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ENVIRONMENTAL PROTECTION

WATER RESOURCE MANAGEMENT

DIVISION OF WATER MONITORING, STANDARDS, AND PESTICIDE CONTROL

Ground Water Quality Standards

Remediation Standards

Adopted Amendments: N.J.A.C. 7:9C-1.7, 1.9, and 7:9C Appendix Table 1; and 7:26D-7.2

Proposed: January 2, 2024, at 56 N.J.R. 3(a) (see also 56 N.J.R. 402(a)).

Adopted: January 2, 2025, by Shawn M. LaTourette, Commissioner, Department of Environmental Protection.

Filed: January 3, 2025, as R.2025 d.023, **with a non-substantial change** not requiring additional public notice or comment (see N.J.A.C. 1:30-6.3).

Authority: N.J.S.A. 13:1D-1 et seq., 58:10A-1 et seq., and 58:11A-1 et seq.

DEP Docket Number: 04-23-11.

Effective Date: February 3, 2025.

Expiration Dates: January 28, 2028, N.J.A.C. 7:9C;

March 24, 2029, N.J.A.C. 7:26D.

The Department of Environmental Protection (Department) is adopting amendments to the Ground Water Quality Standards (GWQS), N.J.A.C. 7:9C, to update the specific ground water quality criteria and/or practical quantitation levels (PQLs) for 73 constituents of Class II-A ground water based on United States Environmental Protection Agency (USEPA) methodologies and the best available scientific information. These updates result in changes to the ground water quality

standards for 64 of the 73 constituents. Of these 64 ground water quality standards, 50 are becoming more stringent, and 12 are becoming less stringent. Two new standards are being added for constituents that currently have interim generic ground water quality criteria pursuant to N.J.A.C. 7:9C-1.7(c)3ii. Once adopted, the standards for these two constituents will be less stringent than the current interim generic criteria. The criteria updates for an additional nine constituents remain less than or equal to their PQLs, resulting in no updates to the ground water quality standards for those constituents.

In addition, the Department is adopting amendments at N.J.A.C. 7:9C-1.7(c)3i to enable the Department to update, by rulemaking, the specific ground water quality criterion for a constituent with a corresponding maximum contaminant level (MCL) pursuant to the Safe Drinking Water Act (SDWA) rules, N.J.A.C. 7:10, when the Department determines that the weight of evidence approach specified at N.J.A.C. 7:9C-1.7(c)3ii would more appropriately address the risk posed by the constituent than the health-based level used to establish the MCL.

The Department is also amending the default values for body weight and drinking water consumption rate at N.J.A.C. 7:9C-1.7(c)4i and ii to be consistent with the USEPA's 2015 Final Updated Ambient Water Quality Criteria for the Protection of Human Health (see 80 FR 36,986).

Additionally, the Department is amending the rounding provisions at N.J.A.C. 7:9C-1.7(c)4iii and 1.9(c)3i to round new or revised ground water quality criteria and PQLs to two significant figures, rather than one, when scientifically supportable, to be consistent with the rounding protocols employed for other environmental standards promulgated by the Department.

Lastly, the Department is amending the Remediation Standards at N.J.A.C. 7:26D-7.2(b) to reference N.J.A.C. 7:9C-1.7(c), instead of paragraph (c)5. This will enable the Department to

update an attendant remediation standard when it modifies or adds a ground water quality criterion to N.J.A.C. 7:9C, Appendix Table 1.

Summary of Changes to the Basis and Background Document and Agency-Initiated Changes

The Department relied on USEPA methodologies and the best available scientific information to derive the 39 proposed practical quantitation limit (PQL) updates. However, after the notice of proposal comment period, and in consideration of comments raised during that period, the Department reviewed the basis of PQL derivations for 22 constituents to confirm the accuracy of the information utilized. The Department also reviewed the USEPA's Method Detection Limits (MDLs), laboratory data, and information solicited from New Jersey-certified laboratories prior to the rulemaking. The Department also requested MDLs and reporting limits (RLs) for vinyl chloride from laboratories certified for Environmental Protection Agency (EPA) Method 524.3 and EPA Method 624.1.

Of the 22 constituents evaluated, the Department confirmed that PQLs for the following 12 constituents were derived by multiplying the USEPA method MDL by five, consistent with the Department's procedures: 1,1,2,2-tetrachloroethane; 1,1,2-trichloroethane; 1,2-dichloroethane; 2,4,6-trichlorophenol; 4-chloro-3-methylphenol (3-methyl-4-chlorophenol); dimethyl phthalate, nitrobenzene; polychlorinated biphenyls (PCBs); tetrachloroethylene (PCE); thallium (total), toxaphene; and vinyl chloride. The Department confirms that it used laboratory solicitation MDL data to derive the PQL for the following nine constituents: 1,2,3-trichloropropane (1,2,3-TCP), 1,2-diphenylhydrazine, 1,3-dichloropropene (cis-and trans-), 2,4-dinitrotoluene/2,6-dinitrotoluene mixture, 3,3'-dichlorobenzidine, acrolein, benzene, benzidine, and perfluorononanoic acid (PFNA).

The Department surveyed New Jersey-certified laboratories regarding their analytical capabilities for vinyl chloride. One laboratory is currently achieving a reporting limit of 0.02 (micrograms per liter) µg/L for SW846 8260D SIM, which is lower than the adopted practical quantitation limit (PQL) of 0.035 µg/L. Four other laboratories indicated that they do not currently use selective ion monitoring (SIM) analysis for vinyl chloride, but that they have the capability to achieve lower limits if they implement the use of SIM. The Department, however, did not receive data to validate the capabilities of the laboratories. Of the three laboratories surveyed that are certified for EPA Method 524.3, only two laboratories submitted a response to the Department's inquiry. Neither laboratory is using SIM or analyzing below 0.5 µg/L.

As explained in the Summary of Agency-Initiated Changes below, the USEPA method detection limit for bis(2-chloroethyl) ether is not confirmed.

The Department is updating the Basis and Background (NJDEP, 2023) for this rulemaking to clarify the source and basis of the PQL derivations for the 22 aforementioned constituents. These edits do not result in any change to the PQLs for 21 of the constituents or any change to the adopted criteria for the 22 constituents.

This rule adoption may be viewed or downloaded from the Department's website at https://dep.nj.gov/rules/notice-of-rule-adoptions/.

Summary of Hearing Officer's Recommendation and Agency Response:

The Department held a virtual public hearing on the notice of proposal on Tuesday, January 30, 2024, at 10:00 A.M., through the Department's video conferencing software, Microsoft Teams. Kimberly Cenno, Chief of the Bureau of Environmental Analysis, Restoration, and Standards,

served as the hearing officer. Eighty-three people attended the hearing, and four people provided oral comments. After reviewing the comments received, the hearing officer recommended that the Department adopt the proposed rulemaking. The Department accepts the hearing officer's recommendation.

A record of the public hearing is available for inspection, in accordance with applicable law by contacting:

Department of Environmental Protection

Office of Legal Affairs

Attention: DEP Docket No. 04-23-11

401 East State Street, 7th floor

Mail Code 401-04L

PO Box 402

Trenton, NJ 08625-0402

Summary of Public Comments and Agency Responses:

The Department accepted comments on the notice of proposal through April 5, 2024. The public comment period was extended from March 2, 2024, through April 5, 2024, in response to stakeholder requests (see 56 N.J.R. 402(a)). The following individuals provided written and/or oral comments:

1. Candace Baker, New Jersey Licensed Site Remediation Professionals Association
2. Kenneth Boley, Environmental Laboratory Advisory Committee (ELAC), Eurofins Lancaster

3. William Call, New Jersey Licensed Site Remediation Professionals Association

4. Raymond Cantor, New Jersey Business & Industry Association

5. Benjamin Dziobek, Climate Revolution Action Network

6. Michael Egenton, New Jersey Chamber of Commerce

7. Rodger Ferguson, Penn Jersey Environmental Consulting

8. Dennis Hart, Chemistry Council of New Jersey/Site Remediation Industry Network

9. Dan Kennedy, National Association of Industrial and Office Parks

10. Rose Koplin, ELAC

11. Grant Lucking, New Jersey Builders Association

12. Doug O'Malley, Environment New Jersey

13. David Robinson, Synergy Environmental Inc.

14. Anthony Russo, Commerce and Industry Association of New Jersey

15. Eileen Snyder, ELAC, Pace Analytical Services

16. Nick Straccione, ELAC, Environmental Monitoring Systems Laboratory (EMSL) Analytical Inc.

17. Blake Thompson

18. Dennis Toft, New Jersey Chamber of Commerce/Council of State Governements (CSG) Law

19. Bill Wolfe

The comments received and the Department's responses are summarized below. The number(s) in parentheses after each comment identify the respective commenter(s) listed above.

Public Comment Period

1. COMMENT: The commenters requested an extension of the comment period by an additional 90 days, extending it to Friday, May 31, 2024. The current deadline of March 2, 2024, poses a challenge in adequately reviewing the proposed amendments and the available compound-specific toxicological studies. (3, 4, 8, 9, 13, and 18)
2. COMMENT: The time allowed during the comment period was insufficient to thoroughly vet the limited evidence and reasoning of every one of these changes for soundness. (1, 4, 8, and 14)
3. COMMENT: The rule proposal contains detailed information on the revision of the regulatory criteria that will be used by the Department to establish and enforce the ground water quality standards for remediation standards for the cleanup of ground water (site remediation applications applied by New Jersey Licensed Site Remediation Professionals (LSRPs)), as well as the development of regulatory criteria for New Jersey Pollutant Discharge Elimination System (NJPDES) Discharge to Ground Water for permit compliance, as well as other regulatory applications. The broad scope of this major revision of regulatory criteria of 65 toxic substances with criteria for 50 becoming more stringent and criteria of seven toxic substances changing by over an order of magnitude, will impact thousands of sites and hundreds of

certified laboratories. Additional time is needed for laboratory consultation with the licensed practitioners (the data users) and the Department's program offices. (15)

RESPONSE TO COMMENTS 1, 2, AND 3: The Department granted a 30-day extension of its original 60-day comment period for its rulemaking (see 56 N.J.R. 402(a)). The Department extended the public comment period from March 2, 2024 to April 5, 2024.

General Support

4. COMMENT: The commenter supports the work that the Department did to move forward with this rule to protect New Jersey's ground water. (12)

   RESPONSE: The Department acknowledges this comment in support of the amended rules.

Stakeholder Process

5. COMMENT: This regulation has been proposed without the benefit of stakeholder participation since 2019. In doing so, the Department has ignored the basic tenents of transparency and the use of the most current science, as previously stated by the Murphy Administration. As mandated by the Site Remediation Reform Act (N.J.S.A. 58:10C-14.c(3)), engagement with stakeholders, including Licensed Site Remediation Professionals whose services are required to be protective of human health and the environment, has been shown to be effective in both rule development and technical guidance development. Meaningful dialogue relative to potential flaws or unintended consequences within Department rulemakings has resulted in a more comprehensive evaluation of the technical literature and often a simplification of administrative procedures, resulting in a significantly improved final product. An example of such an approach was in the promulgation of the Remediation Standards, adopted at N.J.A.C. 7:26D on May 21, 2021. As this stakeholder process was not

utilized in the development of this current rulemaking, the rulemaking should be withdrawn, and a meaningful stakeholder process be incorporated into any future rulemaking. (1 and 14)

6. COMMENT: The rulemaking was the result of a flawed stakeholder process that did not engage the regulated community adequately and provided misleading and partial information on the Department's intent. After documents were provided in 2019 that described the constituents being considered for change, numerous additional constituents were put into the proposed rulemaking without any ability to discuss such significant changes. The process to develop this rulemaking did not allow for needed input from expert stakeholders and other members of the public. It was certainly not consistent with Governor Murphy's intent when he authored Executive Order 63 (2019). This rulemaking should not be adopted in its currently proposed form and that extensive and collaborative stakeholder engagement before an amended rule is subsequently adopted. (4)
7. COMMENT: Information previously provided by stakeholders is outdated and should not be used in rulemaking. There were no subsequent meaningful and transparent discussions with the regulated community following this 2019 stakeholder meeting regarding the MCL issue. At the recent Department's Air & Waste Management Association 22nd Annual Regulatory Update Virtual Conference in November 2023, the slides presented on the "Upcoming GWQS Rulemaking – Toxics Proposal," changes to the Department's position on MCLs were not discussed. (15)
8. COMMENT: The rulemaking should be withdrawn so stakeholders, including the analytical laboratories, can be involved again as in 2016 and 2019. (4, 7, 13, and 14)

RESPONSE TO COMMENTS 5, 6, 7, AND 8: The Department initiated stakeholder engagement for this rulemaking in 2016. This process involved several informal stakeholder workgroup meetings to discuss potential amendments to the GWQS between 2016 and 2018. Workgroups included representatives from county health departments, business, industry, laboratories, consulting firms, Rutgers University, and environmental groups. Draft updates to the ground water quality criteria and PQLs were shared with stakeholders during this time.

On May 28, 2019, the Department held a stakeholder meeting to discuss potential rule amendments and presented revisions to the previously shared draft updates to the ground water quality criteria and PQLs. Information regarding this meeting is available on the Department's website at https://dep.nj.gov/workgroups/gwqs/. The Department shared draft updates for 58 constituents with stakeholders and received feedback from six laboratories on some of the anticipated updates to PQLs.

After further evaluation, the Department added 19 constituent updates and withdrew three from the list. This list of 74 updates was distributed to stakeholders by email for review in December 2019.

As indicated in the Response to Comments 1, 2, and 3, the Department provided a 60-day comment period upon publication of the notice of proposal until March 2, 2024. In acknowledging certain stakeholders' requests for additional time to comment, the Department granted a 30-day extension to April 5, 2024. The Department also conducted a public hearing on January 30, 2024. The Department has demonstrated a commitment to stakeholder engagement, scientific integrity, and transparency throughout this rulemaking process. The extensive initial engagement, subsequent evaluation and updates, an extended public comment

period, and public hearing collectively reflect a comprehensive approach to addressing stakeholder concerns.

General

9. COMMENT: The GWQS classify ground water throughout the State according to its designated use(s). To that end, as noted in the Background section of the notice of proposal, ground water is classified as Class I for pristine ground water, either Class II-A or Class II-B for potable or potentially potable ground water, or Class III for ground water that is naturally not potable. The proposed ground water quality standards are for Class II-A ground water. Significantly, the notice of proposal notes expressly that no ground water in this State has ever been classified as Class II-B. This is true, notwithstanding a number of petitions that have been filed with the Department seeking to establish that ground water in certain areas of the State should be classified as II-B. The Department's failure to appropriately recognize Class II-B areas further exacerbates the economic impact of the changes in Class II-A standards. Before adopting new standards, the Department should fully implement the ground water classification system so that the new Class II-A standards will not be applied in those areas of the State where it is inappropriate to do so. (6)

RESPONSE: The Department, through the GWQS, establishes classes of ground water according to the hydrogeologic characteristics of the ground water resource and the designated use(s), which are to be maintained, restored, and enhanced within each classification area. Classifications are regional in nature and, thus, include localized infringements on designated uses due to natural quality or pollution incidents. The primary designated use for both Class

II-A and Class II-B ground water is potable water with conventional water supply treatment, either at the current water quality (Class II-A) or subsequent to enhancement or restoration of regional water quality (Class II-B) (see N.J.A.C. 7:9C-1.5(e)). The Class II-A criteria are also the Class II-B criteria pursuant to the GWQS at N.J.A.C. 7:9C-1.7(d). The use of Class II-A criteria prevents degradation of Class II-B ground water beyond either the Class II-A criteria or current water quality, whichever is higher.

Pursuant to the GWQS, only Class III ground waters may be changed on a site-specific basis. The Department uses Classification Exception Areas as a temporary measure to identify localized areas where the ground water quality standard for a constituent is not met or may not be met due to: (1) contamination; (2) a permitted NJPDES discharge to ground water; or (3) natural conditions. The Department provides flexibility to remediate ground water on a site-specific basis through the implementation of the Technical Requirements for Site Remediation, N.J.A.C. 7:26E.

The GWQS, at N.J.A.C. 7:9C-1.5(e)2, lists the requirements that must be met for the Department to consider a reclassification of ground water from Class II-A to Class II-B through either a petition for rulemaking or a rulemaking. In general, Class II-B includes regional areas of pollution that are technologically infeasible to restore, where current potable use is nonexistent, or very limited with little likelihood of increasing, and were relying on natural attenuation processes to restore ground water quality will not pose a significant risk to public health. The Department initiated discussions on the classification of ground water during its stakeholder meetings from 2016 to 2018. However, the Department has not identified areas of the State that meet the requirements listed in the GWQS, nor has it received a formal petition

for rulemaking to reclassify any Class II-A area to Class II-B in the last 20 years. The Department will consider the classifications as appropriate and will consider for the reclassification of any areas identified by any interested person that meet the requirements at N.J.A.C. 7:9C-1.5(e)2.

10. COMMENT: The proposed language at N.J.A.C. 7:9C-1.7(c)3i contravenes the intent of Executive Order No. 27 (1994), which required State administrative agencies to include a statement when Federal standards are exceeded through the adoption, amendment, or readoption of rules and regulations. (1 and 14)

    RESPONSE: As provided in the Federal Standards Statement for this rulemaking, "the proposed amendments to the GWQS that update specific ground water quality criteria and/or PQLs for 73 constituents of ground water do not exceed any Federal standards or requirements. The GWQS are not promulgated pursuant to the authority of, or in order to implement, comply with, or participate in any program established pursuant to Federal law or under a State statute that incorporates or refers to Federal law, standards or requirements." (See 56 N.J.R. 3(a)). The enabling authorities for the GWQS are State statutes and the rules have no Federal counterpart. As the GWQS amendments are not mandated by any Federal standards and are entirely pursuant to State statutes, the Department determined that no further analysis was necessary.

11. COMMENT: When will the rule be implemented after it is adopted? Laboratories will need to plan ahead to meet the expectations of the Department and the licensed practitioners. (15)

RESPONSE: The updates to the GWQS will be enforceable and implemented upon publication of this notice of adoption. In accordance with the Department's Remediation Standards at N.J.A.C. 7:26D, any remediation standard attendant to the adopted GWQS is effective on the date a notice of administrative change is filed with the New Jersey Office of Administrative Law (see N.J.A.C. 7:26D-7.2(d) and 1:30-2.7). However, the person responsible for conducting the remediation may continue to use a remediation standard that is specified in a remedial action workplan or remedial action report for a site; provided that: (1) the remedial action workplan or remedial action report is submitted no later than six months after the effective date of the updated standard; (2) the remedial action workplan or remedial action report is approved by the Department or is certified by an LSRP; (3) the remediation standard specified in the remedial action workplan or remedial action report for a given contaminant is not greater by an order of magnitude than the updated remediation standard; and (4) the remedial action complies with the applicable regulatory timeframes pursuant to the Technical Requirements for Site Remediation at N.J.A.C. 7:26E-5 and 7:26D-7.2(e).

For NJPDES permits, if the Department includes a limit in an NJPDES permit for a parameter upon which an inadequate number of laboratories are certified to analyze, the Department would enable a phase-in period to provide time for laboratories to adjust current procedures to adequately reflect the lower limits. However, the Department does not anticipate such a scenario, as the parameters included in this rulemaking are either not required in the NJPDES permits or are listed as "monitor only." In all cases, these considerations would be permit-specific.

12. COMMENT: The commenter expresses concern that rounding provisions cited in the proposed rulemaking will require laboratories to commit significant information technology resources to revising data reporting workflows and online tools used by practitioners to compare data results to the revised regulatory criteria. (15)

    RESPONSE: The adopted rounding procedures are consistent with the rounding protocols employed for other environmental standards promulgated by the Department. The modern Laboratory Information Management System will be able to accommodate two significant figures as required by the adopted rounding requirements. The Department recognizes that updates to data reporting will be necessary, as the updated ground water quality criteria and PQLs are rounded to two significant figures. However, the Department does not anticipate that the proposed rounding policies to two significant figures will require significant information technology resources or time commitments.

Ground Water Quality Criteria (GWQC)

13. COMMENT: There are inconsistencies in the proposed rulemaking: "the numbers of constituents that are proposed to have the same ground water quality standards (nine actual versus eight as published in the New Jersey Register) or higher ground water quality standards (14 actual versus 15 as published in the New Jersey Register) as described in the Proposed Rules are incorrect." (1, 4, 8, and 14)

    RESPONSE: The Department acknowledges the commenters' observations regarding the number of constituents that have changes in the adopted criteria. As stated in the notice of proposal at 56 N.J.R. 3(a), "the proposed criteria and PQL updates will result in changes to the

ground water quality standards for 65 of the 73 constituents, with the remaining eight constituents having no change to the ground water quality standard. Of these 65 ground water quality standards, 50 will become more stringent, 13 will become less stringent, and two are new specific standards for constituents that currently have interim generic criteria." The commenters accurately note that nine constituents at N.J.A.C. 7:9C Appendix Table 1 were proposed to have the same GWQS. The nine constituents are: (1) acrylamide; (2) benz(a)anthracene; (3) benzo(a)pyrene; (4) benzo(b)fluoroanthene; (5) dibenz(a,h)anthracene; (6) 1-2-dibromo-3-chloropropane; (7) hexachlorobutadiene; (8) ideno(1,2,3-cd)pyrene; and (9) PFNA. In the case of benz(a)anthracene, the criterion is updated from 0.05 µg/L to 0.1 µg/L, which is the same as the existing PQL of 0.1 µg/L; hence the ground water quality standard is not changing. The adopted criteria and PQLs will result in changes to the ground water quality standards for 64 out of 73 constituents instead of 65 out of 73 constituents, as indicated in the notice of proposal.

Additionally, the commenters allege that the revised standards for 14 constituents at N.J.A.C. 7:9C Appendix Table 1 were higher, or less stringent, than their existing standards. Rather than the 14 constituents mentioned by the commenters and 13 constituents mentioned in the notice of proposal, the Department has identified 12 constituents with revised standards that are higher than their existing standards. These are: (1) benzo(k)fluoroanthene; (2) bromoform; (3) chrysene; (4) 4,4'-DDE (dichlorodiphenyldichloroethylene); (5) 1,1-dichloroethylene (1,1-DCE); (6) ethylene glycol; (7) hexachlorobenzene; (8) methanol; (9) methyl ethyl ketone (MEK) (2-butanone); (10) methylene chloride; (11) tetrahydrofuran; and (12) 1,1,1-trichloroethane (TCA). Consequently, the Department is addressing this

inconsistency. The ground water quality standards for 12 constituents are becoming less stringent by this rulemaking.

14. COMMENT: To derive the GWQC, the Department references some studies that go back a few years and some non-United States studies. How does the Department choose which parameters need to be reviewed and validated for updating these ground water quality standards? What is the review cycle for the analyte selection process? (14)

RESPONSE: Regarding the methodologies that the Department has used to derive the ground water quality criteria, please refer to the Response to Comments 15, 16, and 17. As explained in the Basis and Background for the GWQS, most of the human health criteria have not been updated since 2004. The Department identified all constituents from N.J.A.C. 7:9C Appendix Table 1 of the GWQS for which updated scientific information was available and re-evaluated the specific ground water quality criteria for those constituents to determine whether each criterion should be updated. Additionally, the human health criteria updates are based on a review of the information sources through 2017. The Department reviewed information relevant to improved analytical capabilities through 2020 for those constituents where their standards would be based on PQLs.

The GWQS do not mandate a review cycle for updating the ground water quality criteria and PQLs. However, the Department reviews relevant data and may derive new or updated criteria and/or PQLs when any of the following occurs: (1) new data or scientific information (for example, new toxicity factors or analytical methods) become available; (2) a need for a new ground water remediation standard arises; (3) new or revised Federal guidance or

standards become available; or (4) the Department receives a petition for rulemaking. The number of updates can be one or a few specific constituents (for example, when there is a need for a ground water remediation standard for a new constituent) or can include a larger number of updates, as in this rulemaking.

15. COMMENT: When selecting toxicity values to develop the proposed ground water quality standards, the Department did not follow the hierarchy of toxicity source information for the State according to the methodologies used for the Department's Soil Remediation Standards for the Ingestion-Dermal Exposure Pathway (NJDEP, 2021) or USEPA's Human Health Toxicity Values in Superfund Risk Assessments (USEPA, 2003). In particular, contrary to N.J.S.A. 58:10B-12.b(5), the Department decided to use a lower-tier source of information, including the USEPA PPRTVs, California EPA (CalEPA), and the Agency for Toxic Substances and Disease Registry (ATSDR), even though USEPA Integrated Risk Information System (IRIS) values are available. The Department should follow its hierarchy of toxicity source information and, when suggesting an alternative, the reasoning behind using new and, particularly, alternative sources of toxicity information should be made complete and explicit to the regulated community.

The Department established a hierarchy of toxicity source data based on "maintaining consistency with the other state standards," rather than based on the best available scientific information, and that the Department gives priority among the many sources of toxicity values available to the New Jersey Drinking Water Quality Institute (DWQI), rather than to the USEPA IRIS database. The process for developing an IRIS human health assessment involves

opportunities for public comment, interagency science consultations, and external peer review, which ultimately generates toxicity values that are representative of the most recent toxicological and epidemiological studies available and up-to-date methodologies for dose-response assessment, including the 2005 USEPA Guidelines for Carcinogen Risk Assessment.

The development of PPRTV is not as rigorous as the IRIS process, as it receives internal review by only two USEPA scientists, and external peer review by three independent experts in toxicology and human health risk assessment, which lacks the interagency review provided for IRIS values.

Minimum risk levels (MRLs) also undergo a similar robust review process. MRLs are developed by ATSDR and reviewed by the Health Effects/MRL Workgroup within the Division of Toxicology and Human Health Sciences, an expert panel of external peer reviewers, and the agency-wide MRL Workgroup; other Federal agencies participate as well, including the USEPA. MRLs are submitted for public comment through the toxicological profile public comment period. (1, 4, 8, and 14)

16. COMMENT: The Department is inconsistent and arbitrary in its use of toxicity values across different regulations/rulemaking efforts. To illustrate the inconsistent use of toxicity values, a comparison was made between the toxicity values used to develop the revised ground water quality criteria as shown in Table B of the Basis and Background for Criteria Development and Practical Quantitation Levels and those used by the Department to develop soil remediation standards for the ingestion-dermal exposure pathways in Table A-4 of soil remediation standards for the ingestion-dermal exposure pathway: Basis and Background (NJDEP, 2021) and N.J.A.C. 7:26D. This comparison relies on the fact that assessments for

both ground water and soil rely on oral toxicity values. For 25 of 51 constituents, the Department relied on different oral toxicity values for developing the proposed ground water quality criteria when compared to those used for developing the 2021 soil remediation standards. None of the 25 changes in toxicity values were due to new study data developed after 2021. Therefore, this means that for nearly 50 percent of constituents, the Department's chosen toxicity values for ground water quality criteria development differ from those relied on in 2021 even though no new toxicological information became available to the Department between 2021 and 2024. The Department should not use different oral toxicity values for soil and ground water, and the Department needs to fully explain and reconcile the uses of different toxicity values to the regulated community. (1, 4, 8, and 14)

RESPONSE TO COMMENTS 15 AND 16: The Department does not establish a hierarchy of information sources of toxicity factors specifically for developing ground water quality criteria for the State of New Jersey. However, the Department uses a hierarchy of toxicity factor sources to develop soil remediation standards (NJDEP, 2021), and the USEPA (2003) outlines a hierarchy of toxicity factor sources for Superfund risk assessments. The commenters compare the basis of the toxicity factors used by the Department to develop Soil Remediation Standards in 2021 with those used to update the human health criteria for the proposed ground water quality standards. To derive soil remediation standards, the Department follows the USEPA's Risk Assessment Guidance for Superfund Sites (USEPA, 2003). In contrast, for deriving ground water quality standards, the Department references USEPA's Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (USEPA, 2000b) to derive ground water quality standards. The sources of toxicity factors considered for

the update of the ground water quality criteria include the DWQI, USEPA IRIS, and the other sources mentioned in the Basis and Background document. The toxicity factor that was determined to have the most scientifically sound basis was then selected for ground water quality criteria development. The toxicity factor sources, except for the DWQI, were also considered by the USEPA in its 2015 updates of Human Health Ambient Water Quality Criteria (HH AWQC; USEPA, 2015). As discussed at the Department's Surface Water Quality Standards Stakeholder Meeting on August 29, 2023 (https://dep.nj.gov/event/surface-water-quality-standards-stakeholder-meeting-for-toxic-substances/; see slide 19 of https://dep.nj.gov/wp-content/uploads/workgroups/swqs-20230829-pres.pdf), the Department also intends to use these sources of toxicity factors to update its human health surface water quality criteria.

In updating the ground water quality criteria, the Department did not prioritize the toxicity factors developed by the DWQI. As stated in the GWQS Basis and Background, "[i]f there were toxicity data from multiple sources, the Department reviewed all available information and selected the most scientifically sound basis for ground water quality criteria development." For example, the current toxicity factor for trichloroethylene is a cancer slope factor developed by the DWQI in 1987, based on data from a 1984 study on liver tumors (DWQI, 1987). The updated toxicity factor is a cancer slope factor developed by IRIS in 2011 (USEPA, 2011) and based on increased cancer risk in humans exposed to trichloroethylene from studies published in 2003 and 2006. The updated cancer slope factor, which is used for the USEPA (2015) HH AWQC, considers more recent scientific information that was not available when the DWQI

(1987) cancer slope factor (CSF) was developed. Consequently, the 2011 IRIS CSF was chosen for deriving an updated ground water quality criterion for trichloroethylene.

The Department agrees that IRIS assessments are an important source of toxicity information. However, the Department concluded that the IRIS toxicity factors for certain contaminants are not the most scientifically sound basis for ground water quality criteria development. The IRIS toxicity factors for numerous contaminants included in the GWQS have not been updated for many years, often not since the 1980s. As such, these older IRIS toxicity factors are not based on "the most recent toxicological and epidemiological studies available and up-to-date methodologies for dose-response assessment, including the 2005 USEPA Guidelines for Carcinogen Risk Assessment," as discussed in Comment 15. Additionally, the development process for these older IRIS toxicity factors did not include opportunities for public comment or external peer review, as outlined in the USEPA (2022) Office of Research and Development (ORD) Staff Handbook for Developing IRIS Assessments. Therefore, the Department concluded that for some contaminants, toxicity factors from sources other than IRIS may provide the most scientifically sound basis for criteria development.

The USEPA PPRTVs were used as a source of toxicity factors by the USEPA (2015) in its update of the human health ambient water quality criteria (HH AWQC). PPRTVs provide toxicity factors (reference doses (RfDs) and cancer slope factors) that are developed by the USEPA ORD's Center for Public Health and Environmental Assessment (CPHEA), which also develops IRIS assessments. The USEPA subjects PPRTVs to both internal and external peer review. PPRTVs are developed when a toxicity factor for a constituent is not available in

IRIS. For example, if an RfD, but not a CSF, is available in IRIS for a contaminant, the PPRTV for the contaminant does not include development of an RfD, but it does include evaluation of the weight of evidence for carcinogenicity and development of a CSF, if appropriate.

17. COMMENT: The proposed ground water quality standards for cadmium, chlorpyrifos, 1,2-dichlorobenzene (ortho), 1,3-dichlorobenzene (meta), ethion, and ethylene glycol were based on Tier 3 (USEPA, 2003) category ATSDR MRLs. ATSDR specifically caveats that MRLs "…are intended to serve as screening levels…" and emphasizes that "[i]t is important to note that MRLs are not intended to define clean up or action levels for ATSDR or other Agencies." In the proposed rules and its corresponding Basis and Background document, the Department provides no explanation for contravening ATSDR's important statement regarding MRL useability. The Department should not be relying on MRLs or any other screening levels to compute proposed ground water quality standards. (1, 4, 8, and 14)

RESPONSE: The ATSDR develops MRLs to protect against non-carcinogenic effects through a similar process as is used for development of RfDs by the USEPA and the Department. ATSDR MRLs were used as a source of toxicity factors both by the USEPA (2015) in its update of HH AWQC and by the USEPA (2024) as a source of toxicity factors for drinking water Maximum Contaminant Levels (see 89 FR 32532). ATSDR MRLs are peer reviewed by ATSDR, scientists from other Federal agencies including the USEPA, and external reviewers. The ATSDR MRLs are also subject to public comment. Therefore, it is appropriate for the Department to use ATSDR MRLs in the development of ground water quality criteria.

18. COMMENT: The Department should use an Excess Lifetime Cancer Risk Level (ECLR) of one in one hundred thousand (1×10^{-5}) for setting chemical-specific soil remediation standards for carcinogens, instead of the one in one million (1×10^{-6}) ECLR currently used by the Department. The history of the $1x10^{-6}$ cancer risk management goal "does not reveal intent for use in any application other than safety of indirect and direct food additives," as stated on page 8 of the Draft Report of the Environmental Risk Assessment and Risk Management Study Commission (1995) that was mandated by the Industrial Site Recovery Act. The population expected to be exposed to indirect or direct food additives was estimated in the tens of millions. The Commission noted that "this level of population exposure potential does not exist at the vast majority of the remedial sites" in New Jersey. In addition, the Department also uses a cancer risk level of one in 10,000 ($1x10^{-4}$) in its air toxics program, as well as the USEPA, which accepts a cumulative cancer risk range up to $1x10^{-4}$ for Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), and Resource Conservation and Recovery Act (RCRA) sites within its supervision.

Therefore, the adopted ground water quality standards for carcinogens are at the more protective end of the range of what is deemed appropriate by the USEPA, as well as by the Department pursuant to other programs. These measures already ensure a substantial amount of human health protection; therefore, additional conservative assumptions and inputs, for example, in exposure assessment components of the derivation of numeric soil remediation standards, do not result in measurable, if any, incremental benefits to public health protection. The incremental health and environmental benefits of the more stringent numeric standards, if

any, are not commensurate with the burdens, costs, and other adverse consequences they will cause. (1, 4, 8, and 14)

RESPONSE: The New Jersey SDWA (N.J.S.A. 58:12A-1 et seq.) specifies that the one in one million (1×10^{-6}) lifetime cancer risk level be used as the basis for drinking water standards established by the Department. As ground water quality standards are intended to protect New Jersey's ground water for use as drinking water, it is appropriate that the 1×10^{-6} risk level be used as the basis for ground water criteria for carcinogens. It is noted that surface water quality criteria and soil remediation standards established by the Department for carcinogens are also based on the 1×10^{-6} risk level. The commenters state that the exposure assumptions used to derive the soil remediation standards are overly conservative and do not result in substantial "incremental benefits to public health protection." This refers to the exposure assumptions used to develop soil remediation standards and is, therefore, not relevant to the basis of ground water quality criteria. It is noted that the 1995 Environmental Risk Assessment and Risk Management Study Commission Report cited by the commenters is a draft that was never finalized. Additionally, the draft report addressed considerations for setting soil remediation standards and is, therefore, not relevant to development of ground water quality criteria.

19. COMMENT: The Department should provide its standard approach for using uncertainty factors. (14)

RESPONSE: As stated in the Basis and Background document, the Department's application of uncertainty factors to develop RfDs generally follows USEPA risk assessment guidance and involves professional judgement. Additionally, in accordance with N.J.A.C. 7:9C-1.7(c)4, the

Department's policy is to apply an additional uncertainty factor of 10 to the RfD for chemicals that are classified as possible (Group C) carcinogens pursuant to the USEPA (1986b) cancer risk assessment guidelines or suggestive human carcinogens pursuant to the USEPA (2005) cancer risk assessment guidelines if no cancer slope factor is available or the available cancer slope is judged by the Department not to be technically sound (NJDEP, 2004). As discussed in the Response to Comments 20, 21, and 22, this approach for possible and suggestive carcinogens is consistent with the approach used by the USEPA in development of Maximum Contaminant Level Goals (MCLGs), which are the human health criteria used for the USEPA MCLs.

20. COMMENT: The Department's formula for calculating ground water criteria for non-carcinogens includes an uncertainty factor of 10 for chemicals for which there is some evidence of carcinogenicity, but not enough evidence to develop quantitative estimates of the cancer slope factor. The lack of a cancer slope factor often reflects limited evidence of carcinogenicity, in which case, the chemical may have an equal probability of not causing cancer in humans. The commenters recommend that the uncertainty factor of 10 should be eliminated as it is arbitrary and may be revisited in the future if better evidence emerges regarding carcinogenicity. The Brownfield and Contaminated Site Remediation Act, N.J.S.A. 58:10B-1 et seq., directs the Department to avoid redundant conservative assumptions when developing remediation standards (N.J.S.A. 58:10B-12). The uncertainty factors for the following parameters are redundant and should be reevaluated: 1,2-dichlorobenzene (ortho), 1,3-dichlorobenzene (meta), 1,1-dichloroethane (1,1-DCA), and dimethyl phthalate. (1 and 14)

21. COMMENT: No uncertainty factor is used for chemicals that are non-carcinogens, or for carcinogens for which a cancer slope factor already exists. For a chemical classified as carcinogenic for which no cancer slope factor is available, one-tenth of the value for the reference dose is used (through use of an uncertainty factor of 10), which results in a lesser value for the criteria. The Department does not present a scientific basis for the use of an uncertainty factor of 10 applied to a non-carcinogenic toxicity value to account for potential carcinogenicity. If a chemical is classified as a carcinogen for which no cancer slope factor is available, the Department should instead make an effort to derive a new cancer slope factor and apply that cancer slope factor when deriving ground water quality criteria. (17)

22. COMMENT: The Department provides no scientific basis for reducing the noncancer RfD by an additional uncertainty factor of 10 to account for potential cancer effects of Group C carcinogens, nor is there any scientific basis to support such an adjustment. A 2004 Department document (2004 GWQS Basis and Background) states that the Department's methodology for Group C carcinogens "differs somewhat from the approaches used by the USEPA drinking water program and the USEPA Superfund program but incorporates elements from both."

    The USEPA does not incorporate an additional uncertainty factor into the RfD when no slope factor is available for a Group C carcinogen, and the drinking water program policy is to use a "slope factor with a 10^{-5} to 10^{-6} risk level." The Department determined that an additional uncertainty factor of 10 is necessary when using an RfD to protect against possible carcinogenic effects. The document then states that the use of the additional uncertainty factor is "consistent with USEPA's water programs as well as New Jersey's current standards and guidance for drinking water, surface water, ground water, and soil remediations." Neither of

the USEPA programs cited utilize a safety factor approach in conjunction with an RfD, so it is unclear how the elements of both programs are incorporated in the decision to use a safety factor. The justification provided in the 2004 Department document is circular logic and does not provide any scientific basis for the 10-fold safety factor. It is inappropriate to adjust toxicity values and reduce proposed ground water quality standards utilizing the Group C carcinogen policy, which is not based on sound scientific principles and has not been subject to peer review (N.J.S.A. 58:10B-12(b)). (1, 4, 8, and 14)

RESPONSE TO COMMENTS 20, 21, AND 22: Possible and suggestive carcinogens are contaminants for which available data suggest human carcinogenicity, but the data is not sufficient to conclude that the contaminants are probable or likely human carcinogens pursuant to the USEPA (1986b) or USEPA (2005) guidelines, respectively.

When a scientifically sound cancer slope factor is available, the criterion for possible and suggestive carcinogens is based on the cancer slope factor and the 1×10^{-6} cancer risk level. However, the data needed to develop a scientifically sound cancer slope factor are not available for many possible and suggestive carcinogens.

For possible and suggestive carcinogens that do not have a cancer slope factor, criteria are based on an RfD for noncancer effects that incorporates an additional uncertainty factor of 10 to protect for potentially more sensitive carcinogenic effects. A commenter stated that neither the USEPA Superfund program nor the USEPA drinking water program apply an additional uncertainty factor of 10 to RfDs for suggestive and likely carcinogens. However, the USEPA uses this approach in the development of RfDs used for MCLGs, which are the human health criteria used for the USEPA's drinking water standards (USEPA, 1985b). Another commenter

stated that the application of an additional uncertainty factor of 10 is "arbitrary." However, the Department concludes that a reference dose for possible and suggestive carcinogens that does not incorporate an additional uncertainty factor for potentially more sensitive carcinogenic effects is not sufficiently protective of potential carcinogenic effects.

It is also noted that the application of an additional uncertainty factor of 10 in reference doses for possible and suggestive carcinogens is well established in the Department's development of human health criteria and standards. This approach has been used for the development of New Jersey MCLs since 1987 (DWQI, 1987), GWQS since 1991 (NJDEP, 1991), surface water quality standards (SWQS) since 1992, and the Department's soil remediation standards since 2008 (see 39 N.J.R. 1574(a); 40 N.J.R. 3187(a)).

23. COMMENT: The Department's formula for ground water criteria for non-carcinogens includes a term for the relative source contribution (RSC), which allots a given percentage of the RfD exposure to the drinking water pathway. For many contaminants, a default RSC of 0.2, or 20 percent, is assumed, which effectively reduces the allowable exposure (reference concentration) by a factor of five. For many contaminants, there is no appreciable "background" exposure from pathways other than drinking water, such that the RSC could protectively be set to 1.0, or 100 percent. The Department should examine available literature to determine background exposure levels where possible and assign chemical-specific RSCs based on background exposure information. (1 and 14)

RESPONSE: The RSC is the portion of the RfD that is allotted to exposure through drinking water. The intent of applying an RSC is to ensure that, when the contaminant is present in

water at the criterion concentration, total exposure from all sources will not exceed the reference dose.

The Department followed the USEPA (2000b) guidance for selection of the RSCs used in criterion development. The USEPA (2000b) specifies a "floor" (lowest) value for the RSC of 0.2 (20 percent) and a "ceiling" (highest) value of 0.8 (80 percent). Therefore, the commenters' suggestion that an RSC of 1.0 (100 percent) be used if there is no appreciable exposure from sources other than drinking water is not in accordance with USEPA (2000) guidance. Additionally, USEPA (2000b) guidance specifies that the default value for the RSC of 0.2 (20 percent) be used when there is insufficient information to develop a chemical-specific value. The default RSC of 20 percent was used for most criteria because there is insufficient information to determine what percentage of the reference dose comes from exposure sources other than drinking water.

24. COMMENT: How are public welfare and organoleptic effects quantified? (14)

RESPONSE: Public welfare and organoleptic effects are addressed with ground water quality criteria that protect against undesirable properties of water other than health effects, including taste, odor, undesirable appearance, staining, corrosion, and aesthetic effects, such as discoloration of teeth or skin. In general, these ground water quality criteria are based on the Department's secondary drinking water standards (secondary MCLs) that protect against these effects (NJDEP, 2020).

25. COMMENT: The proposed changes to the GWQS will not have a measurable impact on public health. Many of the proposed ground water quality standards are lower than the MCLs that are used to protect the population that is drinking from public water supply systems. New Jersey has more than 600 community water systems that provide drinking water to approximately 87 percent of the State's population. Therefore, for a vast majority of the State's residents, the proposed ground water quality standards will have little-to-no impact on their public health because the water they drink and use for other purposes is held to a different standard, a standard or MCL that is higher (that is, protective but less stringent) than the proposed ground water quality standard. From a public health perspective, drinking water is either safe or it is not. Massachusetts, Connecticut, and even New Jersey, through its SDWA program, promulgate ground water cleanup or drinking water standards that are safe, yet higher than the proposed ground water quality standards. (1, 4, 8, and 14)

RESPONSE: As stated in the notice of proposal Summary, the Department makes every effort to update health-based ingestion standards concurrently, where appropriate; however, concurrent updates to MCLs and ground water quality standards are not always possible or necessary (see 56 N.J.R. 3(a)). There are several reasons why ground water quality standards and MCLs may differ. Ground water quality standards and MCLs consider both human health criteria and analytical PQLs. Analytical PQLs represent the lowest concentration of a constituent that can be reliably quantitated in laboratories, within specified limits of precision and accuracy in routine operating conditions (see N.J.A.C. 7:9C-1.4). Additionally, MCLs consider the limitations of available treatment removal technology in their derivation, which ground water quality standards do not consider.

26. COMMENT: For constituents that are known or potential carcinogens, the changes being proposed will not have a measurable public health impact because the background incidence rate for cancer is approximately 40 percent based on the American Cancer Society (ACS 2024). In other words, the background risk of cancer is approximately 0.4; the ground water quality standards protect to a cancer risk level of 0.000001. The proposed changes will not result in a measurable change to the background risk of cancer in the general public, which is true even for those chemicals that have proposed ground water quality standards that are lower by an order of magnitude. (1, 4, 8, and 14)

    RESPONSE: The background incidence rate of cancer is not relevant to the choice of the cancer risk level used as the basis for the ground water quality criteria. As stated in 2005 (see 37 N.J.R. 4226(b)), the 1983 amendments to the SDWA (N.J.S.A. 58:12A-1 et seq.) require that MCLs are set at a level such that cancer will not result in more than one in one million persons ingesting that chemical for a lifetime. The designated use for Class II-A ground water is potable water. Therefore, it is reasonable for the Department to use a lifetime risk level of $1x10^{-6}$ as the basis for the risk assessment for the ground water quality criteria.

27. COMMENT: The commenter questions some of the methodologies that the Department has used to derive the GWQC. The Department references some studies that go back a few years and some non-U.S. studies. In this case, the commenter is referring to ethylbenzene, in which the criterion was based on a 2014 Health Canada assessment. (14)

28. COMMENT: The Department used a lower tier of information for obtaining toxicity values, such as the USEPA's PPRTV, California EPA, and ATSDR, instead of IRIS, and, therefore, did not follow the hierarchy of toxicity source information. Some examples include the toxicity values underlying the ground water quality criteria for methoxychlor, cadmium, and ethylbenzene. In some cases (for example, heptachlor, heptachlor epoxide, and hexachlorobenzene), the Department attempts to justify this decision by simply stating that the alternative source used "more current risk assessment approaches," which is an inadequate explanation.

    The proposed changes include revisions to the ground water quality criteria for 53 constituents due to updates of toxicity values. The Department's descriptions of the proposed toxicity value changes are summarized, in many cases, in just one or two short paragraphs. The Department does not provide adequate documentation describing why proposed toxicity value changes are valid and/or computed correctly. This is a significant shortcoming of the proposed rulemaking because, for many constituents, the proposed ground water quality standards are based directly on the underlying changes to the toxicity values being employed by the Department. (1, 4, 8, and 14)

29. COMMENT: In 2015, the USEPA classified ethylbenzene as Group D (not classifiable as to human carcinogenicity). The current criterion is based on noncancer effects (kidney and liver) with an RfD of 0.1 mg/kg/day. In 2015, the USEPA updated the ambient water quality criteria for ethylbenzene using Health Canada's 2014 assessment where Health Canada derived a tolerable daily intake of 0.022 mg/kg/day. The Department intends on using this RfD to revise the criterion; therefore, the lower RfD will result in a lower regulatory value, changing from

700 ug/L to 150 ug/L. Why would the Department not use a United States-based toxicity value to set their regulatory value? Could the Department provide additional clarity for the selection of the RfD? Additionally, the USEPA still presents an RfD of 0.1 mg/kg/day (chronic) in their 1987 IRIS assessment (https://iris.epa.gov/ChemicalLanding/&substance_nmbr=51). In 2009, the USEPA also presented a PPRTV of 0.05 mg/kg/day (subchronic) (https://cfpub.epa.gov/ncea/pprtv/chemicalLanding.cfm?pprtv_sub_id=1746), which in 2023, the USEPA used to arrive at a noncancer screening level in their RSL of 500 ug/L (https://semspub.epa.gov/work/HQ/404394.pdf).

There are several inconsistencies in the setting of criterion for different chemicals. In the case of ethylbenzene, the Department does not consider the cancer slope factor derived by the California EPA. However, for heptachlor, the Department uses a cancer slope factor derived by the California EPA to set the criterion. As the Department appears to be relying on assessments conducted by the USEPA, the Department should ensure that there is consistency between the criterion they set and the USEPA's current Regional Screening Levels for tap water (November 2023). (17)

RESPONSE TO COMMENTS 27, 28, AND 29: The basis for each of the updated toxicity values is presented in Section 4.1.1 of the Basis and Background document (NJDEP, 2023). Additional details regarding the basis of the updated toxicity factors are provided in the references cited for each updated criterion in the Basis and Background document.

The bases of the updated toxicity factors for the six contaminants mentioned by the commenters are summarized below.

- *Cadmium*: The previous toxicity factor is the RfD published by IRIS in 1989 (USEPA, 1989a). This toxicity factor is based on kidney damage in humans and utilizes information from a USEPA (1986a) evaluation. The updated RfD considers more recent scientific information related to human kidney damage and an ATSDR (2012) meta-analysis of the effects of cadmium on indicators of kidney function in epidemiology studies published after the 1989 IRIS assessment.
- *Ethylbenzene:* The previous toxicity factor is the RfD posted by IRIS in 1985 (USEPA, 1985a). It is based on liver and kidney damage in a 1956 study of female rats exposed for 182 days (six months) (Wolf et al., 1956). The updated RfD, which is used for the USEPA (2015) HH AWQC, considers more recent scientific information that was not available when the IRIS (USEPA, 1985a) assessment was developed. It is based on a toxicity factor for noncancer effects developed by Health Canada (2014) from a chronic inhalation study conducted by the National Toxicology Program (NTP) in 1999, and the approaches used by Health Canada for development of the toxicity factor were generally similar as those used by the Department and the USEPA for RfD development. In comparison with the 1956 study used by IRIS, NTP (1999) used a more current protocol, evaluated both mice as well as rats, used more animals per dose group (10 versus 50), and evaluated more endpoints. NTP (1999) determined that mice, which were not included in the 1956 study, are more sensitive to ethylbenzene than rats. Additionally, it identified pituitary gland toxicity as a sensitive effect of ethylbenzene, which was not evaluated in the 1956 study. As such, the Health Canada

toxicity factor was determined to be the most scientifically sound toxicity factor that is available for ethylbenzene.

- *Heptachlor:* The previous toxicity factor is a cancer slope factor based on liver tumors in mice that was developed by IRIS in 1987 (USEPA, 1987b). The updated cancer slope factor, which is used for the USEPA (2015) HH AWQC, was developed by the CalEPA in 1999 from the same mouse tumor data used by IRIS (USEPA, 1987b). However, the CalEPA (1999) cancer slope factor uses more current risk assessment approaches that were not used by IRIS (USEPA, 1987b), including correcting for early mortality (deaths during the study that occurred before the expected lifespan of the mice) and the current approach of mouse-to-human scaling based on body weight raised to the three-fourths power ($BW^{3/4}$) rather than to the two-thirds power ($BW^{2/3}$), which was first recommended by the USEPA (1992).
- *Heptachlor epoxide:* The previous toxicity factor is a cancer slope factor based on liver tumors in mice that was developed by IRIS in 1987 (USEPA, 1987a). The updated cancer slope factor, which is used for the USEPA (2015) HH AWQC, was developed by the CalEPA in 1999 from the same mouse tumor data used by IRIS (USEPA, 1987a). However, the CalEPA (1999) cancer slope factor utilizes a more current risk assessment approach, including animal-to-human scaling based on body weight raised to the three-fourths power ($BW^{3/4}$) rather than the two-thirds power ($BW^{2/3}$). This method, first recommended by the USEPA in 1992 (USEPA, 1992), was not used by IRIS in the 1987 assessment (USEPA, 1987a).

- *Hexachlorobenzene:* The previous toxicity factor is a cancer slope factor that was developed by IRIS in 1989 from data on liver tumors in rats (USEPA, 1989b). The updated cancer slope factor, which is used for the USEPA (2015) HH AWQC, was developed by the USEPA Office of Pesticide Programs (2008) from the same rat tumor data used by IRIS (USEPA, 1989b). However, the USEPA Office of Pesticide Programs (2008) cancer slope factor uses a more current risk assessment approach, including animal-to-human scaling based on body raised to the three-fourths power ($BW^{3/4}$) rather than the two-thirds power ($BW^{2/3}$). This method, first recommended by the USEPA in 1992 (USEPA, 1992), was not used by IRIS (USEPA, 1989b).
- *Methoxychlor:* The previous toxicity factor is the RfD developed by IRIS in 1990 (USEPA, 1990) based on loss of litters in a 1986 developmental study in rabbits (Kincaid Enterprises, Inc., 1986). The updated RfD, which is used for the USEPA (2015) HH AWQC, considers more recent scientific information that was not available when the IRIS (USEPA, 1990) assessment was developed. It is based on a toxicity factor developed by the CalEPA (2010) from toxicological effects observed in a 1999 developmental study on mouse offspring (Welshons et al., 1999). The 1999 mouse study identified more sensitive effects than the 1986 rabbit study used by IRIS (USEPA, 1990), and it was not available to IRIS in its 1990 assessment.

The updated heptachlor criterion uses the toxicity factor from the CalEPA Public Health Goal (that is, drinking water criterion, similar in derivation to a ground water criterion). For ethylbenzene, CalEPA (CalEPA 2007a, b) used non-carcinogenic effects from a chronic study (NTP, 1996) as the basis for its public health goals and concluded that the evidence for

carcinogenicity from the same study (NTP, 1996) was too uncertain to support development of a cancer slope factor.

The commenters' recommendation that the Department be consistent between the criteria it sets and the USEPA's current Regional Screening Levels (RSLs) for tap water is not possible because the GWQC and USEPA RSLs for tap water are not directly comparable. Ground water quality criteria are intended to protect for a lifetime of exposure, and they use chronic exposure assumptions, while RSLs are developed based on the assumption of exposure during childhood or for a fraction of an adult's lifetime. Additionally, as discussed in the Response to Comments 15, 16, and 17, there are differences in the sources of toxicity factors considered in updating the ground water quality criteria and those used by the USEPA for RSLs.

30. COMMENT: The ground water quality standards development considers oral routes of exposure, and not inhalation exposure. The ethylbenzene and cobalt proposed ground water quality criteria are based on toxicity values from the USEPA's Office of Water (USEPA, 2015) and a PPRTV, respectively, and are currently under reassessment pursuant to the IRIS program. The Department should not propose modified toxicity values for these constituents. Instead, the Department should allow the reassessment process to come to completion and adopt the post-reassessment IRIS toxicity values. (1, 4, 8, and 14)

RESPONSE: The current IRIS assessment of cobalt is focused on carcinogenicity through inhalation exposure. IRIS does not plan to evaluate toxicological effects of cobalt through oral exposure (https://www.epa.gov/system/files/documents/2023-

10/iris_program_outlook_oct2023.pdf). This IRIS inhalation assessment is not relevant to the development of the ground water quality criterion for cobalt.

IRIS does not anticipate release of its draft ethylbenzene assessment until 2026, and the timeframe for the finalization of this assessment is indefinite (https://www.epa.gov/system/files/documents/2023-10/iris_program_outlook_oct2023.pdf). The Department will review the assessment when it is final.

31. COMMENT: The Department should not implement the cobalt RfD as proposed. The 2008 PPRTV study, from which the proposed chronic RfD for cobalt (0.0003 mg/kg-day) is derived, uses a composite safety factor of 3,000 to account for inter-individual variability, sub-chronic to chronic conversion, and converting from a lowest-observed-adverse-effect level (LOAEL) to a no-observed-adverse-effect level (NOAEL), and a factor of three for a lack of multi-generation toxicity studies. Using the Department's proposed body weight of 80 kg, the proposed cobalt RfD is equivalent to a daily intake of 15 µg/day (0.003 mg/kg-day × 80 kg). Finley et al. (2012) notes that the RfD derived for the PPRTV profile (USEPA, 2008a) is within the range of the typical dietary intake of the U.S. population (5-40 µg/day) for a 70-kg person, making the RfD impractical and the use of safety factors by the PPRTV overly conservative. ATSDR confirms the dietary intake of cobalt, stating that the average person consumes about 11 µg of cobalt per day (ATSDR, 2004). Finley et al. (2012) propose a chronic RfD of 0.03 mg/kg-day that is more in line with the currently accepted RfD of 0.02 mg/kg day. The current range of dietary cobalt intake is already at or above the Department's proposed RfD for

generating ground water quality standards; therefore, implementing this proposed change will not result in a measurable benefit to public health. (1, 4, 8, and 14)

RESPONSE: The daily intake for an adult weighing 80 kg at the RfD of 0.0003 mg/kg/day is 24 µg/day, which is higher than 15 µg/day. The information attributed to Finley et al. (2012) regarding a typical daily U.S. intake of cobalt of five to 40 µg/day is not supported by the information stated in Finley et al. (2012) or the sources cited by Finley et al. (2012). Finley et al. (2012) states that "most individuals consume [five to 40] µg/day in their diet," but they do not state that this range of dietary intake applies to the U.S. population. Additionally, Finley et al. (2012) cite the World Health Organization (WHO) (Kim et al., 2006) and Hokin et al. (2004) as the sources for this range of dietary intake. WHO (Kim et al., 2006) states that "the general population is exposed to cobalt primarily through the food supply, with estimated intake of [five to 40] µg/day through the diet," but does not provide the source of this range of values or state that this range applies to the U.S. Hokin et al. (2004) specifically state that the average U.S. daily cobalt intake is 3.4 to 11.6 µg/day, which is below the exposure of an 80 kg adult at the reference dose of 24 µg/day, which does not support the commenters' statement that "the current range of dietary cobalt intake is already at or above the Department's proposed RfD."

32. COMMENT: In the case of cadmium, the Department's proposed RfD value of 0.0001 mg/kg-day is five times lower than the present RfD used to derive ground water quality criteria (0.0005 mg/kg-day). However, ATSDR (2012) notes in its toxicological profile that the proposed RfD is lower than the age-weighted cadmium dietary intake of 0.3 µg/kg-day (0.0003 mg/kg-day) estimated by a cadmium dietary exposure model (Choudhury et al. (2001), as

referenced by ATSDR (2012)). Thus, similar to cobalt, the Department's proposed RfD for cadmium is in the range of background dietary intake; application of the proposed RfD is not practical and will not result in a measurable impact on public health. (1, 4, 8, and 14)

RESPONSE: ATSDR (2012) notes that the value of 0.3 µg/kg/day cited by the commenters for dietary intake of cadmium "is derived from the cadmium dietary exposure model which estimates food cadmium concentrations from national survey data and food consumption patterns …" and that "… it should not be considered a precise value." The previous criterion uses the reference dose posted by IRIS in 1989 (USEPA, 1989a), which came from a USEPA (1986a) evaluation. As stated in the Response to Comments 27, 28, and 29, the ATSDR (2012) MRL used for the updated cadmium criterion is based on the same effect, kidney damage in humans, as the USEPA (1989) reference dose used for the previous criterion, but it considers more recent scientific information related to human kidney damage and an ATSDR (2012) meta-analysis of the effects of cadmium on indicators of kidney function in epidemiology studies published after the 1989 IRIS assessment.

33. COMMENT: The formula in the proposed rule amendment for deriving ground water quality criteria for a carcinogenic chemical is based on adult exposure parameters, specifically a proposed updated value of 80 kg for the body weight and 2.4 L/d for the water ingestion rate. However, in estimating the Department's proposed ground water quality criteria of 0.022 ug/L for vinyl chloride, the Department appears to be using the IRIS cancer potency slope factor of 1.5 kg-d/mg, which is based on the assumption of lifetime exposure from childhood. The Department should use the adulthood lifetime exposure potency of 0.75 kg-d/mg

(https://iris.epa.gov/ChemicalLanding/&substance_nmbr=1001) instead, which would be consistent with the adult exposure parameters of 80 kg for the body weight and 2.4 L/d for the water ingestion rate, and would result in a ground water criterion of 0.044 µg/L. (1 and 14)

RESPONSE: The ground water quality criteria are intended to protect for chronic exposure, beginning at birth and continuing throughout the lifetime. The USEPA IRIS assessment (USEPA, 2000a) concluded that the lifetime cancer risk of exposure to vinyl chloride beginning in early life and continuing throughout the lifetime is approximately twice the risk of exposure, as opposed to starting in adulthood and continuing throughout the lifetime. Specifically, IRIS provides drinking water concentrations of vinyl chloride that are predicted to result in specified cancer risk levels (including 10^{-6}, which is used for the criteria) for exposure through drinking water starting at birth (through adulthood) using the cancer slope factor of 1.5 $(mg/kg/day)^{-1}$ and for exposure from drinking water starting in adulthood using the cancer slope factor of 0.75 $(mg/kg/day)^{-1}$. Therefore, it is appropriate for the criterion to be derived using the cancer slope factor of 1.5 $(mg/kg/day)^{-1}$, which considers the increased risk when exposure begins in early life as compared to when exposure begins in adulthood.

34. COMMENT: The Department should revise the proposed ground water quality standards for the parameters listed below that are many times more stringent than Massachusetts' GW-1 ground water standards. The Department uses the same excess lifetime cancer risk level of $1x10^{-6}$ as Massachusetts' GW-1 ground water standards and Connecticut's Ground Water Protection Criteria (GWPC). For noncancer toxicological endpoints, the Department's proposed ground water quality criteria and Connecticut's GWPC are based on a hazard

quotient of 1.0 (Connecticut Department of Energy and Environmental Protection (CTDEEP), 2021), while Massachusetts' GW-1 standards for non-carcinogenic constituents are based on a more stringent hazard quotient of 0.2. Given that Massachusetts and Connecticut are protecting to the same or lower risk thresholds as New Jersey, numeric criteria should be relatively consistent among the states, with Massachusetts' GW-1 standards for non-carcinogens being lower. However, the Department proposed many ground water quality standards that are significantly lower than those promulgated by the other states.

The Department has proposed ground water quality standards that are, on average, more than 20 times lower than Massachusetts' most conservative risk-based ground water standards, known as GW-1 ground water standards for 39 constituents. For the constituents that the Department proposes to change by an order of magnitude, the corresponding Massachusetts GW-1 criteria are less stringent by:

1. 10 times (heptachlor epoxide);
2. 20 times (1,3-dichlorobenzene);
3. 57 times (vinyl chloride); and
4. 400 times (methoxychlor).

Similarly, for those compounds that typically drive remediation, the proposed ground water quality standards are unnecessarily more stringent than Massachusetts' GW-1 standards by:

1. Five times (cadmium and ethylbenzene);
2. 11 times (benzene);
3. 13 times (tetrachloroethylene);
4. 17 times (1,2-dichlororethane);

5. 18 times (trichloroethylene); and

6. 57 times (vinyl chloride).

The Department should revise the proposed ground water quality standards for the parameters written below, as they are conservative beyond what is necessary to protect human health and the environment; in fact, they are many times more stringent than Connecticut's ground water protection standards. There are 40 constituents in common between Connecticut's and the Department's ground water protection standards; 30 (or 76 percent) of them have corresponding proposed ground water quality standards that are lower than Connecticut's GWPC. For those 30 constituents, the Department's proposed ground water quality standards are, on average, more than 25 times lower than the criteria established by Connecticut. For the constituents that the Department proposes to change by an order of magnitude, the corresponding Connecticut GWPC are less stringent by:

1. 10 times (heptachlor epoxide);

2. 120 times (1,3-dichlorobenzene);

3. 57 times (vinyl chloride);

4. 40 times (cyanide); and

5. 400 times (methoxychlor).

Similarly, for those compounds that typically drive remediation, the Department's proposed ground water quality standards are more stringent than Connecticut's protection criteria by:

1. Five times (cadmium and ethylbenzene);

2. Two times (benzene);

3. 13 times (tetrachloroethylene);
4. Three times (1,2-dichlororethane);
5. 18 times (trichloroethylene); and
6. 57 times (vinyl chloride).

(1, 4, 8, and 14)

RESPONSE: The commenters did not provide a reference for Connecticut's GWPC values it referenced. While the Department was able to infer that the values may have come from sources such as action levels, the GWPC, or the USEPA MCLs, the Department cannot respond to specific values outlined by the commenters without knowing the precise source of the data provided. In general, however, differences between the Department's GWQS and Connecticut's GWPC likely reflect differences in policies or risk assessment methodologies. For example, Connecticut may choose to align its standards more closely with the USEPA's MCLs and health-based guidance, while the Department may choose to consider other exposure pathways or site-specific conditions.

The Department also notes that its ground water quality standards and the Massachusetts GW-1 standards consider both the health-based drinking water concentration (that is, the criterion) and the analytical PQL (MassDEP, 2024). Therefore, differences between the ground water standards may arise from contaminant-specific differences in any of these parameters. The Department also notes that the hazard quotient of 0.2 used by Massachusetts for the derivation of the GW-1 standards for non-carcinogenic effects is equivalent to the default RSC factor of 0.2 used by the Department in derivation of ground water criteria based on non-carcinogenic effects. The difference in terminology used by Massachusetts (hazard index) and

the Department (RSC) for the same factor does not affect the numerical values of the health-based ground water criteria.

Practical Quantitation Levels (PQLs): Laboratories/Methods

EPA Analytical Methods Used in PQL Establishment

35. COMMENT: The proposed amendments include PQLs based on several USEPA analytical methods that may not be appropriate for the analysis of ground water and are not currently certified by the Department's Office of Quality Assurance for use in analyzing ground water. (1 and 14)
36. COMMENT: The Department indicates that the data was based on EPA Method 524.3 SIM analysis, which does not appear pertinent to ground water/non-potable water (NPW) standards. Additionally, this method is not accredited for NPW/ground water by the Department. (16)
37. COMMENT: In Table C from the Basis and Background document, non-standard analytical methods are listed for establishing the PQLs. For example, USEPA drinking water methods 524.2 and 524-SIM are applied to a ground water rule. However, certified laboratories do not employ USEPA drinking water methods to analyze NPW ground water samples and do not report to the MDL, which is a statistically generated number. (10)
38. COMMENT: There are discrepancies in Table C in the Basis and Background document, where non-standard analytical methods are listed for establishing listed PQLs. Methods were misapplied here, such as USEPA drinking water methods 524.2 and 524-SIM being used for a ground water rule, despite most certified laboratories not supporting these non-standard methods for NPW ground water samples. Did certified laboratories provide their RL and MDL

tables for standard SW846 analytical methods typically used for ground water sample analysis in site remediation applications, and were those tables utilized in developing PQLs for this rulemaking? (15)

RESPONSE TO COMMENTS 35, 36, 37, AND 38: Through the GWQS, the Department designates Class II-A ground water as potable water. Therefore, the Department selects drinking water analytical method (USEPA 500 series methods), where available. Alternatively, the Department selects the most sensitive promulgated analytical method to be protective of drinking water and public health. The GWQS at N.J.A.C. 7:9C-1.9(c)3ii mandates that the most sensitive analytical method providing positive constituent identification be used, with preference given to PQLs derived from MDL data from the New Jersey Department of Health (DOH) – Public Health and Environmental Laboratories, which is the New Jersey primary laboratory for drinking water analysis. The MDL is multiplied by a factor of five to account for the variability and uncertainty that can occur at the MDL.

The Department selects analytical methods to develop PQLs that are developed without regard to certification or commercial laboratory capability. The party conducting a remediation is expected to select an analytical method that appropriately characterizes ground water quality. Therefore, if the concentrations are quantifiable, any approved analytical method can be used. For example, there are other methods that are offered for certification and are widely used in the laboratory community that can also achieve these limits, such as EPA Method 624.1, EPA Method 625.1, SW-846 8260D, and/or SW-846 8270E. These methods include the option for SIM analysis, which may be used to achieve the standard whenever SIM is an option in the method. In most cases, the Department does not offer separate SIM certification for all methods

that allow the use of SIM. Therefore, if a laboratory is certified for a method that includes the SIM option, they may utilize SIM using the current certification for that method.

The Department acknowledges that there may not be certified laboratories for all methods referenced in its rulemaking at this time. However, many of these methods are offered for certification. In addition, there are certified laboratories for other methods that can achieve the adopted standards, such as the methods mentioned in this response. As discussed in its notice of proposal Summary at 56 N.J.R. 3(a), the Department considered input from the GWQS stakeholder process about the currently utilized methods employed by the commercial laboratory community to derive the PQLs for several parameters (see also the Response to Comments 56 and 57).

39. COMMENT: Many PQLs cited by the Department are based on EPA Method 524 and its variants, which utilize SIM to achieve the PQLs. EPA Method 524.4 states that "the option to operate the mass spectrometry (MS) in SIM or selected ion storage (SIS) mode is restricted to analytes that cannot be effectively analyzed in full-scale mode, for example, 1,2-dibromoethane and 1,2-dibromo-3-chloropropane. The SIM detection mode should not be used to enhance analyte signal for instrumentation that is not properly optimized and maintained (p. 4)." Although the SIM detection limits are listed at Table 10 of the method, chemicals such as benzene and vinyl chloride are readily analyzed with acceptable response factors in full scan mode and are not applicable to the SIM analysis option by the method according to its own statement. Therefore, the proposed method for determining the PQL is not appropriate, and the rulemaking should be withdrawn. (1, 7, and 8)

RESPONSE: The Department agrees that the SIM detection mode should not be used to enhance an analyte signal for instrumentation that is not properly optimized and maintained. However, the Department interprets the statement quoted by the commenters to address those situations where instruments are not properly maintained and optimized to achieve method specified QC requirements. EPA Method 524.4 does not state that SIM cannot be used when instruments are performing acceptably. As such, SIM can be used if it is determined that it would be beneficial to achieve necessary analytical sensitivity.

40. COMMENT: For 11 analytes, methods validated with finished drinking water are used, but the samples being assessed are raw ground water. This mismatch can increase method detection limits due to interference from complex ground water matrices. The Department should switch to methods developed for raw ground water samples. (1, 4, 8, and 14)
41. COMMENT: The USEPA's 500 method series are for potable water and are, therefore, inadequate for ground water analysis. Due to the turbidity and interference in ground water, the proposed analyses will not meet the quality assurance standard set by the methods to ensure reliable and usable data for the intended purpose. EPA Method 524.4, for example, explicitly states that its applicability is limited to finished drinking waters only, rendering it inappropriate for ground water analysis (EPA Method 524.4, page 1). The method selected by the Department for the rulemaking is unsuitable, and the rulemaking should be withdrawn. (1 and 7)
42. COMMENT: The Department's Basis and Background document references several potable water analytical methods unsuitable for ground water analysis, even if certified by the

Department. These methods explicitly state their inapplicability for ground water analysis, having only been evaluated for finished drinking water. Pertinent examples include EPA Methods 528 and 529. EPA Method 528 for phenol analysis may be potentially applied to untreated source waters but has not been evaluated for such uses. Method 529 for military explosives analysis, including RDX, was meant for finished drinking water and has not been evaluated for other water types. Similar to USEPA Method 524.4, EPA Methods 528 and 529 have not been evaluated for the analysis of ground water by the USEPA and, thus, it is inappropriate to use it for this context.

The Department regulates certified laboratories and distinguishes between potable and non-potable water certification (that is, ground water) in their regulations. Laboratories are not certified for ground water analysis using potable water methods; instead, ground water is certified separately from potable waters. For the reasons stated above, the proposed rulemaking should be withdrawn. (1 and 14)

43. COMMENT: EPA Method 524.4 SIM for benzene and EPA Method 528 for 4-chloro-3-methyl phenol are part of the 500 Series methods meant for finished drinking water. Labs avoid analyzing ground water on this equipment due to potential equipment damage. These methods detect low concentrations, requiring dilution for specific volatile organic compounds, leading to elevated RLs/MDLs and failure to meet PQLs.

Currently, no laboratories are certified for EPA Method 524.2 SIM or EPA Method 528. If the Department approves laboratories to use alternative methods for these compounds, they may be able to meet these limits by running EPA Method 8260 SIM and EPA Method 8270 SIM for benzene and 4-chloro-3-methyl phenol, respectively. However, this requires redoing

MDL/RL studies, new capability demonstrations, standard operating procedure (SOP) updates, and certification submissions. Procuring laboratory certifications by the effective date of this rulemaking in the GWQS would necessitate the Department expediting certification requests. For the reasons stated above, the proposed rulemaking should be withdrawn. (1 and 14)

44. COMMENT: The Department's selected laboratory methods, such as Method 524.2 SIM for volatile organic compounds (VOCs) and Method 1999 for pesticides, are unsuitable for ground water analysis or are not achievable because there are currently no laboratories certified by the Department. The methods listed in Table C of the Basis and Background are not currently certified by any laboratory in New Jersey, which renders them unattainable: EPA Methods 524.4 SIM, 603, 1699, 605, 642, 611, 1625C, 528, and 529. For the reasons stated above, the proposed rulemaking should be withdrawn. (1 and 7)

RESPONSE TO COMMENTS 40, 41, 42, 43, AND 44: The Department acknowledges that there may not be certified laboratories for all methods referenced in its rulemaking. However, many of the methods are offered for certification.

The commenters correctly state there are no laboratories certified for EPA Method 524.2 SIM. EPA Method 524.2 does not allow for the SIM option to be performed. In addition, there are methods that specifically list SIM as an allowable option and those may be used with the specific method certification, such as EPA Methods 624.1 or 625.1, which include the SIM allowance. Laboratories will need to adjust the analytical conditions needed to measure at a lower standard requirement, and SOPs will need to be updated, as is routine for any changes in procedure. As for allowing time for the certification process, laboratories that possess certification for a method that can achieve the new limits will simply need to revise their

internal processes without any additional certification application. Only those laboratories that are not certified for a sufficiently sensitive method will need to go through the certification process. In response to the comment pertaining to the lack of certified laboratories, while there may not be certified laboratories for all methods mentioned in the rulemaking at this time, many of the methods are offered for certification. In addition, there are certified laboratories for other methods that can achieve the standards (see the Response to Comments 35, 36, 37, and 38).

The Department recognizes the concern regarding using 500 series methods for non-potable waters. It is important to recognize that, operationally, the methods are similar and can achieve similar limits of quantitation.

Upon review of responses from laboratories recently surveyed regarding their MDLs and limits of quantification (LOQs), laboratories have demonstrated the ability to achieve the recommended PQLs using not only 500 series methods but also non-potable methods, that is, 600 series and 8000 series methods. Based on the MDL and LOQ/RL data voluntarily submitted by the laboratories, the Department is confident that laboratories can meet the adopted PQLs with currently certified methods. To reiterate, methods that are referenced in the Basis and Background document are not necessarily required to be used. Please refer to the Response to Comments 35, 36, 37, and 38 for more information on why the Department selected certain drinking water methods for PQL development.

Laboratory Certification and Analytical Methods

45. COMMENT: The Department's chosen sample methodology is not certified by any laboratory in New Jersey. Additionally, each proposed EPA Method 524 involves different sample preparation procedures. Therefore, using these methodologies would require separate analyses, resulting in both logistical challenges for the laboratory and increased costs for the client. (13)

46. COMMENT: For 25 of the 39 constituents with proposed PQLs, no laboratory is certified by the Department to run the analyses specified in Table C of the Basis and Background document. Of those 25 constituents, 20 of the proposed PQLs are identified as the proposed ground water quality standards. Table 2 summarizes the analytical methods used to derive the proposed PQLs for which the Department has not certified a single laboratory. Table 2 also lists the relevant environmental matrices associated with the referenced analytical methods used to derive the proposed PQLs.

    N.J.A.C. 7:26E-2.1(a) specifies that laboratories involved in any laboratory activity that provides data of known quality "must have all applicable certifications for the specific parameters or categories for which certification exists." As a result, the person responsible for conducting the remediation is required to ensure that the laboratory is capable of performing the analysis and meeting the data quality objectives specified in the site-specific quality assurance project plan (QAPP). This puts an undue burden on the regulated community as it will require significant time and effort to ensure that the laboratory can achieve this and would also require the regulated community to revise their QAPPs, accordingly. (1, 4, 8, and 14)

47. COMMENT: There are currently no laboratories certified for the following analytes and methods: 603 for Acrolein; 1699 for Aldrin, chlordane, and beta-BHC; 605 for benzidine; 642

for 1,1-biphenyl; 611 for bis(2-chloroethyl) ether; 1625C for 4-chloroaniline (p-chloroaniline); and 528 for 4-chloro-3-methylphenol. If the Department does not allow for the substitution of alternate methods that achieve proposed standards, laboratories will incur major financial costs to order, set up, perform MDL/RL studies, and complete the Department certification process. These costs could easily run into hundreds of thousands to a million dollars, much of which the laboratories would pass along to the end-use consumer (PRCR/LSRP). Existing laboratories, especially some of the mid-sized and smaller laboratories, may not be able to make these capital investments, which would further limit the capacity of the other laboratories and increase costs and turnaround times. For the reasons stated above, the proposed rulemaking should be withdrawn.

Certain New Jersey-certified laboratories have noted that the proposed PQLs can be achieved by modifying existing USEPA analytical methods, such as EPA Method 8260 using SIM. However, the Department requires, at N.J.A.C. 7:18, that laboratories be certified for the specific method and compound using Department-sanctioned analytical methods (DSAMs) before accepting any samples for analysis. The process for certification for an alternative test procedure (ATP) to modify an existing method is also more stringent than commonly utilized DSAMs and can only be utilized by the applicant. No laboratories are currently certified for the analysis of benzene and vinyl chloride using EPA Method 8260D SIM; therefore, it is impossible to unequivocally state that the validated method detection limits would be sufficiently sensitive to meet the data quality objectives for these compounds in the proposed regulation. For the reasons stated above, the proposed rulemaking should be withdrawn. (1 and 14)

RESPONSE TO COMMENTS 45, 46, AND 47: The selected promulgated analytical methods are the most sensitive methods that can achieve better sensitivity than current analytical methodology to allow the Department to determine ambient levels closer to the developed criteria without regard to certification or commercial laboratory capability. These recommendations are provided to meet the human health criteria or approach those criteria because existing analytical methods utilized by certified laboratories do not employ these methods on a routine basis. The comments related to the lack of certified laboratories and the suitability of the methods are addressed in the Response to Comments 35, 36, 37, and 38. In addition, if a certified method includes the option for SIM analysis, then SIM is not considered a method modification, and an ATP application is not applicable. The Department understands that there may be additional costs associated with either new certification or adjustments in procedures to current certifications to achieve the adopted standards; however, it believes the associated costs are justified in the support of public health.

Laboratories Unable to Meet Adopted Standards

48. COMMENT: Are laboratories able to get down to the specific standards proposed? (14)
49. COMMENT: Certain PQLs are not attainable and/or are based on analytical methods for drinking water, not ground water. The Department has no laboratories certified for certain constituents. (4)
50. COMMENT: Laboratories will face challenges in meeting the proposed limits for several substances. Meeting some proposed limits may require more expensive analyses, such as 8260D 25 mL purge low level or 8270E SIM. (2)

51. COMMENT: The Department should ensure laboratory capabilities are currently adequate or sufficiently upgraded before adopting new standards to avoid creating delays in the State's already long and costly development and remediation timelines. (11)

52. COMMENT: Upon comparison of the proposed regulatory criteria with laboratory reporting limits, it is noted that meeting the proposed limits for 32 target compound list (TCL) organic compounds and one target analyte list metals element would pose a significant challenge. These challenges are exacerbated by matrix interferences commonly found in environmental sample media, such as high concentrations of target analytes, which require dilutions, leading to elevated reporting limits. (15)

53. COMMENT: The feasibility of a reporting limit for 1,2,3-TCP pursuant to SW 8011 may not be reasonable. (16)

54. COMMENT: Several of the proposed regulatory criteria are low, presenting a significant challenge for production laboratories to comply using conventional analytical methods like SW846, for which laboratories are certified. Certified laboratories will need to conduct extensive MDL studies to identify a suitable analytical approach. This will be followed by revisions to quality assurance (QA) and information technology (IT) processes, SOPs, instrument calibration, staff training for laboratory analysts, project managers, and log-in staff, as well as notifying customers. These tasks require resources that have not been planned or budgeted for in the current year. (15)

55. COMMENT: Several proposed ground water quality standards are extremely low and may pose challenges for standard analytical methods. Notable examples include 1,1,1,2-tetrachloroethane and vinyl chloride pursuant to EPA Method SW 8260, with ground water

quality standard of 0.2 µg/L and 0.035 µg/L, respectively, as well as 1,2,3 TCP pursuant to EPA Method SW 8011, with a ground water quality standard of 0.005 µg/L. Will laboratories need to adopt SW 8260 SIM for some compounds and does this entail a new Field of Testing (FoT) or integration into existing SW 8260 methods? These lower limits, some of which reach as low as the reporting limit or limit of quantitation, seem unusual for laboratories to handle. (16)

RESPONSE TO COMMENTS 48 THROUGH 55: As stated in the Response to Comments 35, 36, 37, and 38, there are analytical methods that specifically list SIM as an allowable option, and those may be used with the specific method certification, such as EPA Method 624.1 or 625.1, which include the SIM allowance.

Upon the effective date of this notice of adoption, the laboratories will be required to implement the relevant updates. Only those laboratories that are not certified for a sufficiently sensitive method will need to go through the certification process. Laboratories that possess certification for a method, which can achieve the new limits will simply need to revise their internal processes without any additional certification application. When these laboratories have to redo MDL and RL studies, they will need to adjust the analytical conditions required to measure at a lower standard requirement, and update SOPs and other procedural documents.

As to the attainability of PQLs that are based on analytical methods for drinking water, see the Response to Comment 58.

In response to clarification sought on the origin of the data used to establish limits, the Department solicited voluntary data from certified laboratories by parameter and method, using the certified laboratories by method in the NJDEP Data Miner database contact

information. When there were no laboratories listed in the NJDEP Data Miner, published performance data was used with the assumption that due diligence had been used by the organization using acceptable controlled collaborative studies.

Regarding the concern raised by a commenter about potentially high analysis costs, the Department acknowledges that there may be additional expenses. However, the Department believes that these costs are warranted to adequately protect public health.

Method Detection Level Data Utilization

56. COMMENT: Between 2016 and 2019, stakeholder meetings held by the Department underscored the importance of accurately determined PQLs from the Department-certified laboratories. However, methods were introduced in those meetings that were either uncertifiable, lacked proper quality assurance protocols, or were not certified for use by the Department's Office of Quality Assurance. Consequently, the Department sought assistance from the ELAC to obtain actual method detection limits. Test America (now Eurofins) in Edison was among the laboratories that provided MDL data. However, this data was not utilized in developing the rulemaking, and its exclusion from the Basis and Background document violated the Administrative Procedures Act. The commenters would like to know why the data was not utilized in developing the rulemaking. (1 and 7)
57. COMMENT: MDL data was solely obtained from the Department of Health. However, MDL data generated by a single laboratory does not accurately represent the certified laboratory community. It is crucial to conduct appropriate analytical studies using the applicable EPA methodologies to assess the attainability of these proposed standards. (10)

RESPONSE TO COMMENTS 56 AND 57: The Department solicited analytical performance data from New Jersey-certified laboratories for constituents where the calculated PQL was greater than the ground water quality criterion (that is, the ground water quality standard was PQL-driven). The Department requested data for clean ground water or drinking water matrices using the most sensitive procedure available at the laboratory, which may include, but are not limited to, laboratory-developed methods, EPA Method series 1600, 600, 500, and SW846 methods. The number of laboratories submitting data for each constituent varied, with typically a minimum of five laboratories contributing voluntary responses, including Test America Edison. The Department additionally used published performance data when there were less than five responses by participating laboratories. Interlaboratory performance data was used to derive the PQLs according to the most sensitive analytical method and based on either the median method detection limit times five or the median lowpoint. The USEPA recommends that the MDL be multiplied by a factor of five or 10 to account for the variability and uncertainty that can occur at the MDL. The Department appreciates the cooperative efforts of these laboratories in providing essential data to develop the rulemaking.

Proposed PQL-Based Standards and Alternative Analytical Methods

58. COMMENT: There are implications related to proposed PQL-based standards and alternative analytical methods. Decreases to the ground water quality standards, even by less than an order of magnitude, can pose significant challenges to the remediation of sites, particularly those proposed ground water quality standards that have been based on the PQL. As laboratory analytical technology improves, the PQL decreases, allowing the detection of a constituent at ever lower concentrations. These technological advances, however, often outpace the average

remediation at a contaminated site. The older, larger, and more complex sites typically have substantial historical datasets, and one effect of using PQL-based ground water quality standards relates to the potential invalidation of these historical datasets, causing significant additional effort to re-evaluate the sites. In the case of a historical non-detectable concentration, if the MDL and/or reporting limit reported by the laboratory is also greater than the proposed PQL-based ground water quality standards, the absence of the constituent cannot be confirmed.

This is compounded by the use of drinking water analytical methods to develop standards for ground water, since laboratories are also not yet certified to perform ground water analyses that can meet the proposed ground water quality standards. The Department has published four guidance documents that provide the basis to evaluate data quality for precision, accuracy, representativeness, comparability, completeness, and sensitivity (collectively, referred to as "the PARCCS parameters"); these form the basis of verifying that data quality meets the data quality objectives (DQOs). The use of drinking water methods to achieve these low proposed ground water quality standards poses a data quality challenge to the regulated community, particularly for the representativeness and comparability parameters. The Data Quality Assessment and Data Usability Evaluation Technical Guidance, Version 1.0, dated April 2014 (NJDEP, 2014a) and the Quality Assurance Project Plan Technical Guidance, Version 1.0, dated April 2014 (NJDEP, 2014b) speak to the issues posed by the use of drinking water analytical methods for ground water sampling.

First, the parameter representativeness is a qualitative measurement of how well the analytical data characterize the site; factors that influence representativeness include "the selection of appropriate analytical procedures" (NJDEP, 2014a). The representativeness DQO

is "established by … defining appropriate methods for analysis" (NJDEP, 2014b). Selection of a drinking water method to analyze ground water samples is not appropriate because the two media, while similar, have significant differences, with drinking water much less turbid and with many fewer interferents than are found in ground water. Therefore, data collected from this method and used to create the proposed ground water quality standards are not representative of the sites they are meant to evaluate. Until an appropriate, and Department-certified analytical method can be used to develop new standards, alternative methods are not suitable replacements from a data quality perspective.

Second, the parameter comparability "refers to the equivalency of sets of data. This goal is achieved through the use of standard or similar techniques to collect and analyze representative samples" (NJDEP, 2014a). The guidance goes on to provide the following example of a comparability issue related to analytical methods: "For example, if the RLs for a target analyte were significantly different for two different methods, the two methods may not be comparable and more importantly, it may be difficult to use those data to draw inferences and/or make comparisons" (NJDEP, 2014a). Requiring the use of different analytical methods to meet the proposed ground water quality standards will result in the degradation of comparability among the datasets already generated to date. Should these scenarios apply, person responsible for conducting remediation (PRCRs) will be required to conduct an additional evaluation to determine whether the constituent(s) are a concern, which could include conducting a preliminary assessment to rule out the constituents as unrelated to the site or the collection of additional samples in the case of non-detectable concentrations to confirm the absence of these constituents. Additional sampling may also be necessary to confirm delineation or to confirm

that post-remediation samples meet the updated standards. For MNA, this may mean resampling for two years to verify monitored natural attenuation (MNA) is still a suitable remedial action (RA) approach. (1, 4, 8, and 14)

RESPONSE: The analytical methods, presented in Table C of the Basis and Background, that were used to develop the standards are examples of methods that may be used to achieve the limits. These methods are not prescribed as "required" methods to use for testing. For example, there are other methods that are offered for certification and are widely used in the laboratory community that can also achieve these limits, such as EPA Method 624.1, EPA Method 625.1, SW-846 8260D, and/or SW-846 8270E. These methods include the option for SIM analysis, which may be used to achieve the recommended standard whenever SIM is an option in the method. In most cases, the Department does not offer separate SIM certification for all methods that allow the use of SIM. Therefore, if a laboratory has certification for a method that includes the SIM option, they may utilize SIM using the current certification for that method. As to laboratory capacity, while there may not be certified laboratories for all methods mentioned in the rulemaking at this time, many of the methods are offered for certification. In addition, there are certified laboratories for other methods that can achieve the recommended standards, such as the methods mentioned in this response.

The commenters state that the selection of drinking water methods to analyze ground water samples was not appropriate due to differences between the two media, as drinking water is less turbid and contains fewer interferents than are found in ground water. As explained in the Response to Comments 81 and 82 of the 2005 GWQS rule adoption (see 37 N.J.R. 4226(b)), the Department selected drinking water methods (EPA 500 series) for many of the affected

constituents due to their greater sensitivity. As stated in the Response to Comments 40, 41, 42, 43, and 44, other methods are offered for certification and are widely used in the laboratory community that can also achieve the PQLs indicated in the rulemaking. The party conducting the remediation is expected to select an analytical method to appropriately characterize ground water quality. Therefore, as long as the concentrations are less than or equal to the adopted PQLs, any approved analytical method can be used. In addition, N.J.A.C. 7:9C-1.9(c)3iii, allows the Department to approve an alternative PQL to address problems due to site-specific ground water matrix interference.

Regarding the use of old data for a site that may not achieve the current standards, if the site has a remedial action workplan (RAW) or remedial action report (RAR) submitted within the phase-in period, the previous standards would apply to the site, except where an order of magnitude change evaluation is required. For sites that need to meet the new standards, new sampling would likely be required to demonstrate compliance with those standards. Additional time to meet those standards would likely be needed, depending on the treatment method or application of monitored natural attenuation.

N.J.A.C. 7:9C-1.7(c)3i (Criteria and MCLs)

59. COMMENT: The Department does not provide rationale to justify the updates enabling the use of specific ground water quality criterion for a constituent with a corresponding MCL in the SDWA rules, N.J.A.C. 7:10, when determining that the weight of evidence approach specified at N.J.A.C. 7:9C-1.7(c)3ii more appropriately addresses the risk posed by the constituent than the risk addressed by the health-based level used to establish the MCL. The

change in methodology weakens public health protections and fails to provide specific objectives, criteria, and standards to define the factors in decision making, the weights assigned to different types and sources of evidence, and how the numeric decision point would be established.

The change makes all current health-based and MCL-driven ground water quality standards vulnerable to attack by regulated industry and allows the Department, in response to political or economic conditions, to initiate rollbacks of longstanding public health protections. (19)

60. COMMENT: The following statement from the rulemaking causes some concern: "of these 65 proposed ground water quality standards … 13 will become less stringent." Rigorous, health-based water quality standards are necessary to ensure the population of New Jersey is ingesting water that is considered safe to consume over both short and long periods of time. Lessening the stringency of 13 constituent standards poses serious considerations to impacts on human health as a result. New Jersey has shown signs of leadership in regard to strong water quality standards in the instances of arsenic and per- and polyfluoroalkyl substances (PFAS), and the State should continue to pursue examples of these robust standards. (5)

61. COMMENT: Can the Department clarify the proposed revisions in terms of the MCLs that are likely to be included in terms of weight of evidence and their approach? (14)

RESPONSE TO COMMENTS 59, 60, AND 61: The adopted new language at N.J.A.C. 7:9C-1.7(c)3 states, "[i]f, subsequent to promulgation of an MCL for a constituent in accordance with (c)3i above, the Department determines, based on constituent-specific data, applicable USEPA guidance, generally accepted scientific evidence, and/or peer-reviewed sources of information, that a ground water criterion developed at (c)3ii below would more appropriately

address the risk posed by the constituent than the health-based level used to establish the promulgated MCL, the Department shall establish the ground water quality criterion based on the weight of evidence approach at (c)3ii below." N.J.A.C. 7:9C-1.7(c)3ii states, "[f]or all other constituents, the Department shall develop ground water quality criteria for Class II-A ground water based upon the weight of evidence available regarding each constituent's carcinogenicity, toxicity, public welfare, or organoleptic effects, as appropriate, for the protection of potable water, pursuant to …" N.J.A.C. 7:9C-1.7(c)4, which includes the equations to derive the ground water quality criteria for constituents categorized as carcinogens and non-carcinogens. The terms in these equations are based on the best available science determined through the Department's evaluation of the weight of evidence. The approach of using the equations at N.J.A.C. 7:9C-1.7(c)4 to develop human health-based criteria remains unchanged in this rulemaking.

The commenters are incorrect in asserting that this weight of evidence approach is novel and vague or that it would eliminate the health-based approach to developing ground water quality criteria. "Weight of evidence," referenced in the new language and explained in the GWQS at N.J.A.C. 7:9C-1.7(c)3ii, is the current approach by which all the health-based specific criteria in the GWQS, except those based on the health-based MCLs used for drinking water standards, are derived. As stated in the Response to Comments 15, 16, and 17, the Department consults the USEPA IRIS program's database as the default source for toxicity factors (that is, RfDs and cancer slope factors). However, the Department has the flexibility to modify IRIS toxicity assessments, use assessments from sources other than IRIS, or derive toxicity factors itself when it is found that older IRIS toxicity factors are not the "most

scientifically sound basis for GWQC development." If there are toxicity data from multiple sources, the Department reviews all available information and selects the most scientifically sound basis for ground water quality criteria development. The Department does not consider economic, political, or other non-health related conditions in the development of criteria.

The Department agrees with the commenters that in no case should the Department weaken public health protections. However, updates to the criteria that result in less stringent standards do not represent a weakening of public health protections. As new and more specific or relevant toxicological data become available, the Department may determine that the criterion for a constituent can be less stringent while remaining fully protective of human health. Only when the weight of evidence shows that the constituent is not as toxic as previously determined, the Department adopts a less stringent criterion.

This weight of evidence approach is also consistently utilized in determining human health criteria for the SWQS at N.J.A.C. 7:9B-1.14. Often, USEPA 304(a) national recommended water quality criteria are used as a starting point for determining whether an existing human health criterion in the SWQS should be updated. When developing revised human health criteria, the Department will consider a multitude of sources (such as USEPA's IRIS database, CalEPA, and ATSDR), and ultimately identify the best available toxicity factor during its review, which may differ from toxicity factor used in USEPA 304(a) recommendations.

62. COMMENT: The Department is proposing new language at N.J.A.C. 7:9C-1.7(c)3i, which allows the Department to change ground water quality standards based on some other rule of evidence besides what has already been promulgated, contravenes the Safe Drinking Water

Act MCLs recommended by the New Jersey Drinking Water Quality Institute and adopted by the Bureau of Safe Drinking Water. Some commenters provide the example of lead, where the current ground water quality standard is five µg/L, but the Safe Drinking Water Act action threshold pursuant to the Lead and Copper Rule is 15 µg/L. One commenter gave additional examples of benzene, 1,2-dichlorobenzene, 1,4-diclorobenzene, 1,1-dichloroethane, 1,2-dichloroethane, 1,1,2-trichloroethane, ethylbenzene, and vinyl chloride.

The new language will lead to confusion of the public and more discrepancies between ground water quality standards and MCLs. The Department should not cause any additional harm to the general public, or cause an increase in unnecessary costs of remediation, etc. (1, 4, 7, 8, and 14)

63. COMMENT: The Department's proposed rulemaking creates a situation where the ground water quality standards for multiple constituents are lower than their respective MCLs. A paradigm where MCLs are greater than the corresponding ground water quality standards results in the outcome where drinking water from a public drinking water system, that is in compliance with MCLs and safe to drink, could be discharged to the ground surface during routine use (for example, commercial nursery, residential lawn, or garden watering), but contain constituents that are in excess of the ground water quality standards. Routine use of drinking water could add constituents to ground water at concentrations above their ground water quality standards. It is uncertain if this action would constitute a spill, but, regardless, this is an absurd outcome of the proposed rulemaking, and the Department should ensure that ground water quality standards are consistent with MCLs. (1, 4, 8, and 14)

64. COMMENT: The Department should make it clear that it will not alter a ground water quality standard without proceeding through a rulemaking where the basis for any proposed difference between an MCL and a ground water standard will be fully justified. Moreover, because ground water is classified as Class II-A based upon potability, the circumstances where a Class II-A ground water standard could be more stringent than an MCL should be extremely limited. (6)

65. COMMENT: The Department does not consider the outcome of the ground water quality standards being set at levels below the drinking water quality standards. It is hard to argue that the rulemaking uses the best available science and has taken the Legislature's mandates into account when ground water quality standards are more stringent than a drinking water quality standard. How do we explain to the business community, for example, that watering a lawn may be a discharge as a result of these rules? This is exactly what the public objected to, and the Legislature attempted to fix, when it first reformed the site remediation programs pursuant to the Industrial Site Recovery Act in 1993. (4)

RESPONSE TO COMMENTS 62 THROUGH 65: The proposed and adopted language at N.J.A.C. 7:9C-1.7(c)3i enables the Department to update ground water quality criteria based on the best available science as to be most protective of human health. In determining the best available science, the Department looks at constituent-specific data, applicable USEPA guidance, generally accepted scientific evidence, and/or peer-reviewed sources of information and then follows the "weight of evidence" approach currently promulgated in the GWQS at N.J.A.C. 7:9C-1.7(c)3ii. As stated in the Response to Comments 59, 60, and 61, N.J.A.C. 7:9C-1.7(c)3ii specifies that the Department shall develop ground water quality criteria for Class II-

A ground water based upon the weight of evidence available regarding each constituent's carcinogenicity, toxicity, public welfare, or organoleptic effects, as appropriate for the protection of potable water pursuant to the equations in the rule at N.J.A.C. 7:9C-1.7(c)4.

The Department acknowledges that there are differences in the ground water quality standards and the MCLs for some constituents. It is likely these differences will remain until corresponding updated drinking water MCLs are adopted, or the Department undertakes joint rulemaking between the GWQS at N.J.A.C. 7:9C and Safe Drinking Water Act (SDWA) rules at N.J.A.C. 7:10. The GWQS and the SDWA rules require the Department to consider different factors when it promulgates ground water quality standards and MCLs. Furthermore, MCLs and ground water quality standards are promulgated using different regulatory and statutory authority and mandates. The GWQS provisions governing the derivation of a ground water quality criterion for constituents in Class II ground water at N.J.A.C. 7:9C-1.7 considers the risk to human health from exposure through the ingestion pathway. Only human health risk (ground water quality criteria) and analytical capabilities (measured as practical quantitation levels, or PQLs) are considered in deriving the ground water quality standards.

While the Department is required to consider risk to human health in deriving both GWQC and drinking water MCLs, consideration must also be given to analytical capabilities of laboratories, and treatment capabilities developing a drinking water MCL. In accordance with the SDWA, the process for regulating contaminants in drinking water considers not only "any adverse effect [of a contaminant] on the health of persons," N.J.S.A. 58:12A-3.k(2), but also whether "it is economically and technologically feasible to ascertain the level of such contaminant in water in public water systems," N.J.S.A. 58:12A-3.k(3). As the health-based

level is only one of the factors considered in deriving each standard, the MCL and the ground water quality criteria for the same constituent may not always be identical.

The water being supplied by a water system meets drinking water MCLs and is regulated for potable purposes.

66. COMMENT: The change allowing the Department to update specific ground water quality criteria and remediation standards for a constituent (regardless of a weight of evidence approach) without going through a proper rulemaking procedure is significantly problematic. Such an approach would bypass the technical review of the proposed changes to the specific ground water quality criterion that can have significant impacts on the regulated community. Current regulations already allow the Department to calculate interim specific criteria, if needed, which is sufficient for the protection of human health for these limited, unique situations. In addition, the proposed rule language is overly vague and arbitrary as to what constitutes "more appropriately." The Department should establish clear and specific criteria for when a promulgated MCL may be overridden or adopted without going through the proper established rulemaking process. (1 and 14)

RESPONSE: Ground water quality criteria, PQLs, and standards can only be modified or added into the GWQS through rulemaking or, in special circumstances, through notice of administrative change. When establishing a new ground water quality criterion based on the weight of evidence approach, the Department must conduct a rulemaking. The Department may modify or update a ground water quality criterion through a notice of administrative change when: (1) the Department promulgates a new or revised MCL; or (2) the USEPA

revises the carcinogenic slope factor or reference dose in the IRIS database on which a specific criterion at N.J.A.C. 7:9C Appendix Table 1 is based. The adopted language at N.J.A.C. 7:9C-1.7(c)3i does not alter this process. As the commenters noted, the Department can also establish an interim specific ground water quality standard through a notice of administrative change to promptly address a constituent that poses a concern to public health; however, when replacing interim specific criteria with specific criteria, the formal rulemaking process shall be followed.

67. COMMENT: The proposed language at N.J.A.C. 7:9C-1.7(c)3i would result in uncertainty as to whether MCLs and promulgated standards can be relied upon for issuing Key Document submittals and Final Remediation Documents required to be prepared and submitted in accordance with N.J.A.C. 7:26C (for example, response action outcomes) and will be detrimental to the long-term ability of LSRPs to analyze data and make decisions in a timely manner.

The proposed language at N.J.A.C. 7:9C-1.7(c)3i will also result in significant reductions to the analogous migration to ground water soil remediation standards (MGW-SRS), with the potential to impact thousands of sites where remedies are in the design, construction, or long-term monitoring phase. The implications of these changes on the scope, schedule, and execution of remedial work are significant and will directly impact data evaluation and certification by LSRPs (for example, in terms of laboratory reporting limits for soil analytical methods where ground water quality standards are proposed to be reduced by an order of magnitude). (1 and 14)

RESPONSE: As provided in the Brownfield Act at N.J.S.A. 58:10B-12.j, the Department cannot compel the use of a newly promulgated remediation standard at a site that has an

approved RAW unless the new remediation standard differs from the remediation standard approved in the RAW or other plan by an order of magnitude or more. This was instituted to provide some level of finality when completing a remediation. The Department intends to maintain its policy as to when an order of magnitude evaluation is conducted.

Additionally, the adopted language at N.J.A.C. 7:9C-1.7(c)1 through 5 would allow the Department the flexibility to update the soil remediation standards for the SRS-MGW as changes are made to the Ground Water Quality Standards, N.J.A.C. 7:9C. These changes to the SRS-MGW will require a notice of administrative change in accordance with N.J.A.C. 7:26D-7.2(c) and pursuant to N.J.A.C. 7:26D-7.2(e), will allow a six-month phase-in period.

Economic Impact

68. COMMENT: While there is a need to protect the public and environment, there also needs to be an appreciation on how these amendments will impact our economy. The Department should work with all stakeholders and measures should be taken to avoid or minimize any adverse impacts on our economy. (14)

69. COMMENT: Changes to the ground water quality standards result in changes to the site remediation standards. Fifty-three constituents have become more stringent, and six of them have increased by an order of magnitude. Vinyl chloride is one of them, which is ubiquitous. If these rules are adopted, what is the economic impact going to be? What is the reopener? Bank transactions, sales of properties, and redevelopment could be impacted. This could have significant impacts on the economy. (14)

RESPONSE TO COMMENTS 68 AND 69: The Department acknowledges that the adopted amendments may have an economic impact on the person responsible for conducting remediation of contaminated sites. The Department clarifies that 50 constituents were proposed to become more stringent, while seven have decreased by an order of magnitude. As stated in the notice of proposal, the magnitude of the impact will vary based on site-specific factors, such as the increase in the portion of the plume that must be remediated, the volume and characteristics of the wastewater being discharged, the contaminants in the wastewater or ground water to be remediated, the number of additional monitoring wells required, and the type of treatment currently being implemented. For a summary of the Department's stakeholder process, please refer to Response to Comments 5, 6, 7, and 8.

As provided in the Brownfield Act at N.J.S.A. 58:10B-12.j, the Department cannot compel the use of a newly promulgated remediation standard at a site that has an approved RAW unless the new remediation standard differs from the remediation standard approved in the RAW or other plan by an order of magnitude or more. The Department intends to keep its existing policy concerning when an order of magnitude evaluation is conducted.

As for the reopener, for closed cases (that is, cases that have a final remediation document), the timing differs depending on whether the site has a restricted, limited restricted, or unrestricted use remedy. For sites that have implemented a restricted or limited restrictive use remedy (cases that have an institutional control or an institutional and engineering control), the order of magnitude evaluation would be part of the required biennial remedial action protectiveness certification. For sites that have implemented an unrestricted use remedy, the order of magnitude evaluation would be required at the time when a site "re-enters"

Department's contaminated site remediation and redevelopment (CSRR). The order of magnitude evaluation would be conducted pursuant to the Technical Requirements for Site Remediation at N.J.A.C. 7:26E-3.2(a).

It should be noted that for active cases (that is, cases that do not have a final remediation document), the person responsible for conducting the remediation, in conjunction with the LSRP, must utilize the more stringent remediation standard(s), unless the site has an approved remedial action workplan.

Regarding whether the rulemaking is anticipated to impact redevelopment, please refer to Response to Comment 70. The Department anticipates that a phase-in period of six months for sites within the CSRR program will not affect Brownfield redevelopment projects. Additionally, only responsible parties identified in accordance with the Spill Act at N.J.S.A. 58:10-23.11.g are liable for any additional remediation costs necessary to bring the site into compliance with a remediation standard that is more stringent by an order of magnitude, or more than the standard by which the site was previously remediated and for which a No Further Action letter (NFA) was issued. Due to these site and parameter-specific factors, it is difficult to anticipate the rate of increases or decreases to bank transactions and sales of properties. However, as it is expected that redevelopment will not be deterred overall, related bank transactions and sales of properties would remain unaffected.

70. COMMENT: The amendments will have a negative effect on investment in Brownfield remediation, which is the primary method for remediating contamination in the State. Real estate investment occurs on a global scale, and attracting investment to New Jersey will

become even more difficult if developers are unable to accurately account for future costs and risks. If investment in brownfield and other redevelopment is stifled, so too will remediation activity be stifled. (11)

RESPONSE: In the notice of proposal Economic Impact statement, the Department maintains that the adopted ground water quality standards, would primarily impact the person responsible for conducting the remediation. The Department also acknowledges that it is difficult to assign a specific dollar value for the cost of a typical remediation, due to the variety and complexity of contaminated sites throughout the State. The Department understands that its rules and policies, particularly those that relate to remediation and redevelopment of the State's Brownfields, affect the State and its citizens as a whole. However, in order for the citizens to truly benefit from Brownfield redevelopment, the remediation of contaminated sites must be protective of human health and the environment.

The Department disagrees that the adopted ground water quality standards would deter development, and the Department is confident that the Brownfield Program will continue to grow and foster the smart growth in New Jersey.

Developers will be able to use the same methods they use today to estimate remediation costs using the new standards. Given that there is a phase-in period of six months for sites within the CSRR program, it is anticipated that current projects will not be affected.

The Brownfield Act allows, but does not require, the Department to compel additional remediation if it is determined that a site that has been previously remediated poses a risk to human health and the environment when new standards are reduced by an order of magnitude or more (see N.J.S.A. 58:10B-13.e). However, only a person who is a responsible party

pursuant to the Spill Compensation and Control Act (Spill Act) at N.J.S.A. 58:10-23.11.g is liable for any additional remediation costs necessary to bring the site into compliance with a remediation standard that is more stringent by an order of magnitude or more than the standard by which the site was previously remediated and for which a No Further Action (NFA) was issued. Part of this determination will include an evaluation of existing engineering and institutional controls to ensure that they have been adequately maintained and will continue to be protective. After the issuance of an NFA letter, the burden to prove that the remediation and any engineering and institutional controls used at a site, will continue to be protective of human health and the environment rests with the responsible party pursuant to the Brownfield Act.

Housing Affordability Analysis

71. COMMENT: The commenter states that the notice of proposal's housing affordability analysis is inadequate and requests a detailed analysis of housing costs be completed. The Department provides no documentation of the evaluation or evidence provided that the rulemaking is unlikely to evoke a change in the average costs of housing. The Department described remediation costs due to re-opening closed cases, as well as laboratory equipment upgrades. All of these costs are passed on to the remediating party and ultimately the consumer. While not all remediation involves housing, a substantial portion does. It is inaccurate to assess that the increased costs associated with remediation will not increase the costs of housing, or to assume that increased liability associated with limited legacy provisions will not affect financing and other development costs. (11)

RESPONSE: In accordance with N.J.S.A. 52:14B-4, the Department has evaluated the adopted amendments to determine their impact, if any, on the affordability of housing. While

there is some evidence that Brownfield remediation generally increases home prices in surrounding areas, it is unlikely that the additional remediation required by the adopted rulemaking would have an impact on New Jersey's overall property market. It is correct to assume that responsible parties may attempt to pass on the costs of remediation to developers, who, in turn, may attempt to pass their costs on to consumers.

The Department notes that remediation is already required at many of the sites impacted by the adopted rulemaking, and in these cases, the additional marginal costs remediating for the 73 identified constituents of ground water would only be one portion of the total costs of remediation that a responsible party would attempt to pass on to a potential developer.

Further, the Department does not anticipate that either a responsible party or a property developer would be successful in passing remediation costs on to the home buying public. As with most goods and services, home values are established by both supply and demand. Remediation costs are only one variable that goes into the price of land available for development, and land price is only one variable that goes into a property's sale price.

Remediation Schedules and RAPs/CEAs

72. COMMENT: The rulemaking does not include a delayed implementation or phase-in period and lacks clearly stated legacy protections for projects currently underway and those with NFAs and RAOs. Thus, the proposed rulemaking creates immense uncertainty for LSRPs, developers, and the real estate market at large even in the context of the ground water quality standards and remediation standards that are proposed to change by less than an order of magnitude. (11)

RESPONSE: As with previous remediation standard readoptions, the phase-in timeframe outlined in the Remediation Standards, N.J.A.C. 7:26D-1.4(b) is applicable to the updated GWQS. This rule provision allows a responsible party to complete remediation at a site using the former remediation standards if an LSRP certifies and submits a remedial action workplan or response action outcome to the Department within six months of the adoption of updated standards. In addition, the order of magnitude provisions are applicable where relevant (also see the Response to Comments 11 and 73 and 74).

73. COMMENT: The proposed standards will be burdensome for persons responsible for conducting the remediation to meet the regulatory and mandatory timeframes set forth in their remediation sites. Additional activities due to the proposed rulemaking will require additional time: four to eight years for a site that needs to pivot to an active remediation, while four to five years for a site that was on track for an MNA-based remediation. This is significant time given to sites in each remedial phase with up to five years for sites in the remedial investigation (RI) phase, not including site-specific complexity factors, and up to another five years for the RA phase, including obtaining a ground water remedial action permit (RAP-GW), which can take several months to years to receive. The Department takes, on average, two years to review Remedial Action Reports (RARs) and RAPs-GW. The commenters also note that with the latest MNA Guidance, it seems that it will be nearly impossible for the Department to grant an MNA-based RAP-GW for benzene as, pursuant to asymptotic trend conditions, the lowest allowable concentration would have to be 4.5 µg/L (instead of 10 µg/L), due to the Department's requirement that asymptotic concentrations not be greater than an order of magnitude above the ground water quality standard proposed limit of 0.45 µg/L. It is likely

that all sites will need additional active remediation and, therefore, due to the lengthy remediation process, will not be able to comply with their regulatory timeframe.

The only sites that may be able to comply with the new ground water quality standards within their established timeframes are those currently in the site investigation phase, with between 10 and 13 years remaining on their timeframes. Remediation sites in the midst of an RI may or may not be able to accommodate these changes within their existing timeframes, especially if the RI is nearly complete and additional delineation is required, particularly offsite. A minimum of one year would be needed to achieve the order of magnitude evaluation, resampling of the well network, offsite access agreements, sampling, and revision of a CEA that would largely have been completed at that point. The necessary time to complete the RI would extend if a lawsuit is necessary to obtain access or if a commingled plume is identified.

RA completion is required in five years at the most and, should a site need to pivot from an already implemented RA, there would not be enough time left to complete the remediation pursuant to the existing timeframes. Even sites that have received RAP-GWs may be forced back into the RI phase pursuant to a new case if they cannot address any new issues prior to the next biennial certification. As these timeframes are all different, some sites may not even be through the order of magnitude evaluation when their biennial certification becomes due. (1, 4, 8, and 14)

74. COMMENT: The proposed amendments will challenge the effective remediation of sites in New Jersey. Due to insufficient technical support, these challenges may pose an unreasonable burden to the PRCR, hindering the ability of these entities to reach remediation goals and site closure.

Regarding active cases in the RI phase without a RAWP submission, complete delineation of sites to the revised ground water quality standards will pose several challenges. Challenges include access to properties not under the control of the responsible party (RP) or PRCR, logistics of fitting the data into the existing work (such as evaluating whether the data are related to the site), and resource availability. There are a limited number of drilling firms, laboratories, etc., capable of performing the necessary services to complete delineation. An update of the receptor evaluation report (RER) must be conducted to identify any new potential receptors. Sites may miss the RI regulatory or mandatory timeframes if delineation to the new standards cannot be completed, which often is outside the control of the PRCR, especially when access is an issue. This will result in the site entering direct oversight and incurring additional fees for missing a mandatory timeframe.

Active sites with a commingled plume of similar constituents will need to evaluate the effect of the new ground water quality standards on the boundary of the commingled plume. If additional delineation is needed, more evaluation will be required to determine which RP/PRCR is responsible or to generate a new agreement between RP/PRCRs to share delineation costs. These activities will require additional time to resolve. When completing delineation to the new standards, it is also likely that new commingled plumes will be identified through the lowering of the ground water quality standards due to the proposed rulemaking. This will require significant effort to document and conduct additional investigative activities (that is, specialty testing, additional monitoring wells, a preliminary assessment, etc.). Once resolved, the same challenges discussed in the previous scenario apply (that is, logistics, resource availability, or timeframes missed).

For active sites in the RA phase, sites will need to be evaluated as to whether constituents with a new or updated ground water quality standard lower than an order of magnitude are present. If present, delineation and remediation of these constituents are required. Next, it should be evaluated whether existing datasets can be compared to the new or updated standards, given MDL and reporting limit issues. If existing datasets have MDLs/reporting limits above the proposed ground water quality standards, sampling will more than likely be required to evaluate the presence of these constituents. It may be required to use inappropriate analytical methods to meet the proposed ground water quality standards, preventing the comparison of historical and future sample data. Delineation in the RA phase poses the same challenges as in the RI phase (for example, access, logistics, and resources), with even less time available to complete delineation and remediation. Constituents are likely to be present above the proposed updated ground water quality standards for order of magnitude standards. Next, documents must be revised to reflect the new delineation boundary through submission of a new classification exception area (CEA). An update of the RER must be conducted to identify any new potential receptors. Where exceedances are found, revised workplans should be submitted if the remedial action approach changes. RAs involving injections, pump and treat systems, etc., may require significant revision in order to reach new potential areas, some of which will be offsite, that previously did not exceed standards. MNA may not be a suitable approach if impacted receptors are identified during the RER update. Sites near their RA timeframe will have limited time to complete remediation, particularly if delineation is no longer complete. This will result in the site entering direct oversight and incurring additional fees for missing a mandatory timeframe.

Regarding active potable water immediate environmental concerns (IECs), data must be evaluated to determine if it exceeds the proposed ground water quality standards. Existing data may be sufficient to demonstrate compliance; otherwise, additional collection of samples will be required. Potable wells that were previously below standards may now exceed the new standards, triggering new potable water IECs. Additional samples may have to be collected to verify if the historical data are insufficient. If an exceedance exists, additional treatment may be required. Reports will need to be revised to document the new findings and response actions will be required.

The Department has not provided information on how closed potable well IECs will be handled when the IEC includes constituents with lower ground water quality standards. PRCRs will need to evaluate whether the concentrations in the last round of sampling meet the proposed ground water quality standards. If they do not, a new IEC would likely be triggered. It is unclear whether the Department will review closed IECs and issue compliance letters.

For closed cases with an unrestricted RAO, no actions can be taken until the site re-enters the CSRR Program. Once it re-enters the program, an order of magnitude evaluation must be completed. Given the compounds that have decreased by an order of magnitude, it is very likely that closed cases will have exceedances of the proposed ground water quality standards. Additional delineation and remediation will be needed at that time, complicating property sales and transfers.

For closed cases with a RAP-GW, the same actions must be performed as for an active case in the RA phase. The evaluation of the new ground water quality standards will need to be completed before the next submitted biennial certification for the RAP-GW. If these cannot be

completed within the biennial certification period, PRCR will be required to report to the Department hotline a new discharge, and the case will be re-started at the remedial investigation process. (1, 4, 8, and 14)

RESPONSE TO COMMENTS 73 AND 74: The Department recognizes that in certain situations, additional remedial work may be required to meet the established regulatory timeframes. The Department does not provide a detailed analysis of the time required for different phases of remediation but asserts that the timelines provided by the commenter are overstated.

Regarding the commenters' claims that sites may only be able to comply with the new GWQS while in the site investigation phase, with 10 to 13 years remaining on their timeframes and that sites in the RI phase may not be able to meet their existing timeframes, the Department offers a clarification. The commenters' wording suggests that all sites will have to start the remedial process from the beginning. Any remedial work completed can be used to evaluate if additional work needs to be completed. A more stringent ground water quality standards does not automatically necessitate active remediation. If the site is moving forward with an MNA remediation and it has been demonstrated through the MNA technical guidance document (NJDEP, 2022) that the MNA is taking place, then the evaluation may just be to demonstrate that the remedial alternative is still protective of human health and the environment.

The Department acknowledges that the timeframe for completing an RI could be extended if a lawsuit is necessary to obtain access to the site, or if a commingled plume should be identified.

The Department disagrees that it will be unable to grant an MNA-based RAP-GW pursuant to asymptotic trend conditions due to the Department's requirement that asymptotic concentrations not be greater than one order of magnitude above the ground water quality standards. As stated in the latest version of the MNA technical guidance document (NJDEP, 2022), there are criteria outlined for a site to be considered for MNA with a non-decreasing trend, as described in Section 6.1.2.4., titled "Non-Decreasing Levels of Ground Water Contamination." Where a site does not meet all the criteria to be considered for MNA (including when the contaminant concentration is more than one order of magnitude higher than the standard), it would not preclude MNA as a final remedial strategy; however, further technical justification may be warranted.

The Department acknowledges that the CEA may need to be modified, and in certain situations, additional delineation may also need to be completed. If gaining off-site access is causing delays and the person responsible for the remediation is following the off-site access process outlined at N.J.A.C. 7:26C-8, then the Department may consider granting an extension.

In reference to sites in the remedial action phase, once a remedial action workplan or remedial action document is approved by the LSRP, an evaluation of the remedial action only needs to be completed if the change in the standard is over an order of magnitude. This does not necessarily mean that an active remediation would be necessary; it would require an evaluation to determine if the existing remediation remains protective of human health and the environment. For sites with existing GWRAPs, this evaluation would be submitted with the next biennial certification.

The Department acknowledges that additional work may be required to meet the ground water quality standards. However, the tasks and challenges discussed in the comments are the same issues that arise with all ongoing remediations. Ongoing remedial actions necessitate coordinating the logistics of hiring drillers, contracting laboratories to complete the analytical analysis, and dealing with off-site property owners; these are all existing issues that need to be addressed currently. All of the tasks outlined are required to be completed for all existing sites in CSRRs regardless of the new standards.

For example, the commenters state that the RER needs to be updated as a result of the new standards. Currently, an updated RER is required with the submittal of each key document (Remedial Investigation Report (RIR) or Remedial Action Report (RAR)) submittal. An updated RER is also required to be submitted as part of the biennial certification process. The commenter also references the evaluation of any commingled ground water contamination plumes. This is also a requirement for all ongoing ground water investigations, as appropriate.

In reference to the commenters' claim that "inappropriate analytical methods" may have to be used to meet the ground water quality standards, the Department recognizes that analytical methods that have not been previously, nor widely, used may have to be employed that have lower analytical sensitivities. This does not mean that the analytical methods are "inappropriate," nor would the Department condone the use of a method that is not appropriate. Older data may be used for comparison to future sample data, although this might be challenging for those determinations where non-detect values and PQLs have changed.

In regard to contaminant delineation, the Department agrees that additional investigative work will need to be completed. If a site is in the RI phase, ground water delineation must be

completed to the newly adopted standards. Sites further along in the remedial action phase will need to complete additional work only if the standards have decreased by an order of magnitude. For sites undergoing an approved remedial action, whether it be active or one utilizing MNA, an evaluation of the protectiveness may be required if the standards have changed by an order of magnitude. This does not unilaterally result in a change to the remedial approach, but will need to include an evaluation to ensure the remedy is still protective of human health and the environment.

The Department is aware that with changes in the remediation standards, additional time may be needed to complete delineation. The LSRP or person responsible for the remediation can always seek to get an extension of their timeframes from the Department.

In regard to IEC cases, active potable well IECs will require a reevaluation of the potable well sampling data, regardless if the change is more or less than an order of magnitude. If the sampling data is found to be above the newly adopted ground water quality standards, additional sampling and possible treatment may be required. As with other cases, IEC cases will be treated in the following manner:

- Regarding reopening closed cases (that is, cases that have a final remediation document), the timing differs depending on whether the site has a restricted, limited restricted, or unrestricted use remedy.
- For sites that have implemented a restricted or limited restrictive use remedy (that is, cases that have an institutional control or an institutional and engineering control), the order of magnitude evaluation would be part of the required biennial remedial action protectiveness certification.

- For sites that have implemented an unrestricted use remedy, the order of magnitude evaluation would be required at the time when a site "re-enters" the Department's Contaminated Site Remediation and Redevelopment.

The Department is aware that there are concerns with meeting mandatory timeframes, which may result in direct oversight and additional fees. On this subject, please refer to Response to Comments 81, 82, 83, 84, and 85.

75. COMMENT: The proposed rulemaking does not align with Department goals and does not consider the significant impacts implementation will have on the public. As a result of the rulemaking, there will be additional work needed at remediation sites, including the installation of soil borings, monitoring wells, excavation, and capping, and most will be in highly industrialized northeastern New Jersey, in communities already overburdened by air pollution, poor road infrastructure, and limited green space. Examples of impacts from additional remediation in these areas include increased emissions from heavy equipment and generators, increased transportation use on roads and bridges, increased waste treatment or landfill use, and long-term ground water sampling.

The potential new migration to ground water soil remediation standards are very likely to result in the destruction of unpreserved green space, specifically, that decreasing the MGWSRS may lead to considerable additional capping using impervious materials, such as asphalt and concrete.

The Department should consider the impact on climate, particularly the increased production of greenhouse gas related to the need for more asphalt capping material. According

to a June 2022 report from the National Asphalt Pavement Association, greenhouse gas emissions produced from asphalt production, transportation, and emplacement averaged between 50.2 to 52.1 kg of carbon dioxide equivalent per ton of asphalt produced between 2009 and 2019. Implementing regulations that will lead to the need for more asphalt production is not harmonized with the Department's 2024 Comprehensive Climate Action Plan. The Department should perform a thorough evaluation of how the proposed ground water quality standards and potential new MGWSRS will affect remediation, particularly around the use of permeable versus impermeable caps. (1, 4, 8, and 14)

RESPONSE: The primary reason for promulgating remediation standards is to ensure that the potential for harm to public health and safety and to the environment is minimized to acceptable levels pursuant to the Brownfield Act, at N.J.S.A. 58:10B-12.a. The Department is adopting science-based remediation standards to ensure that remediation is conducted to a degree that public health and safety and the environment are protected. Additional remediation required because of the new migration to ground water soil remediation standards will ultimately benefit public health, as the standards are driven by the best available science regarding human health effects. Any significant impact of remediation in overburdened communities is offset by the gains in ensuring that residents are not unfairly burdened by increased health risks.

Climate change impacts are not within the scope of the Remediation Standards, N.J.A.C. 7:26D. The Department addresses climate impacts within the Technical Requirements for Site Remediation at N.J.A.C. 7:26E-1.9, which notes that the Department encourages the use of green and sustainable practices during the remediation of contaminated sites.

76. COMMENT: Regarding sites with an approved GW-RAP and an established CEA, will the Department require the calculation of a new CEA and/or modification of an existing RAP when the ground water quality standard decreased by less than an order of magnitude? For example, what would be the course of action if a plume monitoring well outside an established CEA has consistent benzene concentrations at 0.75 ug/L? (17)

    RESPONSE: If the change to the ground water remediation standard is less than an order of magnitude, as is the case with benzene, the Department cannot compel the person responsible for the remediation to reevaluate the CEA. In the commenter's example, when a plume monitoring well outside an established CEA has consistent benzene concentrations at 0.75 ug/L, the Department will not require the calculation of a new CEA and/or modification of an existing RAP, due to the updated benzene ground water quality standard decreasing by less than an order of magnitude.

77. COMMENT: Revisions to the GWQS will result in revisions to remediation standards, which may potentially reopen thousands of remediated sites, should the amendments be adopted without change. (14)

78. COMMENT: The provision at N.J.A.C. 7:26D-7.2(b) creates a constant moving target of what constitutes soil remediation standards, especially when viewed in conjunction with the proposed changes at N.J.A.C. 7:9C-1.7 that could trigger GWQS changes at N.J.A.C. 7:9B outside the normal rule update cycle. This situation could significantly interfere with the ability to investigate and remediate contaminated sites/site soils within the required Department timeframes. Unless the change in the ground water quality standards is significant (that is,

more than at least one order of magnitude), reopening and/or significantly expanding remedial investigation/remedial action because of a slight change in standards that does not amount to a threat to human health and safety and the environment is unnecessary, since the equations used in developing migration to ground water soil remediation standards are inherently conservative and generic. (1 and 14)

79. COMMENT: Seventy-three constituents are being updated and seven are being changed by an order of magnitude. These changes, especially the order of magnitude changes, will negatively impact development and redevelopment. Such changes should not be made unless necessary. Unfortunately, the Department has not provided clear and unambiguous science with this rulemaking. While the enhanced protections that such order of magnitude changes will achieve will have minor enhancements to the protection of human health, they may be greatly outweighed by the burdens of reopening of numerous cases and the uncertainty that this will place on the marketplace. (4)

80. COMMENT: Significant administrative burdens to both PRCRs and the Department are likely to occur as a result of the proposed rulemaking. There are hundreds to thousands of active and closed cases where the order of magnitude constituents are present, and many will require substantial additional evaluations and remediations. Consequently, revision and resubmission of multiple key documents, including CEAs, RAWPs, RARs, and RAP-GW applications and modifications, will occur in the relatively short term. Additional discharge to ground water permit by rule (DGW-PBR) applications will likely also be submitted for sites requiring a more active remediation approach. CEAs, RAP applications and modifications, and DGW-PBR applications require the Department's formal approval for the remediation to progress and this

will only add to the backlog and delays. Focusing only on those order of magnitude changes that are technically justified will reduce this burden for both PRCRs and the Department. (1, 4, 8, and 14)

RESPONSE TO COMMENTS 77, 78, 79, and 80: There is a concern that promulgation of remediation standards that are more stringent by an order of magnitude or more could result in the need for additional remediation at a site. An existing permit would only need to be modified, not terminated, and reissued as a new permit.

Regarding the commenters' statement that the Department did not provide clear and unambiguous science, please refer to Response to Comments 15, 16, and 17 for clarification on the Department's process for developing the ground water quality standards featured in this rulemaking.

As provided in the Brownfield Act at N.J.S.A. 58:10B-12.j, the Department cannot compel the use of a newly promulgated remediation standard at a site that has an approved RAW unless the new remediation standard differs from the remediation standard approved in the RAW or other plan by an order of magnitude or more. The Department intends to keep its existing policy concerning when an order of magnitude evaluation is conducted.

As for the reopener, for closed cases (cases that have a final remediation document), the timing differs depending on whether the site has a restricted, limited restricted, or unrestricted use remedy. For sites that have implemented a restricted or limited restrictive use remedy (that is, cases that have an institutional control or an institutional and engineering control), the order of magnitude evaluation would be part of the required biennial remedial action protectiveness certification. For sites that have implemented an unrestricted use remedy, the order of

magnitude evaluation would be required at the time when a site "re-enters" the Department's Contaminated Site Remediation and Redevelopment. The order of magnitude evaluation would be conducted pursuant to the Technical Requirements for Site Remediation at N.J.A.C. 7:26E-3.2(a).

It should be noted that for active cases (that is, cases that do not have a final remediation document), the person responsible for conducting the remediation, in conjunction with the LSRP, must utilize the more stringent remediation standard(s), unless the site has an approved remedial action workplan.

With the combination of not requiring new permits, only modifications, and sites closed that have implemented an unrestricted use remedy not being reopened due to a change in the remediation standard, along with an order of magnitude evaluation conducted as part of the required biennial remedial action protectiveness certification for sites that have implemented a restricted or limited restrictive use remedy, there should be a minimal increase in new cases and new permits to add to any existing backlog.

The change at N.J.A.C. 7:26D-7.2(b), which currently references N.J.A.C. 7:9C-1.7(c)5 to referencing N.J.A.C. 7:9C-1.7(c), will not create "a constant moving target of what constitutes soil remediation standards," but will allow the Department the flexibility to update the soil and soil leachate remediation standards for the migration to ground water exposure pathway (SRS-MGW) as changes are made to the GWQS (N.J.A.C. 7:9C). For new or updated ground water quality standards to be adopted based on the weight of evidence approach as described in the rulemaking at N.J.A.C. 7:9C-1.7(c)3i(1), a formal rulemaking process involving a public comment period would be undertaken. The changes to the SRS-MGW would be effectuated

through a notice of administrative change in accordance with N.J.A.C. 7:26D-7.2(c) and pursuant to N.J.A.C. 7:26D-7.2(e) will allow a six-month phase-in period.

Order of Magnitude

81. COMMENT: The proposed amendments will cause numerous NFA and RAO closed cases to be reopened due to the seven ground water quality standards and remediation standards that are proposed to change by an "order of magnitude" or greater. This may impact thousands of projects requiring further action that have already completed significant investment and remediation. Re-opening closed cases disincentivizes redevelopment and should only be left to the most emergent situations. (11)

82. COMMENT: The proposed amendments should include the same applicability language as the soil remediation standards at N.J.A.C. 7:26D-1.4(b) and 7.2. Projects with an existing RAW should be grandfathered. This proposed rulemaking fails to recognize the fact that many of NAIOP's members have purchased contaminated properties with an eye toward redevelopment, invested significant time and resources in remediating contamination caused by others, and redeveloped numerous Brownfields and other sites into productive and useful properties. To make investments like this, our members need to be able to reasonably rely on remediation standards being consistent and need to be able to rely on NFA letters and RAO documents that were obtained at significant cost and in full compliance with the law remaining valid. Yet, if adopted as proposed, the amendments to the GWQS will remove that certainty, potentially exposing these property owners to unforeseen additional remediation.

While the proposed rule suggests that the updated ground water quality standards will apply only to new projects and to projects that have not obtained a DEP-approved or LSRP-certified RAW or similar plan, there is no language within the proposed rulemaking itself that explicitly exempts these completed or approved projects from the updated and more stringent standards, regardless of whether the remediation standard specified in the RAW or Remedial Action Report for a given contaminant is greater by an order of magnitude than the updated remediation standard. Without such language, like the same applicability language as the soil remediation standard at N.J.A.C. 7:26D-1.4(b) and 7.2, LSRPs evaluating properties subject to a remedial action permit for ground water will be required to conduct order of magnitude tests as part of the biennial certification process, and many of these LSRPs must certify that the existing engineering and institutional controls are no longer protective. Without clear and unambiguous exemption and phase-in language for the new standards that is explicitly set out in the body of the rules, the proposed amendments will disrupt commercial real estate development negotiations occurring right now and future commercial real estate development projects, merely due to confusion over the applicability of the new standards. (9)

83. COMMENT: It is recognized that adopted updates to GWQS trigger automatic revisions to the soil and soil leachate remediation standards for the migration to ground water exposure pathway at N.J.A.C. 7:26D Appendix A, Tables 5 and 6. In instances where the proposed ground water quality standards becomes more stringent by an order of magnitude, each of the proposed changes require a comprehensive evaluation regarding certified USEPA analytical method feasibility for the associated soil and leachate analysis, cost, and consistency of data. Additionally, an assessment of case reopeners and future delineation requirements for existing

cases, including cost implications, must be conducted as a result of this trickle-down impact. (1 and 14)

84. COMMENT: There may be impacts to active sites with order of magnitude constituents (total of 3,660), specifically because verification of delineation will be necessary through the evaluation of historical datasets or sample collection. Should delineation be found incomplete using existing wells, the site will return to the RI phase. Offsite access agreements will likely be necessary to facilitate installation of monitoring wells and sampling. A revised CEA will also be necessary. These tasks will take considerable time to complete, which is not accounted for in the existing remedial timeframes.

The findings of this additional RI have the potential to significantly impact active sites that have progressed into the RA phase as well. For example, as discussed in Section 4.2 of the Department's MNA Technical Guidance (Version 2.0) (NJDEP, 2022), impacted receptors are a condition that generally precludes the use of MNA as the primary RA. Many sites currently invested in an MNA strategy may be forced to pivot to another remedy at a late stage in the remediation and may be too close to a timeframe to successfully do so.

For active remediations, new source areas may be identified based on these order of magnitude decreases in standards. Expansion of an active remediation requires revision to regulatory documents, including a DGW-PBR, which requires the Department approval, thus, causing delays in implementation of the remediation.

These additional evaluations will slow progress on sites, potentially delaying environmental improvements through remediation. The ability of active sites to meet the regulatory and mandatory timeframes will also be strained, potentially leading to compliant

PRCRs being forced into direct oversight and subject to fines simply because the existing timeframes are insufficient. (1, 4, 8, and 14)

85. COMMENT: Since the ground water quality standards are the remedial goals for remediation, the commenters are concerned that the 1,239 total closed sites will likely have lingering remaining concentrations that exceed the highest remaining concentrations, shared in a Table the commenters provided titled Summary of Site Order of Magnitude Evaluation Based on the Proposed Rules. Assuming the Department addresses order of magnitude decreases to the GWQS in the same manner as when the soil standards changed in May 2021, these closed sites will be required to complete any necessary additional remediation before the next biennial certification for the RAP-GW, or be required to create a new case, with new timeframes, and complete the required delineation and RA. Through this scenario, closed cases would likely not become subject to direct oversight. However, PRCRs would be subject to additional remediation costs and/or new fees associated with a new case. These changes are not supported appropriately for certain constituents due to deficiencies in analytical chemistry and/or information pertaining to a toxicity assessment. (1, 4, 8, and 14)

RESPONSE TO COMMENTS 81, 82, 83, 84, AND 85: As for the reopener, for closed cases (that is, cases that have a final remediation document), the timing differs depending on whether the site has a restricted, limited restricted, or unrestricted use remedy. For sites that have implemented a restricted or limited restrictive use remedy (sites with an institutional control or an institutional and engineering control), the order of magnitude evaluation would be part of the required biennial remedial action protectiveness certification. For sites that have implemented an unrestricted use remedy, the order of magnitude evaluation would be required

at the time when a site “re-enters” the Department's Contaminated Site Remediation and Redevelopment.

The order of magnitude evaluation would be conducted pursuant to the Technical Requirements for Site Remediation at N.J.A.C. 7:26E-3.2(a). There is no need to insert additional exemption and phase-in language at N.J.A.C. 7:9C, given that N.J.A.C. 7:26D incorporates the GWQS at N.J.A.C. 7:26D-1.4(b) and the phase-in and order of magnitude provisions at N.J.A.C. 7:26D-7.2(e)7.2, which apply to remediation sites. Also, the Department notes that N.J.A.C. 7:26D is entitled “Remediation Standards” and incorporates ground water quality standards. Therefore, the same provisions apply to changes to ground water quality standards and surface water quality standards, as do changes to the soil remediation standards and indoor air remediation standards.

It should be noted that for active cases (that is, cases that do not have a final remediation document), the person responsible for conducting the remediation, in conjunction with the LSRP, must utilize the more stringent remediation standard(s), unless the site has an approved remedial action workplan. Regarding expansions of active remediation sites, an evaluation of DGW-PBR documents is necessary to determine if the remediation is still appropriate.

There is a concern that promulgation of remediation standards that are more stringent by an order of magnitude, or more, could result in the need for additional remediation at a site, which could impact compliance with mandatory remediation timeframes. This is a concern that responsible parties will have to enter into direct oversight by the Department through a costly administrative consent order. The concern is not well-founded. Additional time to comply with a newly promulgated remediation standard that is more stringent by an order of

magnitude, or more, could be the basis for an extension request of a mandatory timeframe pursuant to ARRCS, N.J.A.C. 7:26C, provided that an adequate justification can be given on a site-specific basis. Extension requests for mandatory timeframes are subject to Department review and approval. The Department believes that timeframe extension requests will be more common, as compared to sites entering into direct oversight. In addition, an existing permit would only need to be modified, not terminated, and reissued as a new permit.

With the combination of not requiring new permits, only modifications, and sites closed that have implemented an unrestricted use remedy not being reopened due to a change in the remediation standard, along with an order of magnitude evaluation conducted as part of part of the required biennial remedial action protectiveness certification for sites that have implemented a restricted or limited restrictive use remedy, there should be minimal increase in new cases and new permits to add to any existing backlog.

Projects with an existing RAW involving a parameter with an update of less than one order of magnitude change will be grandfathered. See also the Response to Comments 68 and 69.

86. COMMENT: Proposed changes to migration to ground water soil remediation standards should not occur concurrent with additions or modifications to a specific GWQS as a notice of administrative change. This process would negate the public comment period for changes to the soil standards. The impacts of these proposed GWQS to the MGWSRS are evaluated prior to the adoption of new GWQS, for all 50 constituents, as changes to the MGWSRS will impact remediation of both soil and ground water.

The MGWSRS for cobalt, cyanide, 1,3-dichlorobenzene, and heptachlor epoxide to be an order of magnitude lower, which may reopen delineation and remediation for both active and closed sites operating pursuant to an RAP for Soil (RAP-S). Additionally, MGWSRS will likely be re-established for 1,1-biphenyl and methoxychlor, both of which do not currently have MGWSRS. Lastly, six constituents (benzene, tetrachloroethylene, trichloroethylene, 1,2-dichloroethane, cadmium, and vinyl chloride) will have new MGWSRS set at their current soil reporting limit.

For soil, additional delineation, excavation, and/or additional capping will likely be needed. Promulgating the GWQS prior to the MGWSRS has the potential to derail remediation of ground water as well. For example, the MNA Technical Guidance, Section 4.1.1 on Source Control states, "compliance with the Soil Remediation Standards for the Migration to Ground Water exposure pathway (SRS-MGW) should be demonstrated prior to implementation of a MNA remedy" (NJDEP, 2022). PRCRs may advance an RA for ground water only to find that the remaining soil concentrations constitute a source area, negating MNA as a remedy and, of course, also requiring the same additional delineation and remediation as these proposed GWQS will trigger, should the MGWSRS decrease by an order of magnitude.

Therefore, if the intent of the Department is to update the MGWSRS based on these proposed GWQS, as is likely, the regulated community would be better served if the revisions to the GWQS and the MGWSRS are promulgated at the same time (which is, in fact, a goal of the proposed rulemaking for future rule proposals). Otherwise, sites that are undergoing MNA or are working towards MNA may be forced to pivot from MNA by changes to the MGWSRS. Additional soil remediation may also be necessary.

This harmonization between the promulgation of new GWQS and MGWSRS rules will allow PRCRs to holistically remediate sites. Timeframe requests, technical consultations, RAWPs, RARs, RAPs, etc., will address the site as a whole, reducing duplication of efforts by PRCRs and the administrative burden for the Department, which is already strained by existing backlog. (1, 4, 8, and 14)

RESPONSE: The commenters first state a concern regarding updating the SRS-MGW at the same time as the GWQS through a notice of administrative change, then later state that "the regulated community would be better served if the revisions to the GWQS and the MGWSRS are promulgated at the same time." By updating the SRS-MGW by notice of administrative change, this is achieved. The Remediation Standards (N.J.A.C. 7:26D) already have a provision to update the SRS-MGW at N.J.A.C. 7:26D-7.2(b). The only modification to N.J.A.C. 7:26D-7.2(b) is correcting the cross-reference for N.J.A.C. 7:9C-1.7(c)5 to 1.7(c). The SRS-MGW are directly derived from the GWQS and, therefore, the procedure is already outlined at N.J.A.C. 7:26D Appendix 4.

As for the reopener, for closed cases (cases that have a final remediation document), the timing differs depending on whether the site has a restricted, limited restricted, or unrestricted use remedy. For sites that have implemented a restricted or limited restrictive use remedy (sites with an institutional control or an institutional and engineering control), the order of magnitude evaluation would be part of the required biennial remedial action protectiveness certification. For sites that have implemented an unrestricted use remedy, the order of magnitude evaluation would be required at the time when a site "re-enters" the Department's Contaminated Site

Remediation and Redevelopment. The order of magnitude evaluation would be conducted pursuant to the Technical Requirements for Site Remediation at N.J.A.C. 7:26E-3.2(a).

It should be noted that for active cases (cases that do not have a final remediation document), the person responsible for conducting the remediation, in conjunction with the LSRP, must utilize the more stringent remediation standard(s), unless the site has an approved remedial action workplan.

87. COMMENT: The Department does not address the impacts on IECs. The proposed rulemaking does not address how active and closed IECs will be handled. Potable water IECs are triggered when a potable well contains a constituent above the ground water quality standards. An active IEC will presumably require an evaluation of whether the sampling data from the potable well meet the proposed ground water quality standards, regardless of whether they have decreased by an order of magnitude or not. In this particular case, the methods used to develop the proposed ground water quality standards are drinking water methods, and so these would be appropriate for a potable water IEC. However, because older datasets may not have MDLs that are below the proposed GWQS, resampling will likely be needed in this case. If existing treatment is insufficient, additional treatment will be needed.

For closed potable water IECs or for potable wells that were sampled but did not previously exceed the GWQS, the proposed rulemaking does not address what the Department would require. The Department should provide additional information so that a consistent approach is used for the following cases: 1. if a closed IEC should be opened only for those constituents with an order of magnitude decrease; or 2. if all IECs should be reopened even when the

decreases are not by an order of magnitude to verify protection of human health. This is not currently addressed in the existing regulations and the Department's IEC Technical Guidance, Version 2.0. (1, 4, 8, and 14)

RESPONSE: An active potable well IEC will require a reevaluation of the potable well sampling data regardless of whether the change is more or less than an order of magnitude. If the sampling data is found to be above the newly adopted ground water quality standards, additional sampling and possible treatment may be required. As a potable well IEC has a threat or direct impact on a human receptor through contaminated ground water, a reevaluation of the IEC is imperative to protect human health.

In situations where potable water IECs utilize older datasets that may not have MDLs below the newly adopted ground water quality standards, an evaluation of the dataset is necessary, and resampling may be needed, in accordance with the IEC Technical Guidance document (NJDEP, 2018).

As with other cases, IEC cases will be treated in the following manner. Regarding reopening closed cases (cases that have a final remediation document), the timing differs depending on whether the site has a restricted, limited restricted, or unrestricted use remedy. For sites that have implemented a restricted or limited restrictive use remedy (sites with an institutional control or an institutional and engineering control), the order of magnitude evaluation would be part of the required biennial remedial action protectiveness certification. For sites that have implemented an unrestricted use remedy, the order of magnitude evaluation would be required at the time when a site "re-enters" the Department's Contaminated Site Remediation and Redevelopment. The order of magnitude evaluation would be conducted

pursuant to the Technical Requirements for Site Remediation at N.J.A.C. 7:26E-3.2(a). All sites, including IECs, where constituents increase by more than an order of magnitude or decrease by less than an order of magnitude, are addressed in the same manner. Regarding closed IECs being opened due to GWQS decreasing by greater than an order of magnitude, please refer to Response to Comments 68 and 69. Regarding the commenters' question whether all IECs should be reopened even when the GWQS decreases are not by an order of magnitude, please refer to Response to Comment 11.

The Department notes that, for active cases (cases that do not have a final remediation document), the person responsible for conducting the remediation, in conjunction with the LSRP, must utilize the more stringent remediation standard(s), unless the site has an approved remedial action workplan.

Vinyl Chloride

88. COMMENT: The Department underestimates the economic impact of the order of magnitude changes for certain constituents at closed sites, particularly for vinyl chloride. Vinyl chloride is a breakdown product of several commonly used chlorinated solvents; consequently, at closed sites, vinyl chloride at concentrations above the proposed ground water quality standard could be detected in the future even if it is not now a constituent of concern at such sites. The universe of impacted sites could, therefore, be far greater than the 1,810 active and 639 closed sites where vinyl chloride is currently known to be present. (6)

89. COMMENT: Many sites currently invested in an MNA strategy may be forced to pivot to another remedy at a late stage in the remediation and may be too close to a timeframe to

successfully do so. For example, vinyl chloride is a primary indicator of the anaerobic reductive halogenation of common chlorinated contaminants of concern, such as tetrachloroethene and trichloroethene. At standard temperature and pressure, it is a gas and, therefore, not directly present in ground water as the result of a discharge. It is a primary indicator of MNA and represents the last step in a series of natural processes degrading the target compounds to innocuous end products. Lowering the ground water quality standards and, in turn, requiring additional delineation and possibly active remediation would be counter-productive to the remediation goals of any site. (1, 4, 8, and 14)

RESPONSE TO COMMENTS 88 AND 89: The number of cases involving vinyl chloride that were cited were taken from the EDSA data submitted for the CSRR program and constitutes the most recent and accurate number of sites reporting vinyl chloride as of the time of publication of the Department's notice of proposal. In addition to being a contaminant of concern, vinyl chloride can be a breakdown product of other chlorinated VOCs. If breakdown of these contaminants results in an exceedance of the vinyl chloride remediation standard, then vinyl chloride will need to be addressed at that time as with any other exceedance of a standard.

In regard to the use of MNA for vinyl chloride, a more stringent ground water quality standard does not automatically necessitate pivoting to another type of remediation, even as an active remediation is occurring. If the site is moving forward with an MNA remediation and it has been demonstrated through the MNA Technical Guidance Document (NJDEP, 2022) that the MNA is taking place, then the evaluation may just be to demonstrate that the remedial alternative is still protective of human health and the environment.

Regarding reopening closed cases (that is, cases that have a final remediation document), the timing differs depending on whether the site has a restricted, limited restricted, or unrestricted use remedy. For sites that have implemented a restricted or limited restrictive use remedy (that is, cases that have an institutional control or an institutional and engineering control), the order of magnitude evaluation would be part of the required biennial remedial action protectiveness certification. For sites that have implemented an unrestricted use remedy, the order of magnitude evaluation would be required at the time when a site "re-enters" the Department's Contaminated Site Remediation and Redevelopment program. The order of magnitude evaluation would be conducted pursuant to the Technical Requirements for Site Remediation at N.J.A.C. 7:26E-3.2(a).

It should be noted that for active cases (that is, cases that do not have a final remediation document), the person responsible for conducting the remediation, in conjunction with the LSRP, must utilize the more stringent remediation standard(s), unless the site has an approved remedial action workplan.

There is a concern that promulgation of remediation standards that are more stringent by an order of magnitude or more could result in the need for additional remediation at a site, which could impact compliance with mandatory remediation timeframes. The concern is not well-founded. Additional time to comply with a newly promulgated remediation standard that is more stringent by an order of magnitude or more could be the basis for an extension request of a mandatory timeframe pursuant to ARRCS, N.J.A.C. 7:26C, provided that an adequate justification can be given on a site-specific basis. Extension requests for mandatory timeframes are subject to Department review and approval. The Department believes that timeframe

extension requests will be more common, as compared to sites entering into direct oversight. In addition, an existing permit would only need to be modified, not terminated, and reissued as a new permit.

90. COMMENT: Currently, production laboratories face challenges for analyzing environmental samples containing high concentrations of target and non-target analytes, suspended solids, and other matrix interferences. Lowering the calibrated RL sensitivity exposes the analytical system to increased levels of contamination from laboratory artifacts and sample matrix effects, resulting in increased frequency of sample dilutions to bring high concentrations of target and non-target analytes into calibration range for identification and quantitation, which results in the inability of the laboratory to report sample analytical results at levels lower than the applicable regulatory criteria.

Challenges faced by laboratories include the reporting of sample analytical data to the laboratory RL to meet the current and proposed regulatory criteria. The Department's CSRR program and the Office of Data Quality and the licensed practitioner require laboratories to meet the current regulatory criteria by reporting data to the reporting limit (not the method detection limit) to achieve the remediation standards. Refer to the Technical Requirements for Site Remediation Rule (N.J.A.C. 7:26E-1.5), which requires the person responsible for conducting the remediation to conduct remediation, pursuant to ARRCS at N.J.A.C. 7:26C-1.2, and at N.J.A.C. 7:26E-1.5, using "any and all appropriate technical guidance concerning site remediation issued by the Department, which includes the Program's Analytical QA/QC Technical Guidance (April 2014), and the Technical Requirements (N.J.A.C. 7:26E-1.6(b)4ii)

requirement for the person responsible for conducting the remediation to include, in each remedial phase workplan and report, a list of all rationales submitted for deviations from any technical guidance pursuant to N.J.A.C. 7:26C-1.2(a)3."

A divergent approach (a departure from current Program Rules and Technical Guidance), such as reporting sample analytical data to the laboratory method detection limit (MDL), would require approval by the regulatory program office for remediation projects, with consultation and concurrence by the Office of Data Quality and the licensed practitioners. Taking this approach indicates challenges for meeting the proposed limit for one target compound list/target analyte list (TCL/TAL) compound, vinyl chloride. (15)

RESPONSE: The Department agrees that some laboratories may face challenges in meeting some of the adopted PQLs. The commenter claims that laboratories may seek approval by the Department to report sample analytical data to the laboratory MDL in a "divergent approach" to current technical guidance. However, while the Department sometimes allows data to be used as qualified when a result is between an MDL and RL, the use of an MDL by itself to represent compliance with a standard cannot be used. As MDLs are generated statistically, the numbers generated may have little to do with analytical sensitivity associated with an actual sample or chemical, physical, and biological influences thereof.

Several sections at N.J.A.C. 7:26E address the required demonstration of laboratory sensitivity; N.J.A.C. 7:26E-2.1(a)3 states, "derive the reporting limit for an organic compound analyzed by a particular method from the lowest concentration standard used in the calibration of the method as adjusted by sample specific preparation and analysis factors (for example, sample dilutions and percent solids) and derive the reporting limit for an inorganic compound

analyzed by a particular method from the lowest level check standard." Additionally, N.J.A.C. 7:26E-2.1(a)4 states, "use the analytical method(s) that have analytical sensitivity sufficient to accurately measure concentrations to meet the data quality objectives detailed in the site-specific QAPP." It is suggested that, if a laboratory is capable of adequate analytical sensitivity at a concentration represented as an MDL as determined empirically by an analytical response, then that concentration should be included as the lower point of the calibration curve.

Laboratory Costs

91. COMMENT: The Department underestimates the economic impact of the more stringent ground water quality standards on site remediation cases. The increased costs of addressing the new standards at the almost 3,400 sites where there are active ground water remediations that will be impacted by the rulemaking are acknowledged but not quantified. The costs at each site will be significant, including increased laboratory analysis costs, extended delineation costs, and delays in completing remediation, which put these sites in jeopardy of missing mandatory remediation deadlines. The Department should automatically extend both the regulatory and mandatory remediation deadlines at those sites which are subject to the more stringent standards to provide sufficient time to address the new requirements. (6)
92. COMMENT: The Department does not provide information on the level of effort and associated costs regarding the analytical methods referenced in Table C of the basis and background document to achieve the proposed new standards/PQLs. Laboratory-related costs to procure the required analytical instrumentation/personnel for a typical laboratory are estimated to be approximately tens of thousands to over one hundred thousand dollars.

Additionally, laboratory certification of a method from the Department will likely be one to two years from the date of rule promulgation. Increased costs from the laboratories will be passed on to the person responsible for conducting the remediation and completing required sampling activities. Additionally, delays will be incurred at sites undergoing remediation until sufficient laboratory equipment is procured and methodologies are certified. For example, if EPA Method 1699 (pesticides) is required pursuant to the proposed rulemaking, the cost for the average customer requiring pesticide analysis on a ground water sample will likely increase from $80.00 to $1,080, and laboratory turnaround time will increase by multiple weeks with only minimal demand. If a large influx of samples is required by this method, laboratory turnaround time may take months, and this issue would last for a significant period of time. Significant increases in laboratory costs and extended turnaround time would also occur for more routine analyses, such as volatile organics, as samples would need to be run by multiple methods. The result of the rule could increase the cost of a standard TAL/TCL from $500.00 per aqueous sample to $2,500 to $3,000 per sample. (1 and 14)

93. COMMENT: The proposed rulemaking does not address the practical applications of delivering laboratory analytical services designed for rule compliance. Certified laboratories deliver services within a regulatory framework, such as the Department's CSRR program, which includes consultation with the program office, the certification office, the Office of Data Quality, the technical guidance documents, and the licensed practitioners as the data users. This rulemaking did not include consultation with these entities and lacks focus on practical applications. (15)

RESPONSE TO COMMENTS 91, 92, AND 93: The comments related to the lack of certified laboratories and the suitability of the methods are addressed in Response to Comments 35, 36, 37, and 38. In addition, if a certified method includes the option for SIM analysis, then SIM is not considered a method modification, and an ATP application is not applicable. The Department understands that there may be additional costs associated with either new certification or adjustments in procedures to current certifications to achieve the adopted standards; however, the Department believes the associated costs are justified in the support of public health.

Health

94. COMMENT: The Department's conclusion that the economic impact of the rulemaking will be offset by improved health benefits is not based on any quantitative comparison. The Department should make sure the full economic impact of the rulemaking is fully documented. (6) **Error! Reference source not found.**
95. COMMENT: The Department does not provide documentation for calculated cost estimates and attempts to justify the proposed amendments as resulting in reduced costs of "potential" health impacts to the overall population some time in the future and dismisses the definite and significant increase in costs to investigate and remediate ground water, which is not supported by sound science. The Department should provide a more detailed basis for its statements in how estimated costs savings were calculated, as well as its analysis of the increased costs anticipated to comply with the proposed rule amendments. (1 and 14)

RESPONSE TO COMMENTS 94 AND 95: The GWQS at N.J.A.C. 7:9C are promulgated pursuant to the Water Pollution Control Act and the Water Quality Planning Act and are based on protecting public health and the environment, and, therefore, do not bar the Department from updating or establishing new ground water quality standards after considering costs to investigate and remediate ground water.

The adopted amendments reflect the best available science concerning the impacts of the regulated constituents on human health, some of which are possible, probable, and known human carcinogens. For the same reasons of site-specific variability and complexity relating to contamination and treatment that it is not possible to specifically determine the costs of remediating ground water to the persons conducting the remediation, it is not possible to determine with 100 percent accuracy, the economic benefits of avoided future negative outcomes attributable to remediating contaminated ground water. More simply, the reduced risk to New Jersey citizens by implementing the specific ground water quality standards translates to an overall economic benefit of avoided negative health outcomes, including likely fewer mortalities, hospitalizations, and illnesses, and corresponding avoided healthcare expenditures and potential loss of productivity and income.

Summary of Agency-Initiated Change:

As explained in the introduction to this notice of adoption, the Department is making a change upon adoption to the proposed PQLs resulting from the additional evaluation of the calculations and the USEPA's published analytical methods. As a result, the Department is not adopting the proposed PQLs for bis(2-chloroethyl) ether.

Bis(2-chloroethyl) ether

The Department derived a PQL of 1.3 µg/L for bis(2-chloroethyl) ether by multiplying the USEPA's published method MDL of 0.26 µg/L by five. The published MDL method value is 0.3 µg/L, which may have been rounded from 0.26 µg/L. The PQL for bis(2-chloroethyl) ether would have been 1.5 µg/L if an MDL of 0.3 µg/L was used for the calculation. The Department could not confirm that the published method value was rounded from 0.26 µg/L. Hence, the Department is not adopting the PQL of 1.3 µg/L for bis(2-chloroethyl) ether.

Federal Standards Statement

N.J.S.A. 52:14B-1 et seq. (P.L. 1995, c. 65), requires State agencies that adopt, readopt, or amend State rules that exceed any Federal standards or requirements to include in the rulemaking document a Federal standards analysis.

The GWQS at N.J.A.C. 7:9C are not promulgated pursuant to the authority of, or in order to implement, comply with, or participate in any program established pursuant to Federal law or a State statute that incorporates or refers to Federal law, standards, or requirements. The authority for the ground water quality standards comes solely from New Jersey law and has no Federal counterpart.

As the adopted amendments to the GWQS were not based on Federal counterparts, that is, Federally recommended ground water quality standards, they do not exceed any Federal standards or requirements. In developing revised criteria and/or PQLs for 73 ground water constituents, the Department reviewed data from the USEPA IRIS program's database, as well as data from New Jersey DWQI, the USEPA CPHEA, the USEPA Office of Water, CalEPA, and ATSDR. When

developing ground water quality standards, the Department has the flexibility to modify IRIS assessments, use assessments from sources other than IRIS, or derive toxicity factors itself for scientific reasons. Additionally, as explained in the notice of proposal's Basis and Background, the Department follows risk assessment guidance provided by the USEPA.

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Full text of the adoption follows (additions to proposal indicated in boldface with asterisks ***thus***; deletions from proposal indicated in brackets with asterisks *[thus]*):

CHAPTER 9C

GROUND WATER QUALITY STANDARDS

SUBCHAPTER 1. GROUND WATER QUALITY STANDARDS

APPENDIX

Table 1

Specific Ground Water Quality Criteria--Class II-A and Practical Quantitation Levels

Constituent	CASRN	Ground Water Quality Criterion*	Practical Quantitation Level (PQL)*	Higher of PQL and Ground Water Quality Criterion*
…				
Bis(2-chloroethyl) ether	111-44-4	0.03	*[1.3]* ***7***	*[1.3]* ***7***
…				

Explanation of Terms:

*	=	Ground water quality criteria and PQLs are expressed as micrograms per liter (µg/L) unless otherwise noted. Table 1 criteria are all maximum values unless clearly indicated as a range for which the minimum value is to the left and the maximum
**		value is to the right.
***	=	
PQL	=	Practical quantitation level as defined at N.J.A.C. 7:9C-1.4
CASRN	=	Chemical Abstracts Service Registry Number
NA	=	not available for this constituent
a	=	Asbestos criterion is measured in terms of fibers/liter longer than 10 micrometers (f/L >10 µm)
CU	=	Standard Cobalt Units
b	=	Threshold Odor Number
(Total)		means the concentration of metal in an unfiltered sample following treatment with hot dilute mineral acid (as defined in "Methods for Chemical Analysis of Water & Wastes," USEPA-600/4-79-020, March 1979) or other digestion defined by the analytical method. However**,** samples that contain less than 1 nephelometric turbidity unit (NTU) and are properly preserved, may be directly analyzed without digestion.
m	=	Pursuant to prevailing Safe Drinking Water Act rules, any positive result for fecal coliform is in violation of the MCL and is therefore an exceedance of the ground water quality criteria.

Where there is a decimal point after the ground water quality criterion or PQL, the zero, as well as the non-zero digits are considered significant.