Critical Aquifer Recharge Area Draft Guidance

Laurie Morgan, Hydrogeologist
April 15, 2021
Meet Your Presenter

Laurie Morgan began her career as a hazardous waste inspector in California, followed by a position as an Engineering Geologist with the California Regional Water Quality Control Board, Los Angeles.

She inspected businesses for potential contamination sources in the San Fernando Superfund area and oversaw soil and groundwater investigations.

Laurie has worked for the Washington State Department of Ecology for 29 years, first as the well construction coordinator for the Southwest Region, then as a hydrogeologist for the Water Quality Program, where she is lead staff for the Groundwater Quality Standards.

She has worked on aquifer vulnerability, pesticide risk modeling, regulatory issues with Large Onsite Sewage Systems and Onsite Sewage Systems, wrote the Critical Aquifer Recharge Area Guidance in 2005, and substantially revised the guidance in 2021. Laurie has reviewed and comment on Critical Aquifer Recharge ordinances as well.
Goal of establishing Critical Aquifer Recharge Areas

• Protect the functions and values of a community’s drinking water by
  • Preventing pollution and
  • Maintaining supply.

Drinking Water that is clean, safe, and available
Confirmed Groundwater Contamination in an Industrial Area

- Benzene
- Lead
- Arsenic
- Other Non-Halogenated Organics
- Polycyclic Aromatic Hydrocarbons
- Petroleum Products
- Non-Halogenated Solvents
- Metals

Confirmed and Suspected Contaminated Sites List (wa.gov)
Confirmed & Suspected Groundwater Contamination Toxic Cleanup Sites (Appendix B)
Monitoring for Nitrates in Groundwater

Washington Nitrate Project Wells with Maximum Nitrate Sample $\geq$ 5 mg/L

Max Nitrate Sample, mg/L
- $\geq$ 10
- $\geq$ 5 & < 10

Washington Nitrate Prioritization Project (Morgan, 2016)
Groundwater Contamination in the News

Chehalis Superfund Site Deleted From EPA’s National Priority List | The Daily Chronicle (chronline.com) October 7, 2020

“After the company closed in 1986, a major flood tipped over tanks full of those chemicals, contaminating the groundwater and soil. Beyond the company’s 16 acres of property, the contamination also leached into 25 to 30 other residential parcels, according to the EPA.”

Cleanup options aired for Freeman grain facility
Spokane Journal of Business January 28, 2021

“…Ecology is seeking public input .. on proposed multimillion-dollar plans to clean up contamination at the grain elevator in the Freeman area, about 13 miles south of Spokane Valley.

... the plume of carbon tetrachloride spanning a half-mile underground originates from a seasonally active grain-handling facility ...

The contamination was discovered in the groundwater beneath the Freeman School District, which includes an elementary school, a middle school, and a high school. Additionally, testing found contamination in the wells of three households near the grain-handling facility.
Why we are revising

• Last revision was 2005
• Many changes in GMA laws and rules
• Update resource links and references to websites and publications
• Improve the guidance
Change

Many legislative changes and rule amendments – Here are a few that impact critical aquifer recharge areas.

1989 - 1990
GMA enacted
Counties and cities
must protect Critical
Areas

1995
Best Available
Science

2011
Voluntary
Stewardship
Program

2018
Water availability
for development
(\textit{Hirst})

RCW 19.27.097: Building
permit application—
Evidence of adequate
water supply
How to Comment

• Comment period ends May 7, 2021 (11:59 PM)
• eComments online (preferred)
• Or by mail (postmarked by May 7, 2021):
  Laurie Morgan
  Water Quality Program
  Washington State Department of Ecology
  PO Box 47600
  Olympia, WA 98504-7600

[URL] Critical aquifer recharge areas - Washington State Department of Ecology for the web page

DRAFT - Draft - 2021 Critical Aquifer Recharge Areas: Guidance Document (wa.gov) to go to the draft
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### Important links

- Critical Areas Handbook - Department of Commerce [Critical Areas web page](#)
- Washington State Conservation Commission VSP
- The Growth Management Hearings Board
Voluntary Stewardship Program

- Intent – Provide a voluntary means to protect critical areas in ag lands in VSP opt-in counties.
- Adopted into the Growth Management Act in 2011.
- Administered by the Washington State Conservation Commission
- Other state agencies provide technical support, including Ecology.
- There are challenges with making this work for Critical Aquifer Recharge Areas and prevention of contamination of groundwater from agricultural sources.
Monitoring for Nitrates in Groundwater

Washington Nitrate Project Wells with Maximum Nitrate Sample $\geq 5$ mg/L

Max Nitrate Sample, mg/L

- $\geq 10$
- $\geq 5 \& < 10$

Washington Nitrate Prioritization Project (Morgan, 2016)
Section 3 - Streamflow, Water Availability, and Permit-Exempt Wells

Step 1: Identify where groundwater resources are located

Step 2: Analyze the susceptibility of the natural setting where groundwater occurs

Step 3: Inventory existing and potential sources of groundwater contamination

Step 4: Classify the relative vulnerability of groundwater to contamination events

Step 5: Designate areas that are most at risk to contamination events

Step 6: Protect by minimizing activities and conditions that pose contamination risks

Step 7: Ensure that contamination prevention plans and best management practices are followed

Step 8: Manage groundwater withdrawals and recharge

Section 4 - Protecting the Functions and Values of Critical Aquifer Recharge Areas

Section 3 is new
Section 4 is mostly the same
Section 5 is updated – Especially “Availability” of Best Available Science.
Availability of BAS

• Growth Management Hearings Board
  • The best available science is science that is presently available as well as practically and economically feasible.
  • The “best available science” requirement includes the word “available” as an indicator that a jurisdiction is not required to sponsor independent research but may rely on competent science that is provided from other sources . . .”

• See also Chapter 365-196-050 WAC Regional and Local Variations for important distinctions related to availability of best available science with respect to smaller jurisdictions.

• The GMA recognizes the variability of population and available resources across the state.
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Special thanks to Julie Wartes, City of Issaquah, for Appendix A – Focus on Implementation
Issaquah – Program Integration & Implementation

Integration of pollution prevention goals enables programs to make use of shared resources for administration, funding, information, inspections, and public outreach and education.

- Spill Response
- Illicit Discharge Investigation
- Hazardous Materials Management Plans
- Hazardous Materials Management Inventories
- Pollution Prevention Technical Assistance
- Fats Oils and Grease management review
- Septic Inspection Verification
- Private Storm System Inspections
- NPDES Storm System Inspections
- Ambient Water Quality Sampling
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Ecology welcomes comments during the current comment period on this section too!

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Thank You!
Questions?

Laurie Morgan, LHg
Laurie.Morgan@ecy.wa.gov
(360) 407-6483 (Please leave a message and I will call you back)
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[Links to web page and draft document provided]