THURSTON COUNTY
WASHINGTON
SINCE 1852

PUBLIC HEALTH AND SOCIAL SERVICES DEPARTMENT

SCATTER CREEK AQUIFER – SEPTIC SYSTEM MANAGEMENT PROJECT

Frequently Asked Questions

Drinking Water -Answers

How can I tell if my drinking water is safe?

Test the water regularly to see if meets drinking water quality standards. If your water comes from a community well or a water system, the water must be tested regularly, and customers notified if the water does not meet drinking water standards. More details are available from our drinking water program, or by calling 360-867-2631.

If you have an individual well, it is up to you to test your water to be sure it meets drinking water standards.

- Test your water for bacteria and nitrates at least once a year.
- If there is an infant, a pregnant woman, or a woman who is trying to get pregnant in your home, test more than once a year.
- If your water does not meet drinking water standards, consider options such as installing a water treatment system or getting bottled water.

Thurston County Health Department has a certified laboratory that can test drinking water samples. Coliform bacteria test costs $32 and nitrate tests cost $32. There are 7 locations to pick up and drop off water samples, including Tenino City Hall and ROOF in Rochester. For more

information on water testing including a list of other certified laboratories, please visit our website.

If I live downstream from Scatter Creek, should I install a UV filter on my well?

The only way to know if your water is safe is to test the water. Before deciding on a treatment system, first find out if you have a problem, and if you do, pick treatment that is appropriate to address it. Take time to research the options. Consider the type of contaminants the filter or treatment system removes, your need for short-term or ongoing treatment, how quickly water is treated, required maintenance needs and expenses, and third-party certification, such as National Sanitation Foundation (NSF).

Is there a problem with the water quality in the Scatter Creek Aquifer? Have coliform bacteria been found? If yes, where?

In the past, some wells tested in the Scatter Creek Aquifer area had coliform bacteria or nitrates at levels above the safe drinking water standards. You can find links to past studies, including maps, on our website. Currently the project is sampling throughout the aquifer area twice a year in March and October; Recent water quality sampling shows nitrate levels have improved substantially since 2008 levels. This is good news! However, there were coliform bacteria present in 22% of the wells tested in October 2013. This is likely due to the heavy rains in September and reminds us that the underlying geology of the area means that the aquifer remains vulnerable. The project will help us better understand the aquifer, potential threats to the water, and develop a strategy to protect the drinking water now and in the future.

What levels of various contaminants are dangerous? What are the health problems? Are there any confirmed health issues?

The presence of coliform bacteria in drinking water suggests the presence of pathogens, that is, germs that can make us sick. The acceptable level of coliform bacteria in drinking water is zero. When pathogens contaminate a water supply, they can cause hepatitis, giardiasis, dysentery, and many other water-borne illnesses. Testing for all the different types of pathogens (bacteria, viruses, and protozoa) is extremely expensive, time-consuming, and impractical. Testing for coliform bacteria is relatively simple, inexpensive and a good indicator of the presence of pathogens in drinking water. If your water has coliform bacteria in it, the laboratory will test your sample for fecal coliform (which includes E. coli). The presence of fecal coliform in your water poses an even greater health risk than other forms of bacteriological contamination.

The maximum contaminant level (mcl) of nitrates in safe drinking water is 10 mg/L. Nitrates reduce the ability of red blood cells to carry oxygen and can cause a condition known as

methemoglobinemia or “blue baby syndrome” in infants. High nitrate levels can also affect certain immune-compromised people and may increase the risk of miscarriages in pregnant women. High nitrate levels are also an indicator that other contaminants may be present.

What are nitrate sources?

Nitrate is in most fertilizers, manure, and the liquid waste discharged from septic systems. Certain plants such as peas, beans, and scotch broom can “fix” nitrogen due to natural bacteria in the soil that can convert nitrogen into nitrate. However, nitrates associated with nitrogen-fixing plants are rarely found in groundwater.

Is eliminating Scotch Broom a viable or workable option to reduce nitrates?

Nitrates from nitrogen-fixing plants are rarely found in groundwater, so eliminating Scotch Broom is unlikely to be an effective means of reducing nitrates in the aquifer. However, nearby residents appreciate your effort to eliminate Scotch Broom, as it is harmful to livestock.

Nitrates can be beneficial as fertilizer and for other uses. Perhaps there might be a way to turn a problem into a resource?

Nitrates do have beneficial uses, but at levels above the drinking water standard of 10 mg/L can cause serious health effects. There are ways to reduce the amount of nitrates that get into wastewater and then enter the aquifer from septic systems. Some examples include installing a special nitrogen-reducing type of septic system, composting food waste rather than using a garbage disposal, using micro-flush or waterless toilets, or using no-mix toilets that send liquid waste to a special holding tank, which can then be recycled into fertilizer.

If water quality is improving, aren’t the codes in place working?

It is very encouraging that the nitrate levels have dropped since 2008. While code changes over the years have reduced the number of potential lots and septic systems in the area, we do not know if the current codes are adequate to protect the drinking water quality in the aquifer in the future, especially as more homes are built. The land use and character of the area is shifting from agriculture to rural residential, so we want to understand if the use of septic systems poses a significant risk to the aquifer. We have a window of opportunity to use tools, such as the groundwater computer model, to predict future impacts to the aquifer from a variety of potential scenarios before there are problems. The citizens committee and the county will use this information to help determine what, if anything, should be done differently to protect the drinking water for the future.

Project Details - Answers

What is the goal of the project?

The goal of the project is to ensure that drinking water from the Scatter Creek aquifer is safe now and in the future.

Why is the Health Department doing this and doing it now?

Water quality monitoring data and an evaluation of the area geology show that the aquifer is highly vulnerable to pollution.

- The Scatter Creek Aquifer is the sole source of drinking water for over 18,000 residents.
- Evaluating conditions now gives us the best chance to maintain and improve water quality in the Scatter Creek aquifer.
- The land use and character of the area is shifting from agriculture to rural residential, so we want to understand if the use of septic systems poses a significant risk to the aquifer.

The health department and the Thurston County Board of Health have been concerned about water quality in the Scatter Creek aquifer for some time. The health department applied for a number of grants to support similar projects in recent years, but none were approved. Now that we have secured grant funding, we are able to move forward with the groundwater monitoring, computer modeling, and stakeholder and community outreach work that are necessary the project's success.

What will the project do?

The citizen advisory committee will help the health department evaluate the pollution risks to the aquifer under current land use and septic system regulations.
The committee will help us evaluate future land use and septic system development scenarios and determine the risks associated with them.
Based on monitoring data, scientific literature, computer model results and citizen input an action plan will be developed to protect the groundwater quality and the health of the residents. The plan will be presented to the Thurston County Board of Health and Health Officer for consideration and approval.

Why does the boundary only include part of the aquifer?

The boundary shown on the map is the boundary of the aquifer study area. The boundary is based on how the water flows in the aquifer. The study area boundary only includes those areas served by septic systems where we can "account" for all the water flow, geologic features, and

current water quality. With this information, our hydrogeologist can develop an accurate and testable computer groundwater model. While the study area boundary does not include the entire Scatter Creek aquifer, the model can analyze the impact of potential contamination coming into the study area.

What if there is contamination coming into the aquifer from outside the project boundaries?

The study and groundwater model will consider significant sources of contamination that flow into the study area. The citizen advisory committee and project team will carefully evaluate information as they develop recommendations. Outreach efforts will expand to include all properties affected by this project before we bring final recommendations to policy makers.

How is the computer groundwater model developed?

Numerical groundwater models are developed using geologic, hydrologic, and water quality conditions found in the study area. In this case, a 25 square mile 3-dimensional model was constructed using well log information from 600 well logs and physical and chemical water data collected from an active 40 domestic well network. We also use data from stream gaging and precipitation stations and information and studies from the United States Geological Survey (USGS). Once we build the physical model and calibrate it to the physical data, we can then add contaminants and study their movement in the ground water system. Computer models are powerful predictive tools that allow us to add many complex factors at once versus predicting from 'stand alone' equations. They give us outputs in 3-dimensions such as how far below the ground surface the aquifer can be found or the expected concentration of contaminants moving in the aquifer system.

How can we be sure the data and the modeling is accurate?

The work to gather water quality data, including well sampling and laboratory testing, follow rigorous scientific quality assurance protocols. The computer groundwater model is tested against what the real-life data tells us. For example, during a rainstorm we can measure the amount of precipitation and the water levels in streams and in wells over the course of time. We can check the model by adding the actual precipitation levels and then running the model to see what the model predicts stream and well levels will be and comparing to the real-life data. A skilled licensed hydrogeologist with more than 30 years of ground and surface water modeling experience developed our model. The model uses the latest version of the industry standard groundwater modeling software.

If you don't know exactly what caused the drop in nitrate levels after 2008, how does that impact your model for septic systems?

We know there has been a 35% decrease in nitrate concentrations since 2008. When we ran a simulation scenario in the computer model and then stopped it, the nitrate concentration dropped by 35%, too. While the funding and scope of work for this project won't allow us to go back in time and evaluate specific past land use practices, we can evaluate current practices and septic system standards and use the computer model to predict how future growth on septic systems is likely to affect water quality in the region.

How did you pick the wells tested? How were wells selected for the study?

Wells for this study were selected specifically to support the computer groundwater modeling effort. Ideally, monitoring wells for the computer model would be evenly spaced in a 3-dimensional grid covering the entire aquifer area. That is, they would be evenly placed on a grid along the surface, and evenly spaced on a grid by depth, in the aquifer. Ideally, all the wells would be sampled at the same moment during each sampling session and would all be well constructed. In the real world, the well monitoring network is imperfect, but we work within constraints to be as close to the ideal as possible.
The well monitoring network has grown from 20 to about 40 wells. Each well meets certain standards for construction, is sealed so contaminants cannot enter the well, and has an adequate sample tap. Most are shallow, but enough intermediate depth wells are included to have a vertical profile of the aquifer. There are areas in the perfect grid where there are no wells drilled, or owners are unwilling to have their well monitored. Citizen's committee members have been helpful locating wells in some these areas to reduce the data gaps. The water sampling happens during a two-week period each sampling session in March and October. The wells included in the monitoring network were chosen based on science and public will (owner permission).

A sample has never failed in our school system. Are Rochester wells part of the testing?

It is great that the water serving the schools has not had any problems we want to keep it that way! Since all public water systems, such as the wells serving the Rochester schools, are required to sample regularly, most wells selected for this study were private wells. This avoids duplicating data by sampling the same well twice. Unfortunately, we are not able to simply use the existing data from public water systems because 1) we need water level data as well as water quality data and water systems are not required to monitor water levels regularly; 2) all the sampling needs to occur at about the same time; and 3) we need to have a grid of wells that covers the entire area. A limited number of wells operated by public water systems were included because they were located in areas where data was needed and other coverage was not available. One of these wells is operated by the Rochester Water Association. It is a good check

of our data to see that the water quality results from our lab are similar to the results of tests done by the Association during the same month.

How are you determining cause and effect?

The computer groundwater model can take data about water movement and contaminant movement and help determine whether septic systems are having an effect down-gradient in the aquifer, and if so, how much. The initial work is looking at septic systems. We have accurate information about how much nitrogen is released by septic systems and how much of that nitrogen actually reaches the aquifer. The model then tracks the amount of nitrogen released by each septic system and predicts areas where it will flow and how nitrogen concentrations will rise and fall as it moves through the groundwater system. The model can predict the fate and transport of nitrogen because of our understanding of the geology of the area. From this, we can determine if and under what conditions septic systems have a significant adverse effect on the aquifer. The model results for septic systems are being compared to the actual monitoring results.

Are other issues besides septic being included in the research?

The effect of land use activities on groundwater quality is being evaluated as part of the modeling process. We need to account for this because we know that other land uses contribute nitrogen to the area groundwater. The groundwater model will also take into account the effect of the Tenino sewage treatment plant.

What solutions are being considered?

Check back. At this point (April 2014), we are still gathering data from the computer modeling and water quality monitoring. As the citizens' committee considers the information, they will develop potential options. These will be shared in a newsletter, on the website, and in a community workshop to seek input from Scatter Creek Aquifer Area residents, businesses, and property owners.

Is this just another gopher hunt from Thurston County in Olympia?!

This project is about making sure that drinking water from the Scatter Creek aquifer is safe now and in the future.

When did the project start?

The project began in March 2012 and needs to be completed by December 2014. Groundwater monitoring is under way. The citizen advisory committee was appointed in October 2012, and

began meeting monthly in November 2012. The land use risk analysis and computer modeling began in early 2013, and we plan to have the draft action plan ready in 2014.

Costs - Answers

How much will this study cost? What grant funds this study?

This project is funded in part by a Centennial Clean Water Program grant from the Washington State Department of Ecology. The grant will pay for the well sampling (monitoring), groundwater modeling, advisory committee, community outreach work and plan development. The total project cost is approximately $234,000.

How will the recommendations be paid for?

A groundwater protection strategy and any action recommendations that result will be developed with the assistance of the Citizens' Committee, input from the community, and guidance by the Thurston County Board of Health and the Thurston County Commissioners. Once a plan is drafted with specific recommendations, then financing options for those actions will be considered. Prior to the adoption of any new or additional regulations, the cost and financial impact on residents will be considered. There will be three community workshops during the project to share findings, action recommendations, and seek input. These workshops will help assure that community members have opportunities to shape any recommendations that move forward for consideration by policy makers. In addition, any new or additional regulations, fees, rates, or charges require a public hearing and public notice. This process helps assure that policy makers are aware of the public concerns and potential impacts to county residents.

Is any tax money being used?

The primary funding source for this project is a Centennial Clean Water Grant from the Washington State Department of Ecology. The Centennial Program is a Washington State funded grant program through the Washington State General Fund, primarily via the State Building Construction Account. Ecology administers the Centennial Program as grants to local governments and tribes. The Centennial program provides grants for water quality infrastructure and nonpoint source pollution projects to improve and protect water quality.

More details about Centennial Clean Water Program funds are found on the Department of Ecology website.

Thurston County Resource Stewardship provides grant match by paying for the groundwater sampling portion of the project.

Who paid for the mail outs?

The grant paid for the newsletter mailing.

If changes are done, who benefits financially?

We all benefit from clean water.

Community Input - Answers

How will area residents be informed and give feedback about project?

Throughout the project, information and materials is posted on the project website as it is developed. Residents and property owners in the study area were mailed a project introduction letter in April 2012 and a newsletter update including an opinion survey in July 2013. There will be other direct mailings to residents throughout the course of the project. Periodic updates are sent to those who request to be placed on the update list. There will be 3 community workshops at key points in the project development to get feedback and input from the community. Dates of community workshops are July 30, 2013; April 23, 2014; and one expected in late September 2014. Members of the community are welcome to attend the monthly advisory committee meetings to listen to the discussion.

In addition, any regulation or code amendments needed to implement project recommendations must go through their own public notification process as required by state and county law. For instance, changes to the county sanitary code, IF they are proposed, require a public hearing and legal notice in The Olympian – the county newspaper of record. Thurston County Public Health also publishes hearing notices in the Tenino Independent, the Nisqually Valley News and on the Environmental Health Division web page.

You can always call our office at 360-867-2643.

With all the scientific research and testing – what is the importance or need of public input?

We need public input so we can make the best, responsible choice. We do not know what we are going to find—there may be many approaches that will effectively protect drinking water quality, each with its own pros and cons. Which strategy we decide to recommend will depend, in part, on what input we receive.

How were the citizen advisory committee members chosen?

The citizen advisory committee strives to provide balance and represent the diversity of perspectives and interests that exist in the Scatter Creek area.

Committee members were solicited via an introductory letter that was sent to all project area residents and property owners in April 2012. People could also apply via our web site. Project staff and the Thurston County Board of Health established criteria for the stakeholder committee. The criteria were designed to assure that a broad spectrum of interests would be represented on the committee. The Board of Health and staff reviewed all applications and letters of interest as well as recommendations.

Eleven citizen advisory committee members were appointed at the October 9, 2012 Board of Health meeting. All live, own property, or work in the Scatter Creek Aquifer Area. Committee members indicated they could represent the following interests: neighborhood associations, long-time residents, newcomers, youth, retirees, ROOF (Rochester Organization of Families), agricultural interests, fishing, infants or young children in the home, fixed income, Spanish speaking, property rights, environmental, renters, Rochester Grand Mound Business Group, water system operators, builders/developers, property owners, and fishing.

Septic Systems - Answers

Why examine the area's septic systems? Why is septic being targeted? What about commercial land use and livestock?

- Over time, land use is converting from agricultural to residential use. Septic systems are a known source of nitrogen and bacterial contaminants. A septic system for a three-bedroom home is typically designed to handle 360 gallons of sewage per day.
- Preliminary groundwater modeling (computer analysis) of the area conducted in 2010 indicated contamination from septic systems could be significant in some areas.
- Most new commercial development is expected to occur in the area served by the Grand Mound Wastewater Treatment Plant.

Is the county going to make us replace our septic systems, or convert to sewer?

The purpose of the study is to evaluate the pollution loads associated with septic systems, land use activities, and develop a plan to protect the groundwater. The citizen advisory committee will work with the health department to study the issues and determine if special septic system management strategies are needed. They will then make recommendations to include in the plan. Options for managing pollution from septic systems will be open for discussion through this

project. Options could include upgrading existing systems as well as establishing stricter standards for future septic systems. Community sewer service is also a method of managing sewage disposal and could be considered; however, sewers cannot be extended into the rural area under current state law (the Growth Management Act). The Growth Management Act limits sewer service to urban areas except under very limited circumstances. Most of this project study area is rural.
What the plan ultimately recommends will be the result of careful consideration of the scientific information and input from the community.

Are there ways to reduce the amount of nitrates from septic systems?

A few manufacturers offer special (alternative) septic systems that reduce the amount of nitrogen in wastewater from septic systems. The University of Washington and the Washington State Department of Health have teamed up to conduct a study testing the effectiveness and reliability of three new septic treatment technologies for their ability to reduce nitrogen. Study results indicate these new public domain technologies can reduce nitrogen by 68 – 90%. An additional demonstration project is being set up to refine the technologies. The Department of Health plans to develop Recommended Standards and Guidance for the most promising systems so that they can be used by the public.

What is the basis for the comment sand and gravel is not a good filter?
The reason sand and gravel soils are a problem in the Scatter Creek area is because they are excessively coarse. They are dominated by big rocks, cobbles, and coarse sand and gravel. They often have large void spaces. This soil profile extends from just below the top soil layer down the water-bearing aquifer. These soils provide little treatment or filtration—in some cases they can't even filter out bacteria. They do not treat or reduce nitrogen, or much of anything else. They oxidize the nitrogen to nitrate, which is very mobile and stable.

How come sandy, gravelly soils are risky for groundwater contamination, i.e. bad for sewage treatment; but many septic systems use sand and gravel for treatment?

In most septic systems gravel is used to aerate (oxidize) the sewage and disperse it throughout the drainfield trench. This helps keep the soil from clogging. The voids in the rock also provide storage capacity so that the sewage does not back up in the septic tank and distribution system/pipes. The rock does not do much to "treat" the sewage - it serves more of a mechanical function. Gravel drainfield trenches and beds help disperse the effluent and provide some storage capacity until it is absorbed into the soil.

Some systems use carefully graded sand to help provide treatment and make up for deficiencies in the native soil. In the Scatter Creek area, this sand is often installed at the bottom of the

drainfield trench, below the drainrock, to provide filtration and a modest amount of treatment. The sand is graded and blended to meet specific (ASTM C-33) standards. This removes bacteria and provides a small amount of nitrogen removal.

In other areas of the county the graded sand is used to build lines, sand filters, and above ground systems like mounds and GlenDon systems. These are installed where there is not a sufficient depth of native soil above seasonally saturated or impervious soils or geologic formations. The sand provides treatment capacity to make up for poor native soil conditions. These systems do a better job of nitrogen removal (maybe 25%), but are more expensive and maintenance intensive.

If sand and gravel are not good filters, why not require a proper type of filter soil to be placed in the drainfield as backfill?

That is actually being done now, requiring a sand-lined trench graded to meet specific standards. However, sand still does not do a very good job of reducing nitrogen. Sand graded to meet specific standards is used in certain types of on-site sewage systems to filter out bacteria and provide some level of chemical treatment and removal. Sand lined trenches and sand filters have been used extensively in the Scatter Creek area because they are effective at removing bacteria from septic tank effluent before it seeps into the native soil and aquifer.

What type of soil reduces nitrates best?

Finer-grained soils, such as loam, clay, and silt.
Would gray water diversion systems help this situation by increasing time for sewage to be worked on by bacteria and reducing water pushed through septic system?
Local and state regulations for septic systems classify both black water (toilet waste) and gray water (sink, shower, laundry waste) as sewage. All of the sewage flows from a home, both black and gray water, are required to go into an approved treatment system. A septic system generally includes a septic tank, pump chamber (if applicable), and a drainfield. Nitrates in the sewage are carried down into the aquifer, as bacteria do not remove nitrates.

In some countries, they are experimenting with separating urine from the rest of the blackwater and treating/handling it separately because it contains the majority of nitrogen in the wastewater stream. This approach requires substantially different types of plumbing and sewage infrastructure. Such systems are not currently used in the United States.

Wastewater (sewage) Treatment Systems - Answers

What about the impact of the sewage treatment plants on the aquifer?

The Tenino sewage treatment plant is directly upgradient (upstream) of the study area boundary. In the groundwater model, we can account for the water entering at the boundary of the study area. We will use sewer system discharge data and permit requirements to model the effect of the Tenino treatment plan on water quality in the region. The Grand Mound sewage treatment plant discharges the cleaned water into the Chehalis River and should not affect the quality of drinking water in the aquifer. Each sewage treatment plant has permit requirements limiting the volume of sewage and the concentration of pollutants they are permitted to discharge.

Why was the Tenino wastewater treatment facility excluded from the study area?

The impacts of the Tenino facility will be accounted for by the computer model. The project study area begins just west of Tenino and the infiltration basins for the sewage treatment plant. This was chosen by the project hydrogeologist based on geologic conditions.

Why does Thurston County Health Department not test for carcinogens produced by the chlorination process used by the Tenino Wastewater Treatment facility?

The Tenino wastewater treatment plant must monitor and meet water quality standards for a variety of chemicals including Total Trihalomethanes, which include Chloroform, Bromoform, Brombdichloromethane, and Dibromochloromethane. These are compounds generated by disinfecting wastewater with chlorine. Drinking water containing these by-products in excess of the maximum contaminant level may lead to adverse health effects, liver or kidney problems, or nervous system effects, and may lead to an increased risk of getting cancer. The Washington State Department of Ecology issues and oversees the permit for the Tenino Wastewater Treatment Plant.

The primary purpose of this project is to evaluate the impacts of septic systems. We are modeling nitrate, a contaminant produced by septic systems. With our limited budget we are focusing on nitrate because there is a public health standard for nitrate in drinking water, it is a good indicator of septic system performance, and we can afford enough samples and sample events to characterize the aquifer.

Can we model the carcinogen pollution being introduced by the Tenino Wastewater Treatment facility into our drinking water?

The groundwater computer model can evaluate a variety of different ground contaminants IF we know how much is being released, where the release is taking place, and how they behave in groundwater. Our budget and time project table will only allow us to model nitrate at this time.

Can the City of Tenino allow septic tank pumpers to dispose of the contents of septic tanks (septage) at the treatment plant? To accept septage, does the city need to modify their wastewater discharge permit or obtain a new permit from the Department of Ecology?

If asked, the Department of Ecology will consider a permit modification that would allow for the disposal of septage. The proposal would be approved only if the engineering analysis indicates that the Tenino Wastewater Treatment Plant will stay within their permit discharge limits. This requires a plan from the project design engineer.

Would these changes require public notification?

Public notification is not required if the engineering analysis shows the plant will still comply with permit discharge standards after the modifications are made. Public notice is required if the plan expands capacity. Public notice is also required when the permit for the plan is renewed (every five years).

Property and Land Use - Answers

Will this project affect what I can do with my property?

The project could result in recommendations to change current land use and/or septic system regulations. Depending on the results of the groundwater modeling and the findings of the citizen's advisory committee, the plan could address existing land uses, or new development, or both, or neither. The goal of the project is to protect the quality of this vulnerable and essential groundwater resource for current and future residents of the area without unduly restricting property uses and impacting property value. That is why it is important to have input from as many different perspectives as possible from community representatives. We need to know what matters to you on this issue. Your reactions, concerns, questions, and suggestions will help guide us toward solutions.

Is future development likely with current land use restrictions?

Yes, however recommendations, if adopted and implemented by policy makers, could affect or condition future development.

Aquifer - Answers

What is the projected future of the aquifer? How much snow/rain is needed to keep it flowing? Will weather change impact the aquifer? If so, how much?

We project 18 inches of rain per year is necessary for recharge of this aquifer.

Is the aquifer more a bathtub or slow-moving river?

It is not a river. Water movement in rivers is measured in feet per second (fps), while in aquifers it is in feet per day (fpd). Water movement in the Scatter Creek aquifer is very rapid for an aquifer, but still much slower than it would be in a river.
How long does it take for a raindrop to seep down to the aquifer?
When soils are saturated, a raindrop can seep down into the aquifer in 24 to 48 hours.

Does Thurston/Olympia have any plans to use our water to supply drinking water for Olympia city use?

We are not aware of any such plan.

Farms - Answers

Is there a current limit to the number of animals per acre in the Grand Mound/Rochester area?

The short answer is NO. State or local regulations do not specifically establish how many domestic animals are allowed per acre of land.

State and local law focuses on manure management. These laws state that the application of manure shall not exceed agronomic rates or result in water quality violations. (Article VI, RCW 90.64 and RCW 90.48).

Dairies are required to obtain a permit from the department of Agriculture (RCW 90.64). The dairy producer must develop a nutrient management plan that, once implemented, is not likely to result in water quality violations.

The manure management practices employed by the farmer or property manager ultimately determine how many animals a site can accommodate. An intensively managed farm with better facilities will be able to keep more animals than a poorly managed or financed farm.

How far away do animals need to be from a well?

WAC 173-160-171 states that both public and single family wells should be 100 feet from sources or potential sources of contamination, including livestock barns and livestock feed lots and septic systems.

Are dairies regulated by the Department of Ecology?

The Washington State Department of Agriculture has primary authority over dairies. RCW 90.64 transferred the regulatory authority for dairies from the Department of Ecology to Agriculture in 1998.
RCW 90.64 requires:

- The dairy producer (owner) must develop a nutrient management plan that, once implemented, is not likely to result in a water quality violations
- Pollutants addressed in farm plans are nitrogen, phosphorus and fecal coliform bacteria
- The nutrient management plan:
    - Must be based on the concept that manures will be applied at or below agronomic rates.
    - Be approved by the local Conservation District,
    - Use measures that meet NRCS or other approved standards
    - Be certified by the local Conservation District when it has been successfully implemented

The Department of Ecology has authority over agricultural activities other than dairies under RCW 90.48. Ecology can investigate complaints against agricultural operations and take enforcement action when water quality violations are documented.

Thurston County Environmental Health has authority to investigate complaints against agricultural operations and take enforcement action when best management practices are not being used to prevent the contamination of surface or ground waters (Article VI of the Thurston County Sanitary Code). Because state law has specific management requirements for dairy operations, dairy complaints are referred to the Department of Agriculture.

Scatter Creek - Answers

Sometimes there is a lot of foam on Scatter Creek. Any thoughts or explanations?

Foam in creeks is very common. It is usually caused by turbulence frothing up naturally occurring organic material as the water flows along. However, if someone suspects or observes a pollution source to the creek such as a flowing pipe, or manure applied or piled next to the creek, they can call 360-867-2643 with the location and we will investigate.

Other Questions - Answers

Why are some paying for ULID and others not?

A Utility Local Improvement District (ULID) is the procedure used to extend water and/or sewer service to a group of properties whereby all property owners share in the cost. This process is a formal State defined procedure covered under the Revised Code of Washington (RCW 36.94.230). Thurston County formed the Grand Mound Utility Local Improvement Utility District 96-2 in 1999.

How often is the county required to review growth management area boundaries, and when will the Grand Mound GMA next be evaluated?

The County is required to update its Comprehensive Plan on a schedule established in the Growth Management Act (RCW 36.70A). The next statutory deadline is at the end of 2016. However, the County is not required to update urban growth area boundaries until 2018. The update deadline has been pushed out by the state legislature two times in the past few years due to a lack of funding.

Environmental Health Division - Water Quality & Onsite Sewage System Operation and Maintenance Program
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