SVRP AQUIFER LONG-TERM MONITORING PROGRAM

The Spokane Valley Rathdrum Prairie (SVRP) Aquifer underlies about 370 square miles of the relatively flat valley that spans across Washington and Idaho.

The SVRP Aquifer Long Term Water Quality Monitoring Program is a voluntary program undertaken by Spokane County to monitor the quality and quantity of this important groundwater resource.

Monitoring Program History

In 1977, Spokane County in cooperation with the Spokane Regional Health District began an intensive one-year sampling effort to provide baseline data for water quality within the region's groundwater and determine if surface activity was polluting the aquifer. The same year this intensive sampling was wrapping up, the Environmental Protection Agency (EPA) designated the SVRP aquifer as a "Sole Source Aquifer" under the Safe Drinking Water Act, which means it is the sole or principle source of drinking water for the area.

The baseline study concluded that human activities did negatively impact the aquifer's water quality. In response, the County developed a protection strategy, the *Spokane Aquifer Water Quality Management Plan (1979)* and, in 1980, an ongoing voluntary monitoring program began for the County portion of the aquifer.

Current Monitoring Efforts

The County's 51 monitoring locations are distributed to provide information on water quality throughout the Washington portion of the aquifer. County staff collect samples on a quarterly basis and send them to a lab for analysis to determine the concentrations of 17 chemicals including chloride, fluoride, nitrate, phosphorus, arsenic, and mercury. Field measurements of groundwater levels, temperature, pH, dissolved oxygen, and conductivity are also collected.

Benefits of Monitoring

- Improves understanding of conditions and monitors changes
- Allows for early detection of contamination
- Provides data to assess water quality trends and the effectiveness of aquifer protection measures (e.g. sewer installation)

What 20 years of data tells us[1]:

- **The SVRP has very good water quality**
- **There were 5 exceedances of Maximum Contaminant Levels (MLC): 4 for lead, 1 for arsenic**
- **Most metals, except arsenic, are generally not detectable**
- **Groundwater levels are generally stable**
- **Chloride is increasing throughout the aquifer**
- **Nitrate levels have improved and are below the MCL[2]**
- **Nitrate levels are increasing along the northern boundary of the aquifer to the state line[2]**

1 from the SVRP 20-Year (1999-2019) Report

2 see reverse side for Nitrate Case Study

More Resources for SVRP Aquifer Info

- **SVRP Aquifer Atlas**
- **SVRP Aquifer Data Interactive Map**
- **SVRP 20-Year (1999 -2019) Analysis Report**
- **SVRP Aquifer Data StoryMap**

QUESTIONS? CONTACT US!
SPOKANE COUNTY WATER RESOURCES
waterinfo@spokanecounty.org or 509-477-7579

Case Study: The Nitrate Problem

A septic tank (top) and sewer pipe installation (bottom)

Nitrate is a naturally occurring form of nitrogen. However, in drinking water, nitrate is a potential health hazard with a Maximum Contaminant Level (MCL) of 10 mg/L and a State trigger level of 5 mg/L. Levels at or above the MCL can cause methemoglobinemia, or blue baby syndrome, in bottle-fed infants.

Nitrate levels at some locations in the aquifer approached the MCL in the 1980s and levels were increasing. Nitrates in the aquifer were linked to the use of septic systems, which were prevalent throughout parts of the County at that time.

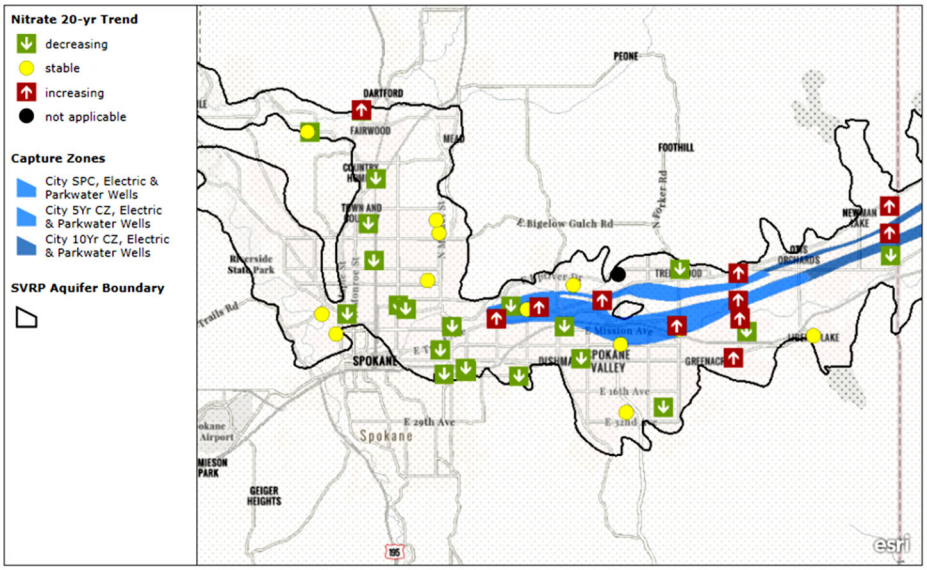
A Community Solution

Concern over public health was the motivation for the County's Septic Tank Elimination Program (STEP), which intended to reduce nitrates through sewer installation and construction of facilities to treat the additional wastewater.

In 1985, Spokane County voters approved the formation of the Spokane Valley Rathdrum Prairie Aquifer Protection Area (APA) and authorized a fee on property owners to finance protection, preservation, and rehabilitation activities. The APA was reauthorized by voters in 2004. The APA fee funds the monitoring program as well as other aquifer protection activities such as sewer and stormwater infrastructure, comprehensive planning, and environmental education.

Did it work?

During the 20-year period from 1999 to 2019, sewer installation lowered and stabilized nitrate levels in much of the County's sewer service area, reducing the risk of reaching unhealthy levels. Nitrates are generally now below the State trigger level (5 mg/L) throughout the aquifer. However, during this same period, nitrate levels in northern Spokane Valley and outside of sewer service near the state line were increasing. These locations are along the same flowpath, indicating up-gradient non-sewered areas may be impacting parts of the aquifer below the County's service area.



Nitrate trends throughout the Spokane Valley Rathdrum Prairie (SVRP) aquifer based on data collected between 1999 and 2019. Most sites with increasing trends occur along the same flow path, represented by the City of Spokane Parkwater Well 5– and 10–year Capture Zones (in blue). A capture zone defines the area where groundwater flows toward a well within a specified period.

Next Steps

With sewer largely addressing nitrates, the next regional concern for the County to address is stormwater. The *Spokane Aquifer Water Quality Management Plan* recognized the need for improved stormwater management since pollutants carried in stormwater can significantly impact the aquifer. The data indicate chloride levels, often used an indicator of stormwater pollution, have significantly increased throughout the aquifer between 1999 and 2019. Future development means more stormwater from hard surfaces (homes, roads, parking lots) will need treatment measures before making its way to the aquifer.