STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600, Olympia, WA 98504-7600 • 360-407-6000

July 11, 2022

Edward Kowalski
United States Environmental Protection Agency Region 10
Sent by email only: Kowalski.edward@EPA.Gov

Re: Response to request for additional information regarding the Lower Yakima Valley Groundwater Management Area

Dear Edward Kowalski:

In response to your letter dated May 11, 2022, the Washington State Department of Ecology (Ecology) is responding below. Our work in the Lower Yakima Valley Groundwater Management Area (GWMA) is coordinated with multiple state and local agencies that will be providing separate responses. This response focuses on areas specific to Ecology's role in supporting the GWMA. In addition, I encourage you to look at Appendix E, page 56 of the Lower Yakima Valley Groundwater Management Program[1] (Program) to gain an understanding of the amount and type of outreach completed by the Lower Yakima Valley Groundwater Advisory Committee (GWAC) from 2012 through 2017.

On July 29, 2019, Ecology certified the Program via a letter to the GWAC membership. The certification was appealed on August 28, 2019. The Pollution Control Hearings Board affirmed Ecology's certification of the program on March 19, 2021. Pursuant to Chapter 173-100 WAC, certification of the Ground Water Management Area and the Program is conditioned to require that the Executive Committee:

1) Identify and Name a Lead Entity and describe specific duties (Scope of Work) to implement the goals and recommendations of the program.
2) Submit a prioritized implementation schedule to Ecology on or before May 31, 2020, including, but not limited to deadlines for accomplishment of the Program's recommended actions, responsibilities to seek funding, and recommended implementation priorities.
3) Seek funding, identify and support opportunities via a study of water supply alternatives, consistent with recommendations 33 and 44, to provide immediate assistance to residents within the Groundwater Management Area boundary whose drinking water nitrate levels are consistently above the EPA safe drinking water standard of 10 mg/L in their private domestic wells.

[1] https://www.yakimacounty.us/DocumentCenter/View/22175/GWMA-VolumeII-Appendices-July2019

South Yakima Conservation District agreed to be the Lead Entity with support from other members of the Implementation Committee (Committee). The appeal delayed the committee from submitting the prioritized implementation schedule by the deadline. The Implementation Committee is currently working through the 64 recommended actions to develop a prioritized implementation schedule by December 31, 2022.

In addition, the Committee is currently seeking funding to hire a project manager to fulfill many of the duties associated with conditions 1 and 2 above. Regarding condition 3, there are multiple activities being implemented to address safe drinking water, including a pilot program to deliver potable drinking water to willing participants with groundwater nitrate levels above or equal to 5mg/L of Nitrate. Funding for this project was secured by the Washington State Department of Health, and the project is being managed by the Yakima Health District.

A substantial amount of work was completed prior to and during the development of the Program. Appendix A attached is a description of many of the actions, including well testing and outreach, that was accomplished prior to and during the development of the Program. Appendix B outlines the testing completed during the process, with additional detail describing each effort. And Appendix C describes Ecology's ongoing implementation efforts.

Please reach out if you have any clarifying questions. For questions regarding the implementation efforts and progress, contact Damon Roberts, Central Region Water Quality Section Manager, at damon.roberts@ecy.wa.gov or 509-823-9626. For questions about Ecology's groundwater and deep soil sampling effort, contact Melanie Redding at melanie.redding@ecy.wa.gov or 509-309-5583.

We look forward to continued collaboration with you on this effort.

Sincerely,

Vincent McGowan, PE
Water Quality Program Manager

Appendix A. Lower Yakima Valley GWMA History, Efforts, and Accomplishments

2002 VIRE Study.

- The Valley Institute for Research and Education (VIRE) sampled 249 private domestic wells for nitrate, bacteria, arsenic, chloride, ammonia, ferrous iron and field parameters. Twenty-one percent of the wells sampled in the eastern part of the lower valley exceeded the drinking water standard for nitrate.

2010 Preliminary Assessment

- Evaluated existing data. Estimated that over 2,000 people are exposed to nitrate levels over the drinking water standard.
- Developed a list of recommendations and a strategy for progress based on the information gathered from the public forum meetings in 2008.

2011 Request for identification of the Groundwater Management Area in the Lower Yakima Valley.

- This is the formal request to Ecology to designate the Lower Yakima Valley as a GWMA under Chapter 173-100 WAC.
- This document describes the problem, the goals, objectives, recommended advisory committee members, associated costs, and potential funding options.

GWMA Accomplishments

- 2014 Groundwater Monitoring Plan and Quality Assurance Plan
- 2014 Deep Soil Sampling (South Yakima Conservation District, PGG)
- 2016 Proposed Ambient Groundwater Monitoring Network Plan (PGG)
- 2017 Drinking Water Well Study (USGS)
- 2018 Nitrogen Availability Assessment (WSDA, Yakima County)
- 2019 Installation of monitoring wells (PGG)
- Education and Outreach
    - "What You Can Do" brochures
    - Health Care Provider Questionnaire on Methemoglobinemia
    - Public Opinion Survey
    - Handouts on well maintenance, nitrates, coliform bacteria, septic systems, Methemoglobinemia, babies and water, and testing laboratories.
    - 2014 High-Risk Well Testing.
    - Public Service Announcements and Billboards, in English and Spanish.

2019 GWMA Program

- Developed an extensive plan, which summarizes the work, including 64 prioritized recommended actions to reduce nitrate concentrations in groundwater.
- Unanimously approved by GWAC
- Program certified by Ecology on July 29, 2019

- Certification of GWMA appealed on August 28, 2019
- The Pollution Control Hearings Board affirmed Ecology's certification of the Program on March 19, 2021

Appendix B. Efforts to assess nitrate contamination in private domestic wells and inform residents, before and during Program development.

Nitrate Sampling Program for Private Domestic Wells	Agency	Year	Homes Sampled	Number > 10 mg/L	Percentage > 10 mg/L
VIRE	private	2002	249		21%
Nitrate Treatment Pilot Program Lab Results	Yakima County	2011	271	152	56%
Nitrate Treatment Pilot Program Nitrate Test Strips	Yakima County	2011	1870	180	10%
Relation between nitrate in wells and sources	EPA	2012	331		20%
USGS Drinking Water	USGS	2017	156		26%
Ecology Ambient Groundwater Monitoring Network	Ecology	2021 Summer	134	20	15%
Ecology Ambient Groundwater Monitoring Network	Ecology	2021 Fall	134	17	13%
Ecology Ambient Groundwater Monitoring Network	Ecology	2022 Winter	134	23	17%
		Total	**3,279**		

Additional detail for the projects listed above

- In 2002, the Valley Institute for Research and Education (VIRE) sampled 249 private wells to inform residents about the quality of their drinking water. They found approximately 21% of the wells exceeded the drinking water standard.
- In 2011, Yakima County initiated the Nitrate Treatment Pilot Program. This program delivered over 7,600 nitrate test strips along with a flyer (in both English and Spanish), to every home in the GWMA. Almost 25% (1,870) of the homes returned the test strips, with 152 homes (9%) exceeding the drinking water standard of 10 mg N/L. Additionally, 271 homes had water samples sent to a laboratory, with 180 of these exceeding the drinking water standard. Based on the results of this sampling and outreach effort, 168 reverse osmosis treatment units were installed in homes. Early estimates based on existing data, determined that approximately 12.9% of the homes exceed the drinking water standard. (Pacific Groundwater Group, 2013g). All of this data is compiled in a GIS database that is accessible to the public.
- EPA conducted an extensive sampling program monitoring over 300 wells in the Lower Yakima Valley in 2012. They found 20% of the wells exceeded the drinking water standard. Additionally, they monitored indicator parameters to determine sources. They identified nitrogen sources from dairies, irrigated agriculture, and on-site sewage systems. This information led them to focus on contamination in the dairy cluster area, which is being extensively monitored as part of an AOC (2013).

- In 2017, the USGS conducted a drinking water assessment sampling 156 private domestic wells multiple times. They found that 26% of the wells exceeded the drinking water standard at least once during the project, and 20% of the wells consistently exceeded the standard for every sampling event (USGS, 2018).
- In 2021, Ecology began the Ambient Groundwater Monitoring Network, sampling 170 wells. This effort is described in detail below.

Appendix C: Ecology's Implementation Efforts

Ambient Groundwater Monitoring Network

Ecology is currently conducting the most intensive long-term ambient groundwater monitoring network in Washington State. We are sampling 170 wells in the Lower Yakima Valley GWMA, quarterly for the first two years, and then annually after. The majority of the wells are private domestic supply wells. This is our measuring stick to determine the health of the aquifer over time. This monitoring effort implements the top two recommended actions in the GWMA plan, and is funded by 2020 supplemental funds from the Washington State legislature.

Ecology is striving for transparency by sharing the results with homeowners, entering the data into EIM (environmental information management publically accessible database), and developing an interactive Story map that will be updated regularly and accessible on Ecology's website.

Community awareness of the groundwater issue was evident during reconnaissance when Ecology staff knocked on over 500 doors looking for wells to include in this effort. Most people were not home (300). Of the approximately 200 people that we talked to (and met our criteria), 74% were interested in participating in our study. This indicates that the community is aware of the issue, and residents are concerned about their groundwater. During this effort, a bilingual Spanish Speaking Ecology employee was on-site as much as possible. During these door-to-door visits, educational materials in English and Spanish were distributed to each household, including the individuals not at home. For those that were home, Ecology had the expertise to answer questions and converse with the individuals about the issue. The bilingual employee that joined the team is a member of the Multi-lingual Interpretation and Translation Team (MITT) developed, in part, so people in Washington with limited English proficiency will gain a better understanding of Ecology programs, and how they can participate in the process.

Furthermore, we know the data we are gathering is helping other efforts. The residents participating in our study, that met the criteria, were offered free bottled water delivered to their homes. This service is funded by DOH and administered by Yakima Health District. Similarly, the results of the ambient groundwater monitoring network are the basis for the public health risk assessment being conducted by DOH.

Nitrate Testing

Ecology is participating in a program with Yakima Health District and the Washington State Department of Health to provide the community test strips for testing nitrate levels in their private domestic wells. Outreach materials will be provided as part of this effort, including information on why testing is important, and how to obtain assistance if nitrate levels are above 5mg/L.

Land Use and Groundwater

Ecology will receive 2022 Supplemental Budget funds from the Washington State Legislature in July 1, 2022, to implement recommended actions: #7, #10, #23, and #24 of the Program. This project is focused on identifying land use management practices that are effective in reducing

nitrate loading to groundwater. Pilot studies utilizing groundwater monitoring wells and deep soil sampling will assess the practices. Ecology will work cooperatively with South Yakima Conservation District and WSDA.

Ecology will continue our outreach efforts tied to the GWMA activities we are currently implementing. It is standard in Central Region to conduct outreach in English and Spanish. In addition, the Ecology Water Quality program will be developing a community engagement plan for the Lower Yakima Valley community, including those within the GWMA. The community engagement plan will be developed to help guide communication on a variety of water quality concerns in the Lower Yakima Valley, including nitrate contamination. As part of the implementation committee, we will continue to provide support in any way we can for our implementation committee partner's outreach efforts.

Ecology has always been responsive to issues and concerns from members of the community. In 2020 when a private group shared sampling results that indicated dioxin was found in drinking water wells in the Lower Yakima Valley, Ecology quickly assessed the situation and developed a scientifically sound study to produce credible data. This study determined that dioxin is not present in groundwater.

Ecology has worked cooperatively with the community, other state, local, and federal agencies since 2009 when EPA encouraged the relevant groups work together to address the issue of high nitrate in groundwater. This cooperative effort has been sustained for the last 14 years and resulted in significant accomplishments, and is continuing with many of the recommended actions actively being addressed by committed entities that are focused on the goal of reducing nitrate concentrations in groundwater.

In order to be successful, we need to use a holistic approach to address all sources of nitrogen. We also need to encourage people to change what they are doing across the extent of the GWMA. Communication and engagement with the community is essential to promoting positive community engagement so we can achieve the goal of reducing nitrate concentrations in groundwater. We have also found that science-based efforts to produce credible data and results will be meaningful to the community.

Ultimately, improvements to groundwater quality will depend on the community making positive changes in the practices they use. Community members will need to know their investment in change will make a difference and are successful in the Lower Yakima Valley. We appreciate the engagement from EPA Region 10 in reissuance of our Concentrated Animal Feeding Operation (CAFO) permits, and look forward to continuing the dialogue as we implement the CAFO permit.