

Executive Summary

Friends of Toppenish Creek is a 501(C)3 non-profit environmental group that has been part of the Lower Yakima Valley Groundwater Management Area (LYV GWMA) since the beginning in 2012.

Friends of Toppenish Creek is dedicated to protecting the rights of rural communities and improving oversight of industrial agriculture. FOTC operates under the simple principle that all people deserve clean air, clean water and protection from abuse that results when profit is favored over people. FOTC works through public education, citizen investigations, research, legislation, special events, and direct action.

FOTC files this report because the LYV GWMA has failed to deliver on promises to reduce nitrates in groundwater. In 2010, according to *Lower Yakima Valley Groundwater Quality; Preliminary Assessment and Recommendations*, about 12% of wells in the LYV had nitrate levels above the safety standard of 10 mg/L. In the last round of GWMA sampling 20% of wells had nitrate levels above the standard.

Here are more specific reasons for a Minority Report:

1. The dairy industry has maintained veto power over any and all GWMA actions. Advocates for dairy have controlled the agenda and marginalized other voices on the GWMA advisory committee (GWAC).
2. The GWMA has missed almost every deadline. The GWMA leadership has failed to provide adequate research that is necessary in order for the GWAC to do the work.
3. The GWMA gathered data and then, failed to analyze the data. The GWMA did no analysis of Deep Soil Sampling data, High Risk Well testing results, composting data, sampling of domestic wells and drains, or responses to a survey of public understanding.
4. GWMA contractors have not complied with the terms of their contracts. There were no consequences. A Nitrogen Availability Assessment was supposed to be the center piece of GWMA problem solving. It arrived 18 months late. The authors ignored bio-solids and waste water spray-fields, ignored the GWMA Deep Soil Sampling, ignored inputs from beef

feedlots and animals on pasture, ignored composting yards, failed to do a promised literature review and incorrectly stated that there is no leaching from alfalfa fields.

5. The GWMA has not addressed the impact of groundwater pollution on the health and well-being of the people who live in the Lower Yakima Valley. The GWAC has ignored Environmental Justice.

6. The GWMA has used up \$2.3 million and left the program with no funds for implementation and no road map for how to obtain funds.

Background

In 2008 reporter Leah Beth Ward wrote a series of award winning reports entitled *Hidden Wells, Dirty Water* for the Yakima Herald Republic. Ward interviewed people who were afraid to drink water from their domestic wells and encountered difficulties when they went to authorities for information and assistance. She asked the U.S. Environmental Protection Agency (EPA) to investigate.

The EPA began sampling water in the area and convened meetings where residents and other stakeholders discussed ways to address the emerging problems. That group recommended formation of a GWMA and Yakima County asked to be designated as the lead agency in a 2011 *Request for Identification Lower Yakima Valley Groundwater Management Area*. Very few of the Goals and Objectives in that document have been achieved.

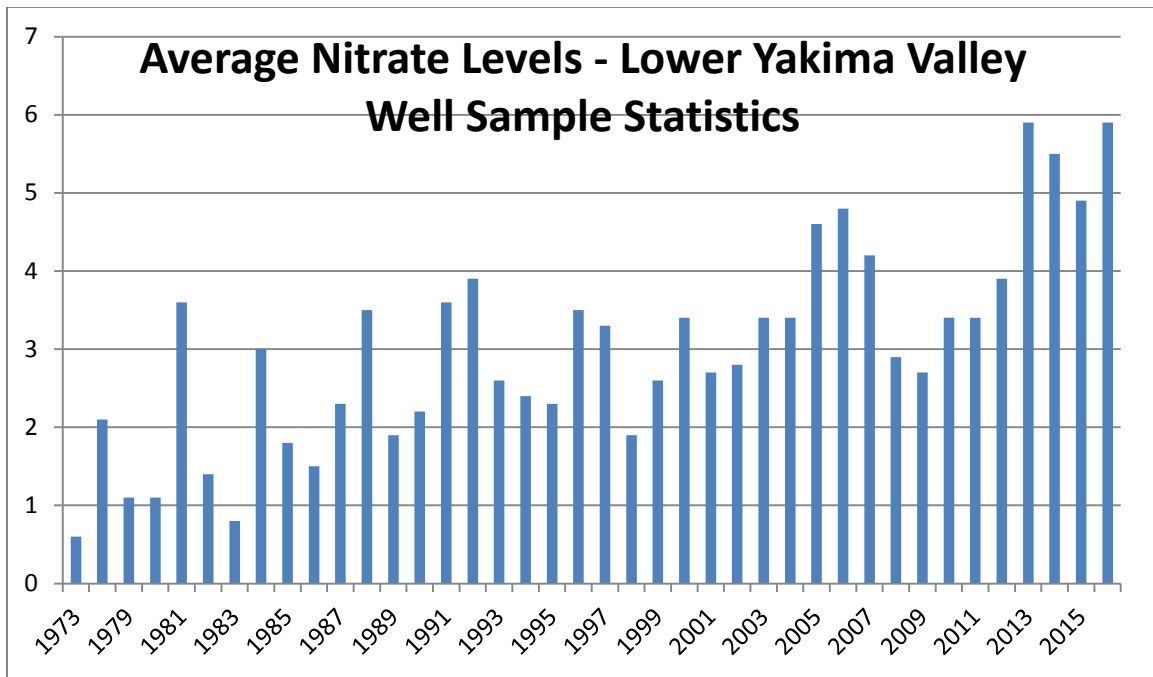
The Nitrate Problem

Nitrate contamination of groundwater is a world-wide problem that has grown over the last century due to an increasing population; man-made changes to the nitrogen cycle due to manufacture of chemical fertilizers; and an increase in confined animal feeding operations. Washington State ranks 12th in the nation for the percentage of the land surface with groundwater nitrates > 5 mg/L. Nitrates pose a health risk to animals and to people, especially babies.

California, with severe water quality problems, spends millions of dollars every year on groundwater. There is no end in sight. In 2008 that state commissioned the University of

California at Davis to study nitrates in drinking water. The LYV GWMA relied heavily on data from this comprehensive study while, at the same time, acknowledging that conditions in California and other impacted areas are different from those in the Yakima Valley.

In the Lower Yakima Valley the number of contaminated wells is increasing and the level of contamination is increasing. Here is a chart taken from the GWMA Data Base that illustrates the trends:



In the most serious situation 61% of domestic wells one mile down gradient from a cluster of dairies had nitrate levels above the safety standard of 10 mg/L. The highest reading in that area was 234 mg/L.

GWMA Actions

Early in the process the GWAC agreed upon the need for foundational work in order to analyze local issues. There was consensus on the importance of education and public outreach, a baseline survey of public understanding, an early Area Characterization, Deep Soil Sampling, a Network of Groundwater Monitoring Wells, and a Nitrogen Loading Assessment.

Public Outreach: In 2013 Education and Public Outreach (EPO) created a public survey that was carried out by students from Heritage University. The EPO group worked with EPA's Pediatric Environmental Health Services Unit (PEHSU) on a program to inform new mothers in the valley about the risks from using well water to mix baby formula. The EPO group facilitated free well water testing for 460 homes, presented bi-lingual material at five health fairs, supported radio presentations in English and Spanish and purchased billboard space that advised people to have their well water tested.

Deep Soil Sampling: Deep Soil Sampling was performed in fall 2014, spring 2015, fall 2015 and spring 2016. Both Ecology and FOTC analyzed the data in 2017-2018 but these analyses were never shared with or accepted by the GWAC. For this data set FOTC found:

- There are differences between spring and fall deep soil testing results
- The range of values for alfalfa is huge and suggests a need for further study
- The range of values for hops is large and suggests a need for further study
- Over half of the fields planted in triticale are at medium to high risk for leaching nitrate to the groundwater
- Double cropping is associated with higher nitrate levels
- In this data set rill irrigation was more protective of the groundwater than sprinkler irrigation
- Application of liquid manure is significantly more likely to result in high nitrate levels than application of solid manures or commercial fertilizer.

High Risk Well Assessment: Between 2013 and 2016, on behalf of the GWMA, the Yakima Health District tested 460 domestic wells in order to better understand the prevalence of nitrate contamination of the aquifer. This High Risk Well study found:

- 59% of wells had nitrates from 0 to 5.0 mg/L
- 26% of wells had nitrates from 5.01 to 9.99 mg/L
- 15% of wells had nitrates from 10.0 to 35.0 mg/L

A survey that was supposed to accompany the High Risk Well Assessment was not completed.

Network of Monitoring Wells: Since 2013 the GWAC has studied plans for a network of purpose built monitoring wells. In January, 2017 the Pacific Groundwater Group signed a contract to oversee the installation of these wells. The county did not sign the contract until January, 2018. In early 2017 the U.S. Geological Survey signed a contract to sample the wells and test for nitrates. The terms of that contract have expired. To date there are no wells, no network and no plans for how to analyze the data if/when samples are collected. The GWAC discussed this topic over eight times during the past six years and repeatedly approved plans for groundwater monitoring.

Nitrogen Loading Assessment: The GWAC agreed on the need for a Nitrogen Loading Assessment, a mathematical approach to nitrogen balance in the target area, in order to determine the contribution from various sources and to prioritize response strategies. The Washington State Department of Agriculture (WSDA) and Yakima County agreed to complete an NLA for the GWMA with a due date of December, 2015.

The NLA did not arrive until April, 2017. By then it was renamed a Nitrogen Availability Assessment (NAA). WSDA and Yakima County did not follow the Scope of Work (SOW) for the study. Nitrogen inputs were missing for alfalfa fields, bio-solids and compost yards

2017 Testing of Domestic Wells: Every two months during 2017 the USGS tested about 156 domestic wells and 24 agricultural drains in the target area on behalf of the GWMA. The data was shared with the GWAC but there was no evaluation. FOTC performed some analysis but our work was never discussed or approved by the GWAC.

Here are average nitrate levels for five areas in the GWMA:

- North of Wapato – 0.50 mg/L
- Wapato to Toppenish – 4.00 mg/L
- Granger to Sunnyside – 8.62 mg/L
- Sunnyside to Mabton – 5.11 mg/L
- South of Mabton – 6.45 mg/L

Proposed Solutions: In mid-2017 the GWMA leadership introduced over 250 proposed solutions to the nitrate problem, in spite of the fact that there was: no Area

Characterization, no analysis of High Risk Well Testing, no analysis of the Deep Soil Sampling, no Nitrogen Loading Assessment and no Network of Monitoring Wells. Throughout the last half of 2017 the GWAC focused on refining this list.

FOTC finds the process to be very flawed. For example, the initial list contained seven strategies that target domestic septic systems but no strategies that targeted composting operations or atmospheric deposition of nitrogen.

GWMA Plan: The most recent GWMA timeline called for an approved plan by June, 2018. This would allow time for a State Environmental Policy Act (SEPA) review and public hearings on the plan before the GWMA contract expires in December, 2018. Once again, the deadline has passed.

For these reasons FOTC now offers an alternate GWMA Plan based on the last six years of work and our participation. We have included an important section entitled, *What Will Happen If We Do Nothing?* This is required by WAC 173-100-100. We suggest measureable goals and objectives along with a draft plan for evaluation. Please understand the limitations involved when a small group with few resources undertakes this work

Problem Definition

Between 12% and 20% of wells in the Lower Yakima Valley have nitrate levels > 10 mg/L. The problem is not evenly distributed across the valley. More wells in the southern portion of the GWMA target area are contaminated than those in the northwestern area. The highest groundwater nitrate concentrations are down gradient from dairies.

Contributing factors are groundwater flow, depth to groundwater, soil characteristics, weather patterns, housing density, disposal of industrial and municipal wastes, and agricultural practices including: crop types, irrigation practices, fertilization, maintenance of lagoons/ponds, volatilization from production areas and cropland.

In recent years the problem has expanded from shallow and aging domestic wells to deeper municipal wells. Since early 2000 the City of Grandview has monitored nitrate levels in its municipal wells closely and has blended water from several wells in order to deliver safe

drinking water. In 2013 the City of Mabton drilled a new \$1.85 million well to replace older wells with decreasing water pressure and elevated nitrates.

FOTC Analysis of the Problem

Area Characterization: The GWMA target area extends along the Yakima River Valley from Union Gap in the north to the Yakima/Benton County line in the east. The western border is the Yakima River & eastern boundary of the Yakama Reservation. The outermost occupied parcels, down gradient from the Rattlesnake Hills and the Horse Heaven Hills form the northern and southern borders.

Soil is mostly composed of rich sediments that include Touchet Beds, loess and thick alluvial sands and gravels, and significant thickness of Ellensburg Formation. Half of the target area lies in the Toppenish Basin and half in the Benton Basin. Rainfall averages seven inches per year.

Agriculture is the driving force behind the local economy. Irrigation from the Sunnyside and Roza Irrigation Districts serves about 96,000 acres of rich farmland. Major crops are apples, corn, triticale, grapes, alfalfa, cherries, mint, hops, wheat and asparagus. Since the late 1980's dairying has assumed an ever increasing importance in the agricultural community. Over the past twenty five years the number of milk cows has increased at a rate of almost 3,000 per year. Increases in land planted in corn and forage have accompanied this trend.

The population is about 70% Latino and is much younger than average for Yakima County or for the state. Many people are recent immigrants who speak English less than well. About 20% of the population lives below the poverty level and slightly over half have a high school diploma. Because the population is often non-mainstream and because pollution issues are prominent the potential for Environmental Injustice is high in the GWMA.

The Yakama Nation has highlighted the impact of climate change on the valley. The USGS has documented declining water tables. Groundwater from shallow aquifers in the LYV flows toward the Yakima River and is a major contributor to instream flows that are protected by treaties. The Yakima River Basin Integrated Water Resource Management

Plan is intensely involved in seeking solutions to problems caused by over-allocation of this precious and limited resource.

Knowledge Gaps: Based on GWMA discussions over the past five years, FOTC perceives the following knowledge gaps:

- Insufficient understanding and recognition of local public health issues
- Insufficient understanding of nitrogen volatilization from animal agriculture and cropland that leads to poorly characterized atmospheric deposition of reactive nitrogen and an unquantified impact on the nitrogen balance.
- Uncertainty about market impacts on agricultural practices in the area
- Insufficient understanding of the percentage of dairy manure that is composted and exported from the area
- Insufficient information about the amount of commercial fertilizer that is applied to GWMA cropland
- Uncertainty about the rate of nitrate leaching from pens, corrals and compost areas
- Insufficient education regarding movement of groundwater in the vadose zone
- Poor understanding surrounding the meaning of Environmental Justice

Regulatory Gaps: Based on GWMA discussions over the past five years, FOTC perceives the following regulatory gaps:

- The Dairy Nutrient Management Act does not authorize the WSDA Dairy Nutrient Management Program (DNMP) to enforce compliance with Dairy Nutrient Management Plans (NMPs)
- Washington State's Non-point Source Pollution Prevention Plan has not yet been approved by the EPA
- Yakima County's Voluntary Stewardship Program relies on the GWMA plan for data gathering and evaluation of agriculture in the LYV. If the GWMA plan is weak this will weaken our VSP.
- WAC 173-201A-020 requires Ecology to approve and list BMPs that protect waters of the state. This has not been done.

- There are no Total Maximum Daily Loads (TMDLs) for nutrients for the Lower Yakima River, in spite of the fact that nitrogen and phosphorous concentrations in agricultural drains have not declined in recent years.
- Environmental groups believe that the 2017 NPDES General Permit for Concentrated Animal Feeding Operations (CAFOs) is weak and does not protect waters of the state. Industry believes the permits are too costly for producers.
- WAC 173-350-220 is poorly enforced. As a result manure composting operations pollute the groundwater
- Under WAC 16-06-210 (29) reporting of the number of cows on a facility is so broad that efforts to control pollution from animal agriculture are impaired
- WAC 173-224-040 imposes lower fees on dairy CAFOs than it does on beef or other CAFOs
- There is no reporting of nitrogenous and other potentially toxic emissions from CAFOs
- There is no regulation of manure applications on non-dairy cropland
- Yakima County with 35% of all Washington milk cows has no CAFO ordinance.

What Will Happen If We Do Nothing? Groundwater quality in the LYV GWMA is worsening. Current efforts to address the problem are not working. If we do nothing different the future will bring falling aquifers with increasingly polluted water.

Goals & Objectives

FOTC believes that GWMA Goals and Objectives must be framed so that change can be measured. With this in mind we suggest the following:

Overarching Goal: Reduce Nitrates in Lower Yakima Valley Groundwater to Safe Levels of < 10 mg/L

Pollution prevention will be a guiding principle

1. Everyone who lives in the LYV will have access to safe and affordable drinking water. No one will pay more than 2% of their income for bottled water.

2. People who live in the Lower Yakima Valley will be engaged and involved in programs to reduce nitrates in groundwater
3. There will be no more “bureaucratic runaround”. When people call authorities they will receive accurate and helpful information.
4. The LYV aquifers will show decreasing nitrate levels beginning in 2020. The aquifers will reach safe levels by 2040
5. Soil nitrate levels below the root zone on LYV cropland will be < 15 ppm
6. There will be no leaching of nitrate below animal pens & corrals, lagoons & ponds, or compost yards
7. Volatilization of nitrogen from production areas and cropland will be quantified and controlled
8. Costs for cleanup of the LYV aquifers will be borne by those who pollute

Summary

Agencies and stakeholders have attempted to turn around the trend toward increasing nitrates in LYV groundwater since the 1990's. Efforts to date, including the work of the LYV GWMA, have failed.

The largest contributor to groundwater nitrates in the LYV is animal agriculture, namely CAFO dairies. FOTC firmly believes that the most cost effective way to solve the nitrate problem is to control the number of cows in the area.