rule’s Climate Change Impact Assessment despite the Rule’s recognition of EO100’s charge to DEP to reduce GHG emissions and AO2020-01’s requirement to reduce carbon dioxide and “short-lived” GHG emissions in regulatory actions. Furthermore, there is no explanation as why the Rule does not include a recognition of Governor Murphy’s Executive Order No. 274 (EO274), which requires all state agencies to reduce GHG 50% by 2030 on an “economy-wide basis”.

EO100 recognizes the need to reduce GHG emissions:

“WHEREAS, the State’s ability to reduce the severity of adverse climate change impacts will depend on the collective effort and commitment of our political and community leaders, businesses, industries, and government entities to undertake considerable efforts to reduce greenhouse gas emissions on an economy-wide basis; and

WHEREAS, traditional methods of energy production that rely on the burning of fossil fuels release harmful emissions of greenhouse gases, which in turn contribute to global climate change; and

WHEREAS, the only method to begin mitigation of these effects is through steep and immediate reductions in greenhouse gas emissions; and

WHEREAS, in the absence of action at the federal level, states must take the lead in reducing greenhouse gas emissions to avoid the most catastrophic impacts of climate change; and

WHEREAS, it is the policy of this State that, as a key part of its efforts to curtail the serious impacts of global climate change caused by greenhouse gas emissions, New Jersey must pursue a just and smooth transition away from its reliance on fossil fuels as a primary

energy source and build a stronger and fairer economy that relies primarily upon clean and renewable energy sources; and

WHEREAS, on July 6, 2007, the State enacted the Global Warming Response Act, N.J.S.A. 26:2C-37, (“GWRA”) which calls for the reduction in greenhouse gas emissions to 1990 levels by 2020 with further reductions to 80% below 2006 levels by 2050; and

WHEREAS, climate pollutants include not only greenhouse gases such as carbon dioxide, methane, hydrofluorocarbons, and perfluorocarbons, but also black carbon and other pollutants determined by DEP to be significant contributors to the problem of global warming; and...

WHEREAS, in accordance with the GWRA, N.J.S.A. 26:2C-41, DEP will deliver, by June 30, 2020, a GWRA report that will: (1) identify all significant sources of Statewide greenhouse gas emissions, including short-lived climate pollutants; (2) monitor progress toward the 2020 limit, the 2050 limit and any interim limits; and (3) inform further actions the State must take to reduce greenhouse gas emissions, including short-lived climate pollutants such as black carbon; and...”<sup>10</sup>

EO274 requires decisive and immediate action to reduce GHG emissions by a “whole-state approach” by 2030:

“WHEREAS, emissions reductions in the next decade are critical to reducing the severity of adverse impacts of climate change; and

WHEREAS, it is vital that, here in New Jersey, we take decisive action in the immediate term to ensure that we remain on track to meet our longer-term emissions reduction goals and protect our people, economy, and environment from the worsening impacts of climate change; and

WHEREAS, effective action to achieve the necessary emissions reductions requires a coordinated whole-state approach that addresses all sectors of the economy, including transportation, electric generation, and residential and commercial building energy use, in an integrated manner; and

WHEREAS a concrete, near-term target for greenhouse gas emissions reductions will help focus our efforts and ensure that we take the critical actions that are needed today;

NOW, THEREFORE, I, PHILIP D. MURPHY, Governor of the State of New Jersey, by virtue of the authority vested in me by the Constitution and by the Statutes of this State, do hereby ORDER and DIRECT:

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<sup>10</sup> NJ Executive Order No. 100 available at <https://nj.gov/infobank/eo/056murphy/pdf/EO-100.pdf>. Page 3.

1. It is the policy of the State to reduce greenhouse gas emissions to 50 percent below 2006 levels by the year 2030.”<sup>11</sup>

It is unacceptable for the Rule to cherry pick EO100 without reference or reliance on EO274, of equal importance in terms of executive influence regarding DEP policy and regulatory actions. This is especially important because EO274 (November 10, 2021) followed EO100 (January 2020) so was not mentioned in EO100 as previous Orders were (EO 7, 8, 89 and 92). The reasons for the need to reduce GHG emission is thoroughly laid out in both Executive Orders and in DEP’s AO2020-01.

DRN points out that scientists agree that urgent action is needed by the whole of government if New Jersey is going to do its part to effectively reduce GHGs in the immediate time frame (50% reduction by 2030). The most recent UN Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report<sup>12</sup> warns that changes in climate at 1.1 degree C have devastating impacts on the world. This level of warming is lower than and it is occurring sooner than was expected when global agreements were set to keep warming below 1.5 degrees C. The report says that every increment of global temperature rise means more loss, more damage.

To avert or reduce the most devastating climate impacts, particularly for the most vulnerable communities in harm’s way, scientists agree, and Governor Murphy has declared, that GHG emissions must be reduced at least by 50% by 2030. This is an ambitious goal but one that is absolutely necessary and also reachable if we start now to curtail current and stop new GHG emissions. Building caverns to hold petroleum gasses and their derivatives moves the state in the opposite direction, working at cross-purposes with these established goals enshrined in New Jersey law, executive orders, DEP administrative orders, and stated policies. It also puts New Jersey on the wrong side of the GHG equation – New Jersey will be adding GHG emissions if caverns are used to store the petroleum products covered by the Rule, feeding the climate crisis.

#### Environmental Justice Considerations are not included in the Rule

An unforgivably glaring oversight in the Rule is the lack of consideration of how these cavern systems will impact environmental justice communities.

The Rule states it will require an applicant to perform an Environmental and Health Impact Statement (EHIS), which will provide information on the possible impacts of the cavern and any release of cavern contents. An EHIS is a step forward in doing a more comprehensive review of a project. The Rule states, “The final component of the EHIS is an assessment of health impacts posed from a release of the regulated substance from a proposed cavern system. Health risk assessment methodology is utilized to evaluate the potential impacts, with descriptions of the

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<sup>11</sup> NJ Executive Order No. 274 available at:

[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEWjb\\_levw\\_L4Ah\\_XFkIkEHc6CAWoQFnoECAUQAQ&url=https%3A%2F%2Fnj.gov%2Finfobank%2F056murphy%2Fpdf%2FEO-274.pdf&usq=AOvVaw2VGCU8uSZbxAYHC\\_B6cCe0](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEWjb_levw_L4Ah_XFkIkEHc6CAWoQFnoECAUQAQ&url=https%3A%2F%2Fnj.gov%2Finfobank%2F056murphy%2Fpdf%2FEO-274.pdf&usq=AOvVaw2VGCU8uSZbxAYHC_B6cCe0). Page 5.

<sup>12</sup> <https://www.ipcc.ch/report/ar6/wg2/downloads>



reasoning and assumptions used in the methodology and a listing of any reference materials used as part of the methodology”. (Page 27)

A rather complex analysis of toxicity exposure is required, including a substance toxicity profile(s). This sounds as if it could yield accurate information about the potential impacts of a release of dangerous substances, presumably as a routine matter through an air, wastewater, or nonpoint source pollution discharge permit, or as an unintentional release (i.e. accident or terroristic incident). However, the issue is how this information would be used in the permitting process.

The Rule continues, “Potential health impacts should be quantified, when possible, or otherwise explained, and descriptions of mitigation techniques proposed to address any potential health impacts included.” (Page 27) In other words, if the health impacts can’t be avoided, they can be excused with mitigation.

Further detailing the acceptance and mitigation approach, the Rule states, “The summary should describe the implications of the unavoidable, adverse impacts and reasons why the facility should be permitted. If the project includes mitigative equipment or techniques proposed to reduce the adverse impacts, the summary should discuss the effectiveness and cost of such measures.” (Page 27)

There are two key ways the Rule fails to address environmental justice.

First, this risk-based health assessment allows for mitigation instead of eliminating the risk of exposure to pollution, a loophole that will allow a cavern to be placed, continue, or expand in a location that will adversely impact environmental justice communities.

Secondly, there is no way offered in the Rule to factor in the existing pollution load that is already affecting the health of overburdened communities. Any new emissions or releases will be layered on top of the pollution that is affecting the overburdened community, making conditions worse for those same populations.

The proposed environmental justice regulations (Proposed New Rules: N.J.A.C. 7:1C) will not necessarily address this inequity because whether or not the permits that trigger a review under those proposed regulations will be required by a cavern is unknown and whether the regulations would apply to each location is unclear.

Furthermore, the requirement for existing projects in the proposed environmental justice regulations as well as in the subject Rule, are less demanding than for new projects. A renewal permit for an existing project cannot be denied based on environmental justice impacts under that proposed environmental justice rulemaking; it can only be subject to conditions. In addition, expansion of existing caverns are not subject to rigorous review in the subject Rule. Furthermore, there is no “cap” on how many can be constructed at one location.

Evidence that existing caverns are proposed in the Rule to undergo a lesser level of review when they apply for a permit for a currently in-use cavern is found in the Economic Impact section. The Rule states, ““An owner and operator who submits materials for a new permit to operate a currently existing cavern system can expect an initial cost of preparing, implementing, and

submitting as-built specifications and integrity test results, as well as an operation and maintenance plan, an emergency response plan, and a decommissioning plan with financial responsibility assurance.” (Page 63-64)

Further evidence is in the discrepancy between the cost for the permit processing for the two facilities that are expected to apply for permits for their existing caverns (Bayway Refinery and Gibbstown Logistics Center) and the cost for a new cavern permit. The Rule states, “Since the Department estimates two facilities will be subject to these proposed rules, no new State positions will be created for the various permit and enforcement activities. Instead, the Department will complete this work by redistributing routine tasks within the staff for the impacted program(s). Under this rulemaking, the review and processing fees paid to the Department by the owner or operator of a new system for approval to construct and the permit to operate will not exceed \$180,900 in 2022 dollars. The review and processing fees paid to the Department by the owner or operator of an existing system for a permit renewal will not exceed \$65,800 in 2022 dollars; this represents the maximum fee for the updated operating permit following the adoption of these proposed rules.” (Page 64) The existing cavern require less DEP resources, presumably because not as thorough a review is required as would be for a new cavern.

Existing cavern systems storing petroleum gasses in New Jersey are located in or adjacent to identified environmental justice communities. DRN considers the Rule’s proposed lesser degree of scrutiny for existing caverns, which are already imposing adverse environmental impacts on adjacent communities, to be obviously unjust. Existing caverns must undergo the same level of review and must meet the same permitting requirements as new caverns. Otherwise, this loophole will disproportionately cause harm.

The Bayway Refinery is in Linden, Union County, within a half mile of and adjacent to census blocks identified in the DEP Environmental Justice Map as low income, minority or limited English census blocks. The Gibbstown Logistics Center in Gibbstown, Gloucester County is approximately 2 miles from low income, minority census blocks. See:

<https://njdep.maps.arcgis.com/apps/webappviewer/index.html?id=34e507ead25b4aa5a5051dbb85e55055>. Under the Rule, these communities would be sacrificed to worsening environmental burdens and the resulting health impacts by the “grandparenting” of these existing caverns. The actions that have been taken by Governor Murphy, his Administration, and the New Jersey Legislature declare that this injustice cannot be allowed.

Governor Murphy’s Executive Order No. 23 (EO23) states:

“WHEREAS, historically, New Jersey’s low-income communities and communities of color have been exposed to disproportionately high and unacceptably dangerous levels of air, water, and soil pollution, with the accompanying potential for increased public health impacts; and

WHEREAS, communities that are disproportionately affected by environmental degradation often face other serious problems beyond environmental issues, including health risks and housing challenges; and

“WHEREAS, in order to expand and improve upon these past efforts, all of the various departments, agencies, boards, and commissions comprising the Executive Branch of State government should consider Environmental Justice in implementing their diverse statutory and regulatory responsibilities; and

WHEREAS, the New Jersey Department of Environmental Protection has recognized that “Environmental Justice” includes, at a minimum, ensuring that residents of all communities receive fair and equitable treatment in decision-making that affects their environment, communities, homes, and health; and”<sup>13</sup>

New Jersey’s Environmental Justice Law, N.J.S.A. 13:1D-157 states:

“The Legislature finds and declares that all New Jersey residents, regardless of income, race, ethnicity, color, or national origin, have a right to live, work, and recreate in a clean and healthy environment; that, historically, New Jersey’s low-income communities and communities of color have been subject to a disproportionately high number of environmental and public health stressors, including pollution from numerous industrial, commercial, and governmental facilities located in those communities; that, as a result, residents in the State’s overburdened communities have suffered from increased adverse health effects including, but not limited to, asthma, cancer, elevated blood lead levels, cardiovascular disease, and developmental disorders; that children are especially vulnerable to the adverse health effects caused by exposure to pollution, and that such health effects may severely limit a child’s potential for future success; that the adverse effects caused by pollution impede the growth, stability, and long-term well-being of individuals and families living in overburdened communities; that the legacy of siting sources of pollution in overburdened communities continues to pose a threat to the health, well-being, and economic success of the State’s most vulnerable residents; and that it is past time for the State to correct this historical injustice.

The Legislature further finds and declares that no community should bear a disproportionate share of the adverse environmental and public health consequences that accompany the State’s economic growth; that the State’s overburdened communities must have a meaningful opportunity to participate in any decision to allow in such communities certain types of facilities which, by the nature of their activity, have the potential to increase environmental and public health stressors; and that it is in the public interest for the State, where appropriate, to limit the future placement and expansion of such facilities in overburdened communities.”<sup>14</sup>

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<sup>13</sup> New Jersey Executive Order 23 available at:

[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiyiZnzvL4AhW3pokEHV1KCf4QFnoECA8QAQ&url=https%3A%2F%2Fnj.gov%2Finfobank%2F056murphy%2Fpdf%2FEO-23.pdf&usg=AOvVaw3czluQRAVY9XeRsa\\_Edt1t](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiyiZnzvL4AhW3pokEHV1KCf4QFnoECA8QAQ&url=https%3A%2F%2Fnj.gov%2Finfobank%2F056murphy%2Fpdf%2FEO-23.pdf&usg=AOvVaw3czluQRAVY9XeRsa_Edt1t) Page 1.

<sup>14</sup> NJ Environmental Justice Law N.J.S.A. 13:1D-157, available at: <https://casetext.com/statute/new-jersey-statutes/title-13-conservation-and-development-parks-and-reservations/chapter-131d-reorganization-of-department-of-conservation-and-economic-development/section-131d-157-findings-declarations-relative-to-impact-of-pollution-on-overburdened-communities>. Page 1.

The mandate is clear that the future placement and expansion of polluting facilities in overburdened communities cannot be allowed.

Environmental and Health Impact Statement (EHIS): Precisely how environmental factors are to be measured and how the information will be used is unclear.

The Rule describes the EHIS in detail and states that it must include an environmental inventory, environmental assessment, and health assessment. (Page 97) The Environmental Inventory contents is also very detailed. However, how the impacts to the various environmental features are to be measured is not firmly established. For instance, the required Environmental Assessment has a requirement for modeling to project impacts. However, modeling can be sidestepped by the use of “best professional judgment” (Page 102); quantification of impacts can be replaced with “qualification” (page 102); and the applicant’s judgement about whether an impact is positive or negative is fraught with potential bias.

The Rule states, “The impact that the proposed facility will have on local transportation patterns, drainage and soil characteristics, surface and ground water quality, endangered or threatened wildlife and vegetation, storm water and wastewater collection and/or treatment capability, water supply capability, ambient acoustical conditions, and air quality” (Page 99) This sounds comprehensive. However, as an example of the weakness of this component of the environmental assessment, the impact on “transportation patterns” is a very general statement. Will a traffic analysis of the transport of cargo to the cavern and from the cavern be required? Will all modes, such as trucks, rail, barge, and/or other marine vessel, be required to be included? If not, how will those impacts to the environment be measured and assessed since without the cavern system the additional traffic would not occur. Without a specific charge to include all modes of traffic in and out of the cavern system, the requirement is open-ended and left to the judgement of the applicant and the reviewer of an individual permit. Elsewhere in the Rule, the ““underground storage cavern system” is defined much more narrowly, as the cavern and its equipment. (Proposed Section 1.6) What are the parameters that must be sampled for to get ambient air quality values? What is the threshold for an impact that is deemed substantial?

Similarly, it is not clear how all the gathered information will be used regarding decisions on permits for a facility. The only hint is the applicant must provide “A description of the mitigative techniques proposed to address any potential environmental impact associated with the proposed system”. This implies that impacts will be able to be addressed by mitigation, which, as discussed in these comments under environmental justice concerns, is not acceptable, particularly for overburdened communities that are in proximity and extremely vulnerable assets such as protected natural areas or waters, public parks, endangered or threatened species and habitats.

For instance, scientific reports have shown poor performance of wetlands mitigation projects. One report explored how the goal of “no net loss” of the nation’s wetlands systems, a goal set in 1987, has been missed and how these losses “can easily contribute to a consistent and considerable net functional loss over time”.<sup>15</sup> The failure of a wetland system can extract extremely high costs to society and yet the measurement of the success or failure is not well tracked.

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<sup>15</sup> <https://www.sciencedirect.com/science/article/abs/pii/S0169204608001448>

A recent report examined wetland mitigation function loss and found a high rate of failure of wetland mitigation projects employing engineered solutions. The study found, "Evidence accrued over the last 15 years has demonstrated that compensation failure rates at the regional level are often over 50% and can be as high as 90%. This research has demonstrated that a continuous string of wetland impacts, followed by delays in achieving fully successful compensatory mitigation, can easily lead to an extended period of net loss of wetland function within the landscape. This occurs even under the assumptions of perfect restoration and mitigation ratios consistently above 1:1, which are both assumptions commonly made by regulators in their mitigation programs. It also demonstrates that the 'no net loss' currently purported to be achieved through instantaneous compensation on paper is difficult to mirror in actual wetland environments".<sup>16</sup>

Studies that have been done illustrate that successful wetlands mitigation projects are very difficult to achieve when measured in ecological functions. One analysis of Florida wetlands explains in detail why many of these engineered mitigation systems and the goal of "no net loss" has failed.<sup>17</sup> Further, it is not clear if mitigation banking will be allowed or whether swapping of lost wetlands in one location for another will be employed. However, it can be assumed that these will be allowed because the state's permitting programs allow these and other manipulations of natural wetlands to serve new development.

These mitigation techniques are fraught with inequities that can create sacrifice zones and lay the environmental losses on one region or community disproportionately. This is unacceptable as a practice. Additionally, New Jersey cannot afford to lose any more natural wetlands. It is estimated that between 1780 and 1880 New Jersey lost 39 percent of its wetlands. From 1952 to 1973, about 30 percent were lost and some counties in New Jersey have lost all wetlands. One report estimates that the loss of tidal marshes between 1953 and 1973 exceeded 24 percent.<sup>18</sup> Conservation is the most effective means of preserving wetlands. Mitigation through constructing engineered wetland is too risky because success is not easily attained.

The preservation of wetlands is being prioritized by climate scientists in New Jersey to provide natural carbon sequestration. A Rutgers report states, "Protecting existing wetlands will help protect existing and potential future carbon stores and avoid emissions related to degradation."<sup>19</sup> The report also advises avoiding impacts to wetlands, "Protection efforts could also be incorporated into land use planning/permitting, such as prioritizing avoiding impacts to highly functioning wetlands that provide ecosystem services such as flood mitigation, water quality

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<sup>16</sup> Bendor, T. (2009). A dynamic analysis of the wetland mitigation process and its effects on no net loss policy. *Landscape and Urban Planning* 89 (2009) 17–27. Page 25.

<sup>17</sup> <https://www.amazon.com/Paving-Paradise-Floridas-Vanishing-Wetlands/dp/0813032865>

<sup>18</sup> Thomas Beranger, New Jersey Wetland Resources, National Water Summary, Wetland Resources USGS. [https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwi3777NqvT4AhVoplkEHeziDTIQFnoECCcQAQ&url=http%3A%2F%2Fwww.fws.gov%2Fwetlands%2Fdata%2FWater-Summary-Reports%2FNational-Water-Summary-Wetland-Resources-New%2520Jersey.pdf&usg=AOvVaw0fbhvjX\\_xHvZqBH5z6Hq8o](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwi3777NqvT4AhVoplkEHeziDTIQFnoECCcQAQ&url=http%3A%2F%2Fwww.fws.gov%2Fwetlands%2Fdata%2FWater-Summary-Reports%2FNational-Water-Summary-Wetland-Resources-New%2520Jersey.pdf&usg=AOvVaw0fbhvjX_xHvZqBH5z6Hq8o) Page 281.

<sup>19</sup> O'Lear, Kaplan, and Schafer, "Wetland Resource Considerations for A New Jersey Natural and Working Lands Strategy", Rutgers Univ., 2.2022. [https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwi3777NqvT4AhVoplkEHeziDTIQFnoECCYQAQ&url=https%3A%2F%2Fnjadapt.rutgers.edu%2Fimages%2FNJCCA\\_NWL\\_Wetlands\\_Report\\_FINAL.pdf&usg=AOvVaw0EsaHzWHIPgRzFSrzUsvBc](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwi3777NqvT4AhVoplkEHeziDTIQFnoECCYQAQ&url=https%3A%2F%2Fnjadapt.rutgers.edu%2Fimages%2FNJCCA_NWL_Wetlands_Report_FINAL.pdf&usg=AOvVaw0EsaHzWHIPgRzFSrzUsvBc) Page 7.

improvement, coastal protection as well as carbon sequestration (Mitsch et al., 2012; Liu et al., 2021).” Loss of wetlands to sea level rise, development, and drought, inject urgency into the need for protection of wetlands, according to the report. Recommended is prioritizing wetlands with a high degree of co-benefits such as flood mitigation, nutrient mitigation/filtration, biodiversity conservation, and endangered species habitat.<sup>20</sup> This is an example of how the Rule’s allowance of mitigation instead of avoidance of damage or loss is destructive and undermines a healthy environment.

### Lacking important bright line limitations

The Rule relies primarily on current environmental regulatory programs to set standards for permits and practices related to the caverns. This results in the Rule establishing few specific limitations on crucial aspects such as where a cavern can be placed, how much of a buffer must be provided from environmental features, residential areas, structures and infrastructure. It is not clear what can be placed on top of a cavern. Can roads, railways, structures, storage facilities, and other uses be located on top of the cavern beneath? How far must a cavern be placed from a stream or river? Why isn’t there a mandatory exclusion zone around the cavern to provide public safety and environmental protection?

Even the separation distance between an existing cavern and a new one is left to qualitative judgement. The Rule states, “The separation between any individual underground storage caverns within a new or expanded facility shall be a distance sufficient to ensure that the caverns are able to maintain mechanical integrity and can be safely operated, and that the migration of the regulated substance(s) between caverns is prevented.” (Page 94) Under construction requirements in the Rule, it is stated, “The owner shall maintain, and control, all of the surface and mineral rights of all privately owned land within 300 feet of the surface footprint of the cavern.” (Page 95). However, there is nothing in the Rule about what can or cannot be done on the surface above those 300 feet of controlled mineral rights.

The Feasibility Study the Rule proposes apparently will evaluate some of these issues but decisions will be made by a “third party evaluator”, not DEP (page 30-31), again supplying no “bright lines” and keeping the public in the dark. We understand that the Toxic Catastrophe Prevention Act (TCPA) will apply but this does not guarantee specific, consistent, and publicly available protocols regarding these issues. It is no exaggeration that there are more defined buffers, mandatory separation distances, and restrictions for a septic system for a private home under state regulations than for a cavern storing hazardous and flammable petroleum gasses.

Are there any required depths for the cavern/cavern system? There seems to be no defined minimum, for instance, of how thick a “rock cap” must be. Again, these critical factors are vague and seem to be left to the judgment of the applicant, which could mean biased decisionmaking.

### Flood zones

For example, the environmental and climate analyses that the Rule requires under the EHS includes a look at the location of the cavern relative to the Flood Hazard Area. “At a minimum, the

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<sup>20</sup> *Id.*, Page 10.

climate change impact assessment would include facility data on whether a cavern system is located within a flood hazard area. If it is not, the assessment should identify the distance to the closest flood hazard area together with a minimum depth flood waters would have to reach to potentially impact the cavern system.” (Page 20) Other storm and sea level rise information is required, as outlined in the Rule.

However, how this information will affect the permitting of the cavern and its location is decided under flood regulations. While it makes the most logical sense to prohibit the placement of a cavern in a flood hazard area and/or a floodplain, as discussed above in this comment, instead the Rule calls for “resiliency” planning and then, as discussed previously, states that there is no requirement to implement any resiliency measures since this exercise is only for information purposes.

It is illogical to expect cavern systems to be resilient or plan to be resilient if they are allowed to be built in 500-year or 100-year floodplains or, even more unthinkable, in flood hazard zones. Why isn't the rule prohibiting the placement of cavern systems in flood zones, one of the most vulnerable and potentially deadly locations? How can a cavern be resilient to climate impacts if they are placed where flooding occurs, which could inundate, destabilize, or knock out of commission the cavern and its related equipment? The aforementioned IPCC Report discusses how nations trying to address climate are unfortunately producing practices described as “maladaptation”. Allowing a cavern in a floodplain or flood hazard zone while trying to adapt it to climate impacts such as sea level rise by, for instance, placing fill over the cap of the cavern to raise it higher (which is allowed under current state regulations), is an example of maladaptation.

Due to the likelihood of substantial sea level rise in New Jersey (as explained in EO100), powerful storm surge events from increasingly severe storms, and the increasing incidence of sunny day flooding from changing groundwater and water infrastructure systems, it is reasonable to predict that serious flooding will occur in a flood area sooner or later. It is best to prevent cavern system inundation and the resulting impacts before constructing a cavern with a life of span of 50 years or more. The Rule states, “The life span of an underground storage cavern system could extend 50 or more years.” (Page 51) The location is crucial in planning to prevent catastrophe. It is also important to avoid the cavern contributing to flooding and downstream flows because fill has been placed in the floodplain. The most effective way to achieve resilience is to keep such systems well away from floodplains and frequently flooded areas and to provide wide riparian buffers to protect in the long term. It is also important to recognize that often maladaptation projects just shift harm elsewhere, too often on communities already overburdened by environmental harms.

#### *Narrow review lacks upstream and downstream impact analysis*

Overall, the Rule is narrow in what it addresses regarding a cavern system. Comprehensive environmental assessment of these activities and their impacts that will be spurred by the building of caverns (“build it and they will come”) must be considered in the Feasibility Study and the EHIS. What will be the overall footprint of the cavern system and its related infrastructure within a community? How will traffic and potential pathways of pollution from transportation impact the health, safety, and quality of life in the host community and the region? The impacts can be

substantial, especially in circumstances where there is more than one cavern or a large cavern system.

### Earthquakes

There is no discussion of the potential for earthquakes to compromise cavern stability, cause loss of pressure, disruption of equipment operations, or a release of gasses. The New Jersey Geologic Survey explains, “New Jersey doesn't get many earthquakes, but it does get some. Fortunately, most are small. A few New Jersey earthquakes, as well as a few originating outside the state, have produced enough damage to warrant the concern of planners and emergency managers.”<sup>21</sup>

As stated in DRN's 2020 Comment, “A 2016 report prepared for the U.S. Department of Energy contends that earthquakes or other disasters could disable multiple underground storage facilities in an affected area, or they could take out combinations of underground storage facilities and other important gas supply infrastructure. A storage well at the Aliso Canyon underground facility was crushed during the 1994 Northridge Earthquake in Los Angeles, California.<sup>22</sup> How caverns will impact water wells, existing pollution plumes, utilities, and other infrastructure must be fully addressed through in-field investigations and assessment.”

### Carbon sequestration and liquid mixed gasses question

It is unclear if the Rule intends or can be used to permit the storage in underground caverns of carbon as an attempt at carbon sequestration. DRN does not support this ineffective method of addressing carbon emissions and many members of the public question its efficacy and potential damage. See DRN's 2020 Comment to DEP (attached) for more details about why we do not support carbon capture/sequestration in caverns or other storage containers.

The Rule should be clearer about exactly what can be stored outside of the substances named. For instance, can gaseous state gases be stored? The Rule implies it applies to LIQUID gasses but this should be more clearly defined. Even in regards to the liquid gasses that are listed in the Rule it is not disclosed what will be in gas mixes and whether this information will be publicly available. Leaving issues such as this unaddressed is confusing, keeps people from fully understanding what can occur, and can misdirect the public who will ultimately be bearing the burdens of the construction and operation of these caverns.

### Segmentation

The Rule does not include a limitation on cavern expansion to prevent segmentation. Segmentation—also known as piecemealing—is a common phenomenon in the context of environmental review statutes.<sup>23</sup> Segmentation occurs when an applicant submits a limited portion

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<sup>21</sup> <https://www.state.nj.us/dep/njgs/enviroed/eqrisk.htm>

<sup>22</sup> Folga et al. (2016). U.S. Natural Gas Storage Risk-Based Ranking Methodology and Results.

<sup>23</sup> See, e.g., *Kleppe v. Sierra Club*, 427 U.S. 390, 410 (1976) (“Only through comprehensive consideration of pending proposals can the agency evaluate different courses of action.”); *Del. Riverkeeper Network v. F.E.R.C.*, 753 F.3d 1304, 1313 (D.C. Cir. 2014) (“An agency impermissibly ‘segments’ NEPA review when it divides connected, cumulative, or similar federal action into separate projects and thereby fails to address the true scope and impact of the activities that should be under consideration.”); *Saratoga Springs Pres. Found. v. Boff*, 973 N.Y.S.2d 835, 838 (N.Y. App. Div. 2013) (“Segmentation is the division of the environmental review of an action such that various



of a proposed project for regulatory approval, then shortly thereafter requests additional approvals or modifications at the same facility, resulting in a large cohesive project. The effect of segmentation is to minimize the appearance of a project's environmental impacts. Had the applicant submitted the overall larger cohesive project in a single application, the regulatory authority would have a more accurate understanding of the facility's impacts. Proposed sections 5.1 and 5.2 govern modifications to systems, but do not provide any limitation on expansion or prohibition of segmenting a project. DRN strongly suggests DEP add language to the proposed regulations to prohibit segmentation of underground cavern systems.

### Chemical interactions

Throughout the Rule, the focus is on mechanical integrity. DRN is concerned about chemical integrity as well. Despite the "process hazard analysis" required at 7:1F-2.3, the Rule does not require an analysis of chemical changes that can occur in the cavern from the stored substances. How will the cavern system potentially affect chemical composition of the geologic formation and groundwater? In turn, how will the geologic formation or groundwater potentially affect regulated substance?

First, the process hazard analysis only applies to "extraordinarily hazardous substance as defined pursuant to the Toxic Catastrophe Prevention Act Program rules at N.J.A.C. 7:31-1.5". Therefore, if these issues are addressed in that analysis, it will not be addressed for all substances that may be stored under the Rule. Secondly, the requirements of 7:1F-2.3 do not mention chemical interactions but focus, as does the rest of the Rule, on mechanical and engineering issues. The Rule should require an analysis of these chemical and physical issues to protect the environment and the public.

### Vague identification of footprint

Term "surface footprint" is used throughout the Rule. It is unclear whether this refers to surface area above entire cavern, or to a limited area on the surface where the cavern system components are visible. The Rule should clearly identify the full meaning of the "surface footprint".

## **Specific Section Comments**

### 7:1F-1.6 Definitions

The Rule states, "Liquefied petroleum gas" or "LPG" means any material in liquid form that is composed predominantly of any of the following hydrocarbons or a mixture thereof: propane,

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activities or stages are addressed for purposes of environmental quality review as though they were independent, unrelated activities, needing individual determinations of significance." (cleaned up)); *Ten Persons of Com. v. Fellsway Dev. LLC*, 951 N.E.2d 648, 653 (Mass. 2011) ("[U]nder anti-segmentation regulations, the proponent of a private project and any participating agency 'may not phase or segment a Project to evade, defer, or curtail . . . review.'" (quoting 301 Code Mass. Regs. § 11.01(2)(c))); *Concerned Taxpayers Opposed to Modified Mid-South Sequim Bypass v. State, Dept. of Transp.*, 951 P.2d 812, 815 n.2 (Wash. Ct. App. 1998) ("Piecemealing is the practice of conducting environmental review only on current segments of public works projects and postponing environmental review of later segments until construction begins. This practice is disfavored because the later environmental review often seems merely a formality, as the construction of the later segments of the project has already been mandated by the earlier construction.").

propylene, butanes (normal butane or isobutane), and butylenes. This definition of “LPG” is broad, and owners/operators of caverns may change the substance stored without need for a permit modification. Importantly, these mixed gasses are regulated as a single regulated substance as per 7:1F-1.4(d). It is unclear if the mixture contents will be made publicly available so that community residents will be fully informed. The definition reads as if other components outside of those listed can be added (“composed primarily of”). Will the components of the mixture be monitored by and reported to DEP in real time?

This can have dangerous consequences that the public should be aware of and of which DEP should require full disclosure, monitoring, and reporting. An example of the dangers of adding dimethyl ether (DME) to LPG is analyzed in a recent scientific paper: “Blending dimethyl ether (DME) into liquefied petroleum gas (LPG) has become a common phenomenon. DME is an isomer of ethanol. On December 3, 2019, an LPG/DME explosion occurred in Beijing, resulting in 4 deaths and 10 injuries.”<sup>24</sup> The lesson learned was that unanticipated corrosion occurred from the mixed gas properties, which led to a leak and deadly explosion. “The silicone flange gaskets on the gas pipeline were subject to the long-term corrosion of the LPG/DME-blended gas, forming laminar fractures and radial cracks on the gaskets, resulting in a decrease in the tensile strength of the gaskets. Under the action of the gas pressure inside the pipeline, the gasket was torn and a leakage hole was formed.”<sup>25</sup> This is an example of dangers that can occur from the mixing of gasses.

The definition of “environmental inventory” at proposed N.J.A.C. 7:1F-1.6 (which focuses on current status of the environment at the site) does not match the contents of the environmental inventory at proposed N.J.A.C. 7:1F-2.4(b) (which focuses on information about the project itself). This discrepancy needs correction.

#### 7:1F-1.7 Municipal ordinances or regulations

DRN strongly supports the provision in the Rule that, “Any ordinance or regulation of any governing body of a municipality or county or board of health shall not be superseded by this chapter, and nothing in this chapter shall preclude the right of any governing body of a municipality or county or board of health to adopt ordinances or regulations.” It is of great importance that a local government can enact stricter regulations that supersede the Rule. This will allow for specific and unique conditions to be considered and for greater protection to be afforded to communities and vulnerable environmental and ecosystem features.

#### 7:1F-2.4 Assessments of environmental, health, and climate change impacts

See DRN General Comments.

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<sup>24</sup> Qian et al. (2021). Cause Analysis of the Large-Scale LPG Explosion Accident Based on Key Investigation Technology: A Case Study. *ACS Omega* 2021, 6, 20644–20656. Retrieved from <https://pubs.acs.org/doi/pdf/10.1021/acsomega.1c02837>

<sup>25</sup> *Id.* at 20653.

7:1F-2.4(b)(7) The Environmental Inventory should include Special Protection Waters designated by the Delaware River Basin Commission (DRBC), as well as Category 1 designated waters under New Jersey's surface water quality regulations.

7:1F-2.4(d) The health impact assessment must provide evaluation of health impacts caused by construction and operation of proposed system, not just in the event of a release, and needs to specifically address environmental justice concerns. Environmental justice concerns are not acknowledged or included in the EHIS/health impact assessment. See DRN General Comments.

7:1F-2.4(f) "Climate change impact assessment" required by proposed N.J.A.C. focuses only on the effects of climate change on the cavern system—rather than analyzing the cavern system's contribution to climate change. It also does not require the owner/operator to implement any resiliency measures and or address greenhouse gas emissions. See DRN General Comments.

7:1F-2.5 DRN opposes the use of third party evaluators because of the opportunity for bias and the need for public access to records and documents. The third-party evaluation process is problematic because it is not neutral, as the evaluator is engaged by and reports to the owner/operator. The proposed waiting period of 2 years between business or consulting services to the owner or operator and performing a third party evaluation, should be extended to 5 years or never to reasonably eliminate bias. Additionally, third party work products may not be available to the public through the Open Records Act. This may inhibit public access to information about a cavern system. DRN has experienced difficulty in getting access to records when other regulations have installed agents outside of DEP to implement programs (such as licensed site remediation professionals (LSRPs) in DEP's Remediation Program <https://www.nj.gov/lsrcboard/>). DEP should be properly funded to employ staff that can carry out these professional duties without a "middle man". This will provide more objectivity and public access to relevant records.

### 7:1F-3.3 Ground water and soil vapor monitoring

DRN supports the measurement prior to disturbance of a site and prior to construction, measurement during and after construction, and continuous monitoring during operation and dormancy of groundwater quality, level, volume, and soil vapors. . Monitoring should continue after decommissioning for more than 5 years, as proposed in the rule at 7:1F-6.1(a)1; the decision about how long should be based on the contents of the cavern - the substances' longevity, toxicity, and propensity to migrate to other locations or attach to other media. In addition to the monitoring of groundwater monitoring wells for the substances listed in the Rule and at Table 1 of the Appendix at N.J.A.C. 7:9C, substances that are listed in Table 2 of the Appendix at N.J.A.C. 7:9C should also be included. Additionally, all specific constituents of the gasses, natural or artificial, that will be stored in the cavern should be added to the suite to be monitored, even if it is not a regulated substance, if an EPA Analytical Method is available or can be developed by the owner/operator or producer. All data produced by monitoring should be readily available to the public. Public websites should be utilized to post findings in a timely and user-friendly manner.

There is no mention of required air monitoring systems. The monitoring protocols and timelines conducted for water and soil vapors should also be conducted for air in the airsheds impacted by the cavern (based on air dispersion models and other science-based assessment methods),

including for normal operations during the life span of the cavern and after decommissioning as discussed above regarding water monitoring longevity. The cavern systems should be required to install real-time continuous air monitors that report to DEP and the public.

#### SUBCHAPTER 4. PERMITTING REQUIREMENTS

##### 7:1F-4.1 General

7:1F-4.1 Generally, the construction of a cavern system involves mining and may result in management of radioactive materials. The Rule does not specify how mined material is to be handled, except to say that a designated stockpile area is required. Stockpiles in New Jersey at mining locations have become sources of air and water pollution for communities that are proximate, but in some cases, distant from the stockpile. Erosion of the stockpile can result in polluted stormwater runoff. There is no discussion of how the stockpile is to be monitored for constituents in the soil and rocks, how it is to be managed, secured, and how it is to be disposed. In some cases stockpiled tailings have sat for years without being properly assessed for contaminated materials or permanently disposed in a manner that fits the stockpiled material's properties (i.e. radioactive materials should be swiftly disposed at a regulated facility, hazardous waste materials disposed at a hazardous waste or soil/solids renovation facilities, etc.)

7:1F-4.1(b) Existing cavern system owners/operators should be required to submit permit application within three years, rather than five.

7:1F-4.2(f) Public commenting on the cavern system should begin as soon as records are available. The Rule sets the public comment period to begin after DEP issues a draft approval. This is not conducive to substantive public input because each stage of administrative, technical, and other review phases is an opportunity for the public to contribute to information being used by DEP. If the public cannot comment until a draft permit is produced, the public is automatically in an adversarial position against DEP, which will have a tendency to defend its draft decision.

7:1F-4.2(f) and 7:1F-5.2(e) The public commenting period is only 30 days with a possible 15-day extension. The highly technical nature of the applications/permits demand a longer public commenting period of at least 90 days. This should also apply to major modification applications. Permits are improved by public input and a transparent, open, public input process that engenders robust public participation should be required in the Rule.

7:1F-4.2(h)-(k) The Rule does not provide any public commenting period for operating permit. This oversight must be corrected so that the public will be able to participate fully in this stage of the cavern permitting. To shut the public out is unacceptable and unproductive.

7:1F-4.6(c) The Rule states, "A current permit for which a complete renewal application is submitted to the Department at least 120 days prior to the expiration date shall remain in effect until the Department grants or denies the renewal application". There should be a reasonable sunset date, such as 12 months, upon which the permit renewal application is automatically returned to the applicant so it can be updated and resubmitted if DEP has not acted. Important environmental and technical conditions change over time.

## SUBCHAPTER 5. MODIFICATIONS

### 7:1F-5.2 Major modifications

There should be a requirement for public notification and input into a major modification of a permit. Major modifications can substantially impact communities and the environment and a transparent, robust public participation process should be provided.

7:1F-5.3 Dormancy and SUBCHAPTER 6. DECOMMISSIONING. It is unclear how long a cavern system can remain in “dormancy” status before “decommissioning” requirements should kick in. It is also unclear what an owner/operator must do when changing regulated substances or selling to an entity that will use a different regulated substance. Would withdrawal of permitted regulated substance be considered a period of “dormancy”? These issues should be cleared up because of safety and environmental implications if these are left vague.

## SUBCHAPTER 6. DECOMMISSIONING

### 7:1F-6.2 Financial responsibility

7:1F-6.2(a). The owner/operator should not be permitted to evade minimum the \$1 million financial responsibility assurance requirement. The Rule states “*If the owner or operator demonstrates* that an amount less than \$1 million is sufficient to protect the environment and public health, safety, and welfare, the Department may accept evidence of financial responsibility in such lesser amount.” (*emphasis added*). There is a built in bias for the owner/operator to argue that the \$1M financial responsibility assurance mechanism be lessened. The requirement for the mechanism is based on the complex scope of the decommissioning plan, according to the Rule. All cavern systems that have stored these dangerous and potentially polluting substances will have decommissioning requirements and processes that are consequential. There is no benefit and potential costs and harm to the public or taxpayers to allow an owner/operator to evade the full \$1M requirement.

## SUBCHAPTER 8. CONFIDENTIALITY

Confidentiality claims should be made available to members of public seeking allegedly confidential materials so that the requestor can contest the claim and gain access to information.

7:1F-8.7. The Rule should provide that the disclosure of confidential information may be made to any person pursuant to an order of court or administrative law judge.

### **Conclusion**

In conclusion, DRN has concluded that the risks are too great for New Jersey to allow the storage of any and all petroleum gasses, liquids, products and/or derivatives - the applicable substances addressed by the proposed rulemaking - in underground caverns. DRN recommends that the rulemaking should prohibit underground cavern storage of all of these materials, in addition to the prohibition of LNG.

Thank you for the opportunity to comment on this proposed rulemaking.

Respectfully submitted,

Handwritten signatures in blue ink. The signature on the left is 'Maya K. van Rossum' and the signature on the right is 'Tracy Carluccio'.

Maya van Rossum  
the Delaware Riverkeeper

Tracy Carluccio  
Deputy Director

Attachment:

DRN Comment to NJDEP dated October 24, 2020, Re. Underground Storage Caverns, Proposed New Rule: N.J.A.C. 7:1F under Authority: N.J.S.A. 13:1D-1 et seq., 13:1K-1 et seq., 26:2C-1 et seq., 58:10-35.1 through 35.4, 58:10A-1 et seq.