SAJB

Spokane Aquifer Joint Board

10/27/2022

1:30 pm

In-Person SCWD3

and via Zoom

ESHB 1329 – Open Public Meetings - Section 9 Agendas Posting Process in Development

1. Anne Francis Web Design will setup a form on a password protected page on SAJB. All purveyors will share the same password.
2. Anne is making a video tutorial to explain the process.
3. Tonilee will work with whomever you want trained to post the agendas.
4. If you need to edit an agenda, you can either post a new agenda or send the edits to Tonilee for updating.

Wellhead Implementation Program Manager's Report

October 27, 2022

SAJB

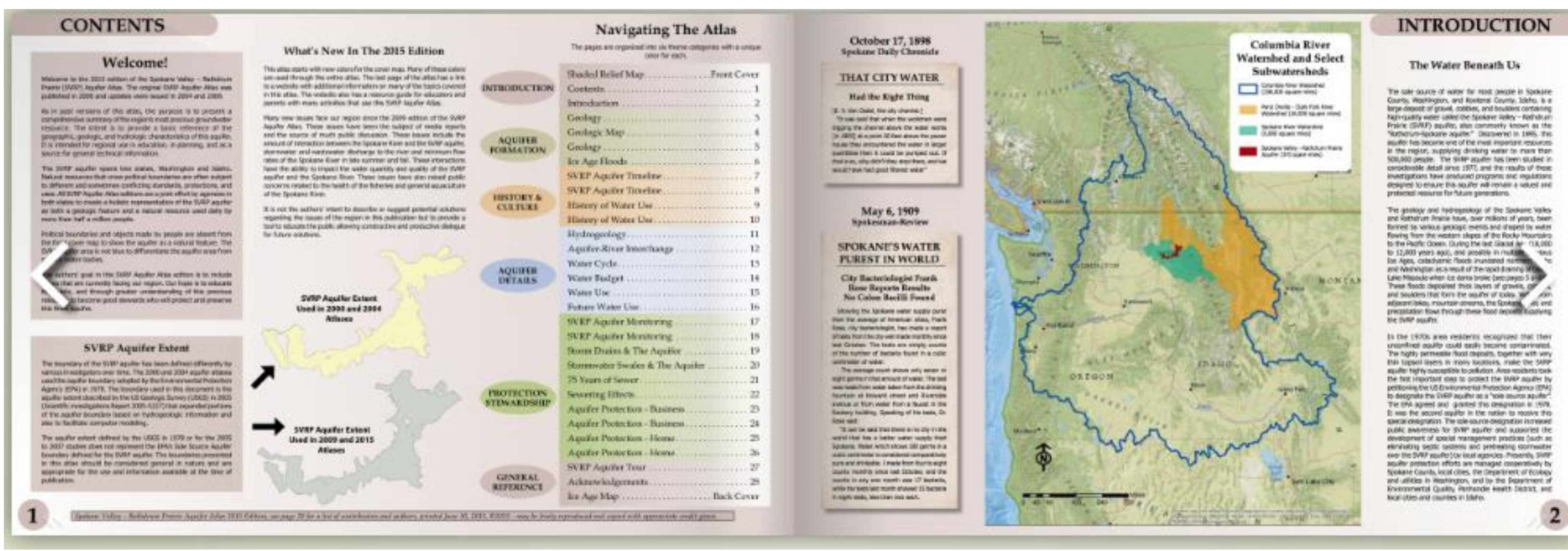
Education and Awareness Events

- 10/4/22 Shadle Library
- 10/7/22 St. Luke's Lutheran Church Environmental Stewardship Group
- 10/24/22 Hamblen Elementary
- 11/7/22 Whitworth Science Methods

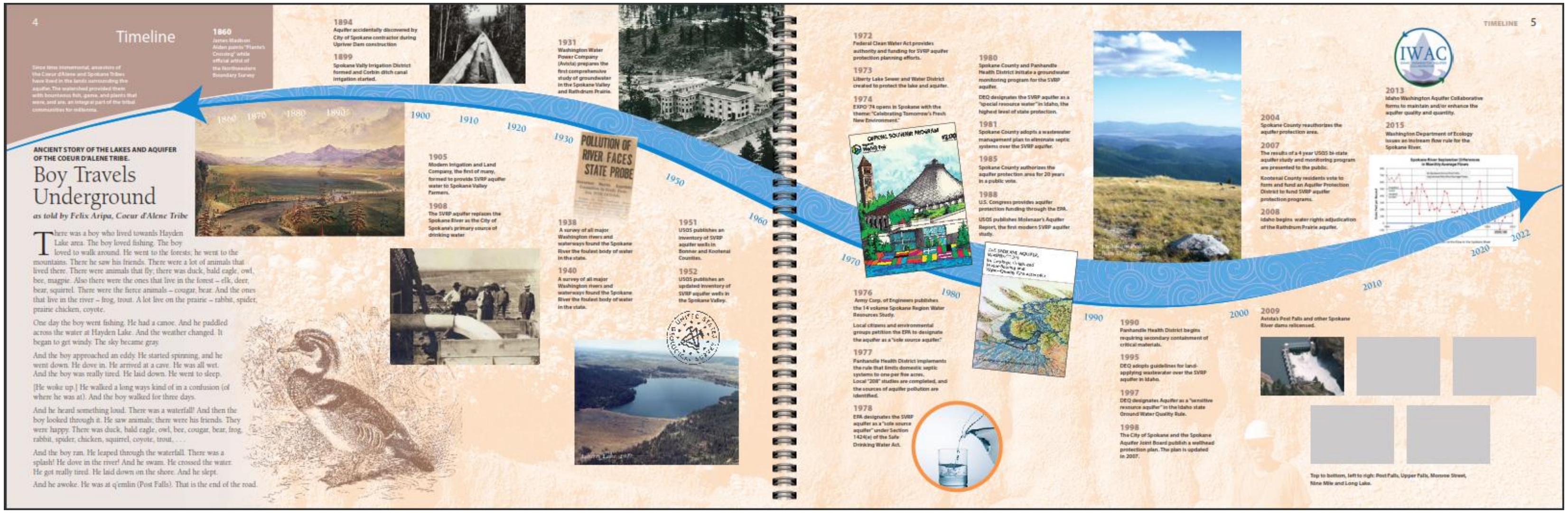
2023 Aquifer Atlas 1st Drafts

Introduction pages 2-3

2015 Atlas Pages Below



2023 Timeline pages 4-5



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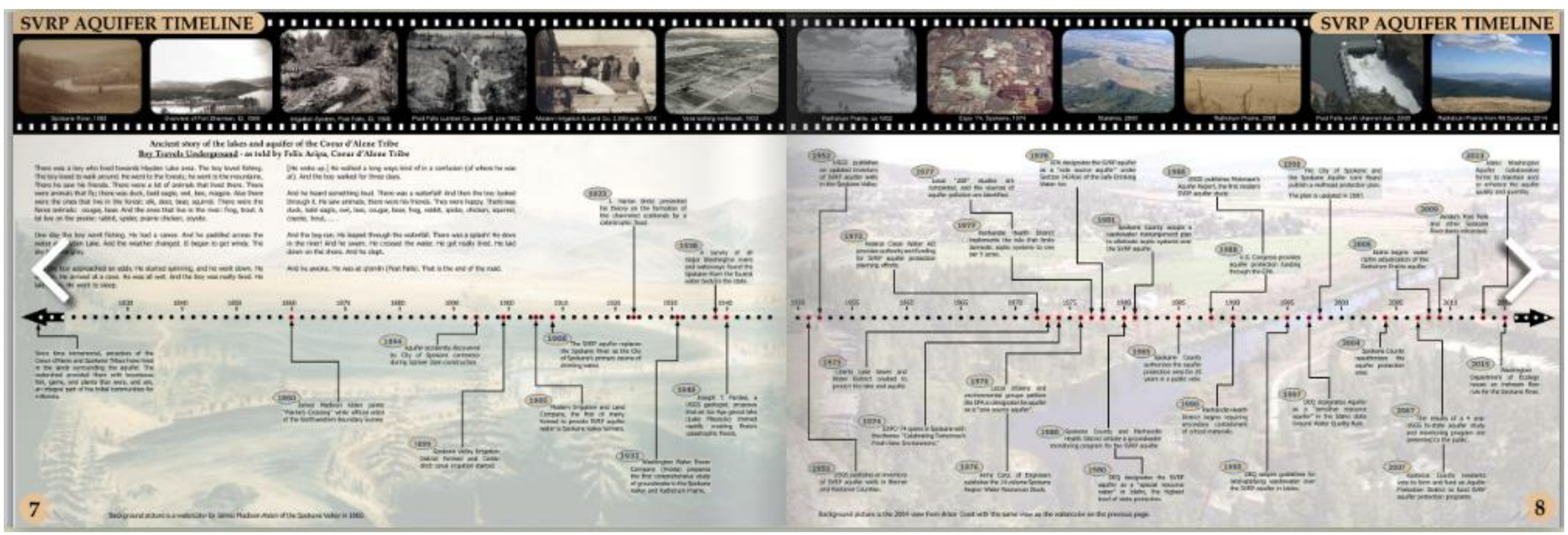
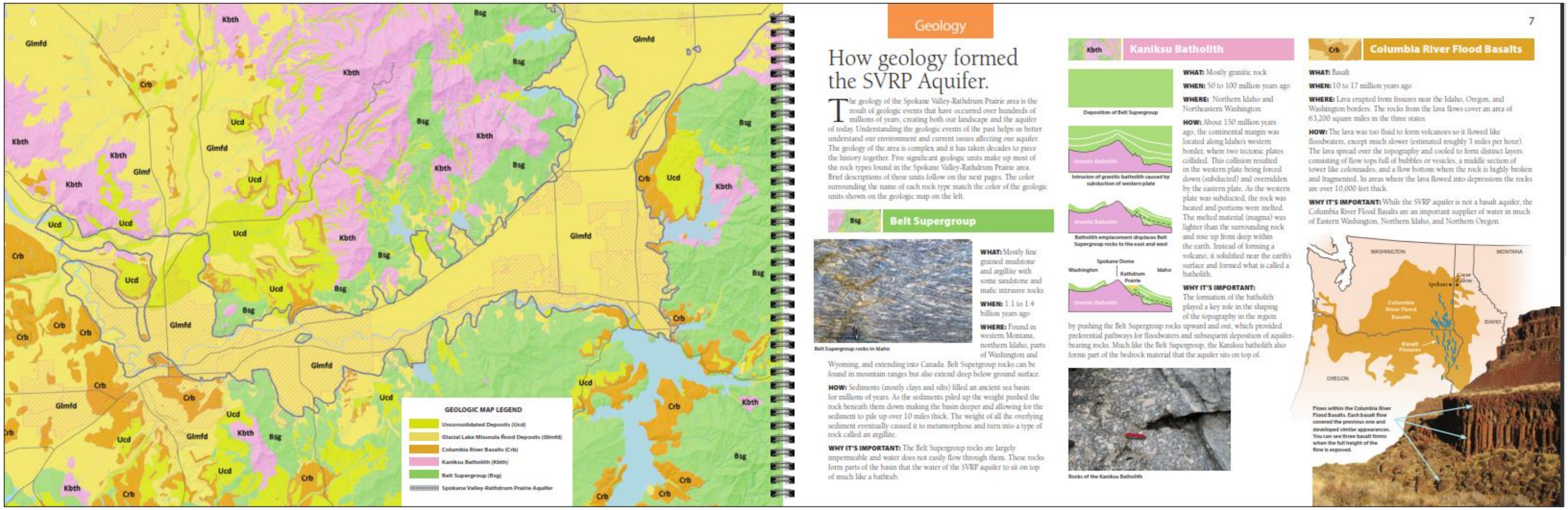


2025 Geology pages 6-7



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Geology

How geology formed the SVRP Aquifer.

The geology of the Spokane Valley-Rathdrum Prairie area is the result of geologic events that have occurred over hundreds of millions of years, creating both our landscape and the aquifer of today. Understanding the geologic events of the past helps us better understand our environment and current issues affecting our aquifer. The geology of the area is complex and it has taken decades to piece the history together. Five significant geologic units make up most of the rock types found in the Spokane Valley-Rathdrum Prairie area. Brief descriptions of these units follow on the next pages. The color surrounding the name of each rock type match the color of the geologic units shown on the geologic map on the left.

Bsg Belt Supergroup

Belt Supergroup rocks in Idaho

WHAT: Mostly fine grained mudstone and argillite with some sandstone and mafic intrusive rocks

WHEN: 1.1 to 1.4 billion years ago

WHERE: Found in western Montana, northern Idaho, parts of Washington and Wyoming, and extending into Canada. Belt Supergroup rocks can be found in mountain ranges but also extend deep below ground surface.

HOW: Sediments (mostly clays and silts) filled an ancient sea basin for millions of years. As the sediments piled up the weight pushed the rock beneath them down making the basin deeper and allowing for the sediment to pile up over 10 miles thick. The weight of all the overlying sediment eventually caused it to metamorphose and turn into a type of rock called an argillite.

WHY IT'S IMPORTANT: The Belt Supergroup rocks are largely impermeable and water does not easily flow through them. These rocks form parts of the basin that the water of the SVRP aquifer to sit on top of much like a bathtub.

Kbth Kaniksu Batholith

Deposition of Belt Supergroup

Intrusion of granitic batholith caused by subduction of western plate

Batholith emplacement displaces Belt Supergroup rocks to the east and west

Spokane Dome
Washington
Rathdrum Prairie
Idaho

WHAT: Mostly granitic rock

WHEN: 50 to 100 million years ago

WHERE: Northern Idaho and Northeastern Washington

HOW: About 150 million years ago, the continental margin was located along Idaho's western border, where two tectonic plates collided. This collision resulted in the western plate being forced down (subducted) and overridden by the eastern plate. As the western plate was subducted, the rock was heated and portions were melted. The melted material (magma) was lighter than the surrounding rock and rose up from deep within the earth. Instead of forming a volcano, it solidified near the earth's surface and formed what is called a batholith.

WHY IT'S IMPORTANT: The formation of the batholith played a key role in the shaping of the topography in the region by pushing the Belt Supergroup rocks upward and out, which provided preferential pathways for floodwaters and subsequent deposition of aquifer-bearing rocks. Much like the Belt Supergroup, the Kaniksu batholith also forms part of the bedrock material that the aquifer sits on top of.

Rocks of the Kaniksu Batholith

Crb Columbia River Flood Basalts

WHAT: Basalt

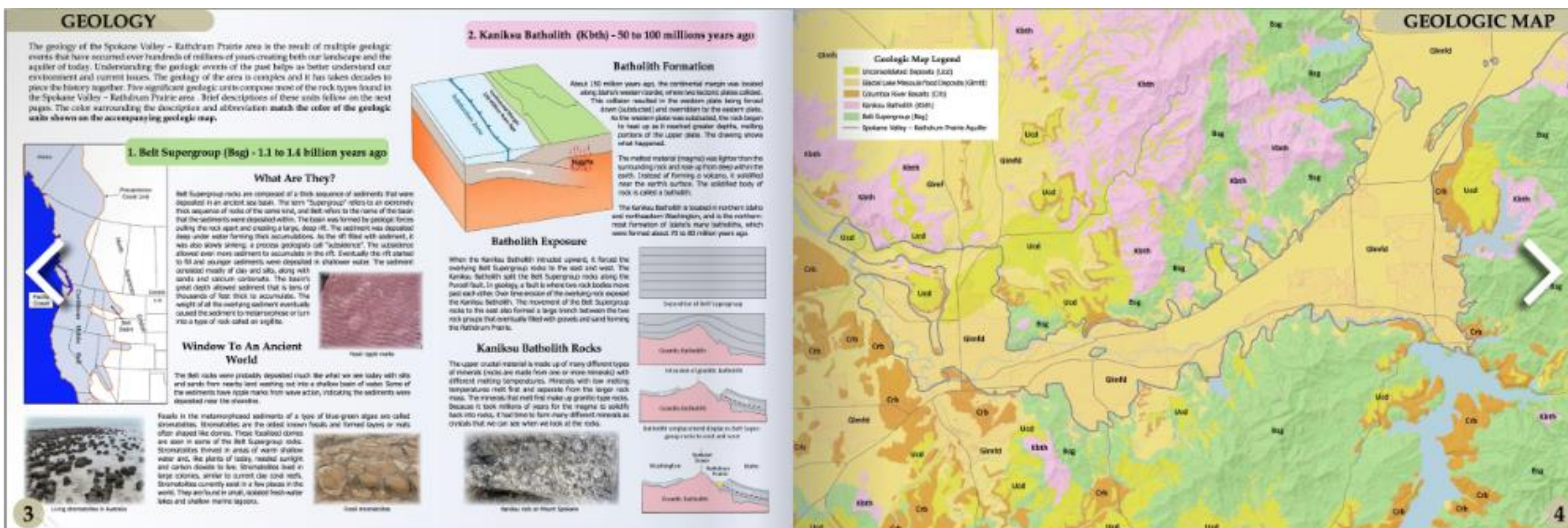
WHEN: 10 to 17 million years ago

WHERE: Lava erupted from fissures near the Idaho, Oregon, and Washington borders. The rocks from the lava flows cover an area of 63,200 square miles in the three states.

HOW: The lava was too fluid to form volcanoes so it flowed like floodwaters, except much slower (estimated roughly 3 miles per hour). The lava spread over the topography and cooled to form distinct layers consisting of flow tops full of bubbles or vesicles, a middle section of tower like colonnades, and a flow bottom where the rock is highly broken and fragmented. In areas where the lava flowed into depressions the rocks are over 10,000 feet thick.

WHY IT'S IMPORTANT: While the SVRP aquifer is not a basalt aquifer, the Columbia River Flood Basalts are an important supplier of water in much of Eastern Washington, Northern Idaho, and Northern Oregon.

WASHINGTON
MONTANA
IDAHO
OREGON
Spokane



GEOLOGY

The geology of the Spokane Valley – Rathdrum Prairie area is the result of multiple geologic events that have occurred over hundreds of millions of years creating both our landscape and the aquifer of today. Understanding the geologic events of the past helps us better understand our environment and current issues. The geology of the area is complex and it has taken decades to piece the history together. Five significant geologic units compose most of the rock types found in the Spokane Valley – Rathdrum Prairie area. Brief descriptions of these units follow on the next pages. The color surrounding the description and abbreviation **match the color of the geologic units shown on the accompanying geologic map.**

1. Belt Supergroup (Bsg) - 1.1 to 1.4 billion years ago

What Are They?

Window To An Ancient World

2. Kaniksu Batholith (Kbth) - 50 to 100 millions years ago

Batholith Formation

Batholith Exposure

Kaniksu Batholith Rocks

3

GEOLOGIC MAP

Geologic Map Legend

4

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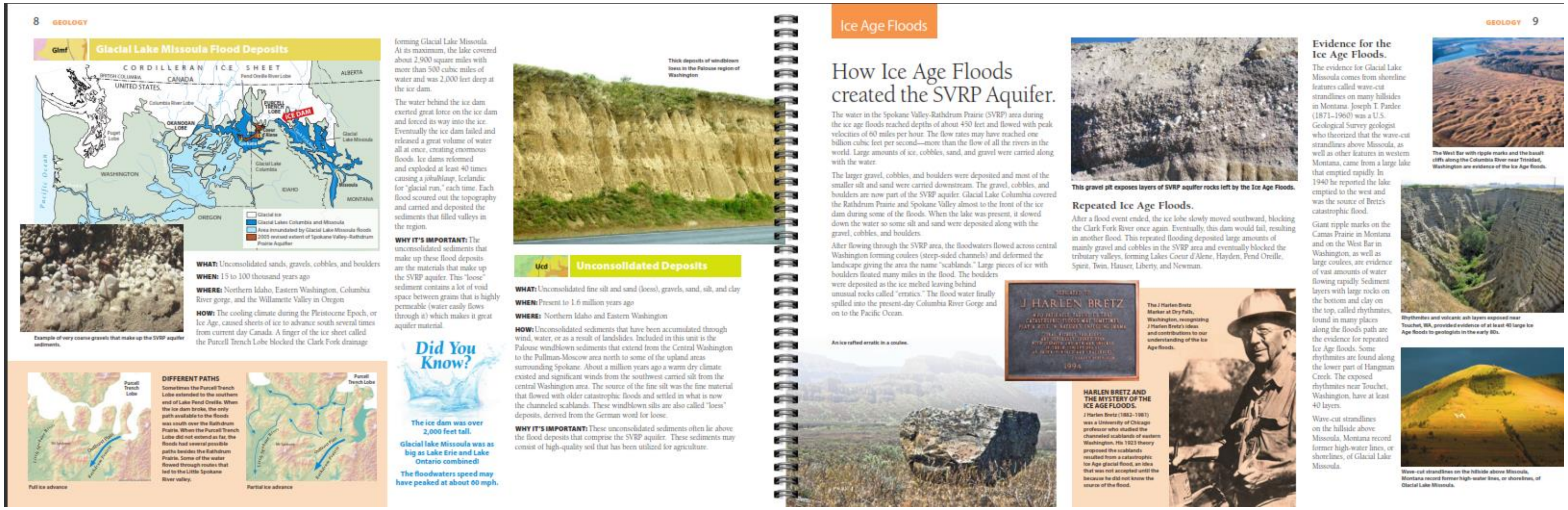

Glimf — Glacial Lake Missoula Flood Deposits

Example of very coarse gravels that make up the SVRP aquifer sediments.

WHAT: Unconsolidated sands, gravels, cobbles, and boulders

WHEN: 15 to 100 thousand years ago

WHERE: Northern Idaho, Eastern Washington, Columbia River gorge, and the Willamette Valley in Oregon

HOW: The cooling climate during the Pleistocene Epoch, or Ice Age, caused sheets of ice to advance south several times from current day Canada. A finger of the ice sheet called the Purcell Trench Lobe blocked the Clark Fork drainage forming Glacial Lake Missoula. At its maximum, the lake covered about 2,900 square miles with more than 500 cubic miles of water and was 2,000 feet deep at the ice dam.

The water behind the ice dam exerted great force on the ice dam and forced its way into the ice. Eventually the ice dam failed and released a great volume of water all at once, creating enormous floods. Ice dams reformed and exploded at least 40 times causing a jökulhlaup, Icelandic for "glacial run," each time. Each flood scoured out the topography and carried and deposited the sediments that filled valleys in the region.

WHY IT'S IMPORTANT: The unconsolidated sediments that make up these flood deposits are the materials that make up the SVRP aquifer. This "loose" sediment contains a lot of void space between grains that is highly permeable (water easily flows through it) which makes it great aquifer material.

DIFFERENT PATHS

Sometimes the Purcell Trench Lobe extended to the southern end of Lake Pend Oreille. When the ice dam broke, the only path available to the floods was south over the Rathdrum Prairie. When the Purcell Trench Lobe did not extend as far, the floods had several possible paths besides the Rathdrum Prairie. Some of the water flowed through routes that led to the Little Spokane River valley.

Full ice advance

Partial ice advance

Did You Know?

The ice dam was over 2,000 feet tall.

Glacial lake Missoula was as big as Lake Erie and Lake Ontario combined!

The floodwaters speed may have peaked at about 60 mph.

Thick deposits of windblown loess in the Palouse region of Washington

Ucd — Unconsolidated Deposits

WHAT: Unconsolidated fine silt and sand (loess), gravels, sand, silt, and clay

WHEN: Present to 1.6 million years ago

WHERE: Northern Idaho and Eastern Washington

HOW: Unconsolidated sediments that have been accumulated through wind, water, or as a result of landslides. Included in this unit is the Palouse windblown sediments that extend from the Central Washington to the Pullman-Moscow area north to some of the upland areas surrounding Spokane. About a million years ago a warm dry climate existed and significant winds from the southwest carried silt from the central Washington area. The source of the fine silt was the fine material that flowed with older catastrophic floods and settled in what is now the channeled scablands. These windblown silts are also called "loess" deposits, derived from the German word for loose.

WHY IT'S IMPORTANT: These unconsolidated sediments often lie above the flood deposits that comprise the SVRP aquifer. These sediments may consist of high-quality soil that has been utilized for agriculture.

Ice Age Floods

How Ice Age Floods created the SVRP Aquifer.

The water in the Spokane Valley-Rathdrum Prairie (SVRP) area during the ice age floods reached depths of about 450 feet and flowed with peak velocities of 60 miles per hour. The flow rates may have reached one billion cubic feet per second—more than the flow of all the rivers in the world. Large amounts of ice, cobbles, sand, and gravel were carried along with the water.

The larger gravel, cobbles, and boulders were deposited and most of the smaller silt and sand were carried downstream. The gravel, cobbles, and boulders are now part of the SVRP aquifer. Glacial Lake Columbia covered the Rathdrum Prairie and Spokane Valley almost to the front of the ice dam during some of the floods. When the lake was present, it slowed down the water so some silt and sand were deposited along with the gravel, cobbles, and boulders.

After flowing through the SVRP area, the floodwaters flowed across central Washington forming coulees (steep-sided channels) and deformed the landscape giving the area the name "scablands." Large pieces of ice with boulders floated many miles in the flood. The boulders were deposited as the ice melted leaving behind unusual rocks called "erratics." The flood water finally spilled into the present-day Columbia River Gorge and on to the Pacific Ocean.

An ice rafted erratic in a coulee.

This gravel pit exposes layers of SVRP aquifer rocks left by the Ice Age Floods.

Repeated Ice Age Floods.

After a flood event ended, the ice lobe slowly moved southward, blocking the Clark Fork River once again. Eventually, this dam would fail, resulting in another flood. This repeated flooding deposited large amounts of mainly gravel and cobbles in the SVRP area and eventually blocked the tributary valleys, forming Lakes Coeur d'Alene, Hayden, Pend Oreille, Spirit, Twin, Hauser, Liberty, and Newman.

The J Harlen Bretz Marker at Dry Falls, Washington, recognizing J Harlen Bretz's ideas and contributions to our understanding of the Ice Age floods.

HARLEN BRETZ AND THE MYSTERY OF THE ICE AGE FLOODS.

J Harlen Bretz (1882–1981) was a University of Chicago professor who studied the channeled scablands of eastern Washington. His 1923 theory proposed the scablands resulted from a catastrophic Ice Age glacial flood, an idea that was not accepted until the because he did not know the source of the flood.

Evidence for the Ice Age Floods.

The evidence for Glacial Lake Missoula comes from shoreline features called wave-cut strandlines on many hillsides in Montana. Joseph T. Pardee (1871–1960) was a U.S. Geological Survey geologist who theorized that the wave-cut strandlines above Missoula, as well as other features in western Montana, came from a large lake that emptied rapidly. In 1940 he reported the lake emptied to the west and was the source of Bretz's catastrophic flood.

Giant ripple marks on the Camas Prairie in Montana and on the West Bar in Washington, as well as large coulees, are evidence of vast amounts of water flowing rapidly. Sediment layers with large rocks on the bottom and clay on the top, called rhythmites, found in many places along the flood's path are the evidence for repeated Ice Age floods. Some rhythmites are found along the lower part of Hangman Creek. The exposed rhythmites near Touchet, Washington, have at least 40 layers.

Wave-cut strandlines on the hillside above Missoula, Montana record former high-water lines, or shorelines, of Glacial Lake Missoula.

The West Bar with ripple marks and the basalt cliffs along the Columbia River near Trinidad, Washington are evidence of the Ice Age floods.

Rhythmites and volcanic ash layers exposed near Touchet, WA, provided evidence of at least 40 large Ice Age floods to geologists in the early 80s.

Wave-cut strandlines on the hillside above Missoula, Montana record former high-water lines, or shorelines, of Glacial Lake Missoula.

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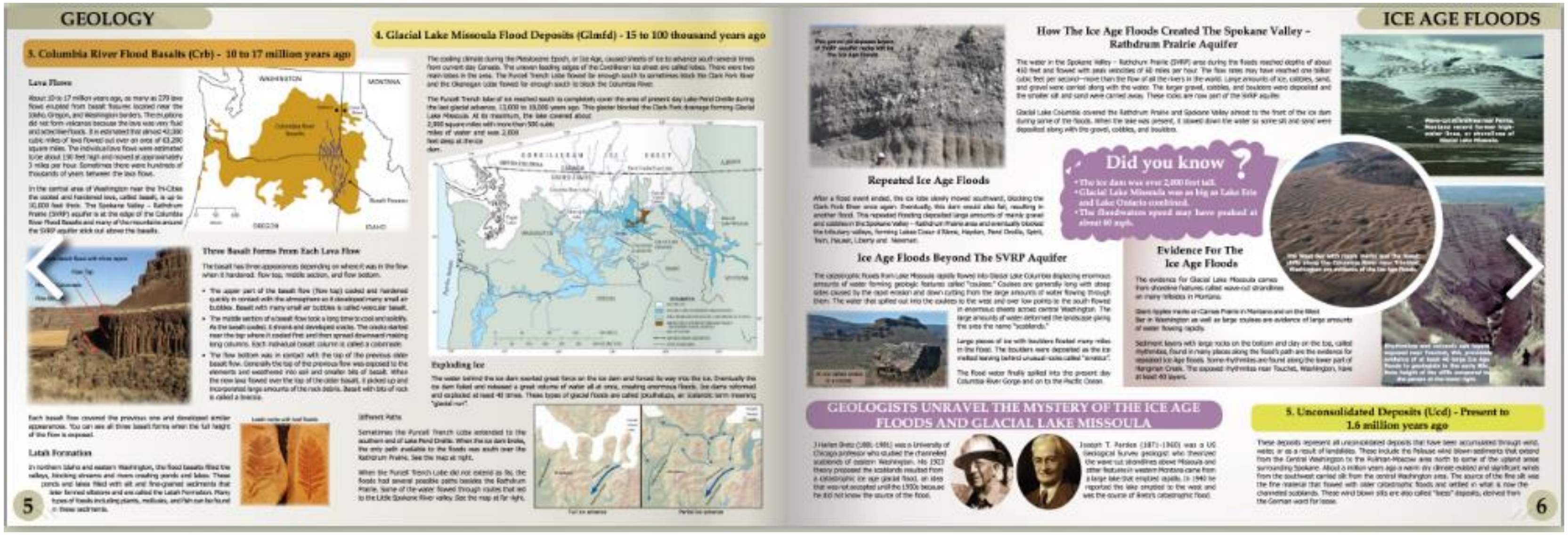

GEOLOGY

3. Columbia River Flood Basalts (Crb) - 10 to 17 million years ago

4. Glacial Lake Missoula Flood Deposits (Glmfd) - 15 to 100 thousand years ago

ICE AGE FLOODS

How The Ice Age Floods Created The Spokane Valley - Rathdrum Prairie Aquifer

Did you know?

Repeated Ice Age Floods

Ice Age Floods Beyond The SVRP Aquifer

Evidence For The Ice Age Floods

GEOLOGISTS UNRAVEL THE MYSTERY OF THE ICE AGE FLOODS AND GLACIAL LAKE MISSOULA

5. Unconsolidated Deposits (Ucd) - Present to 1.6 million years ago

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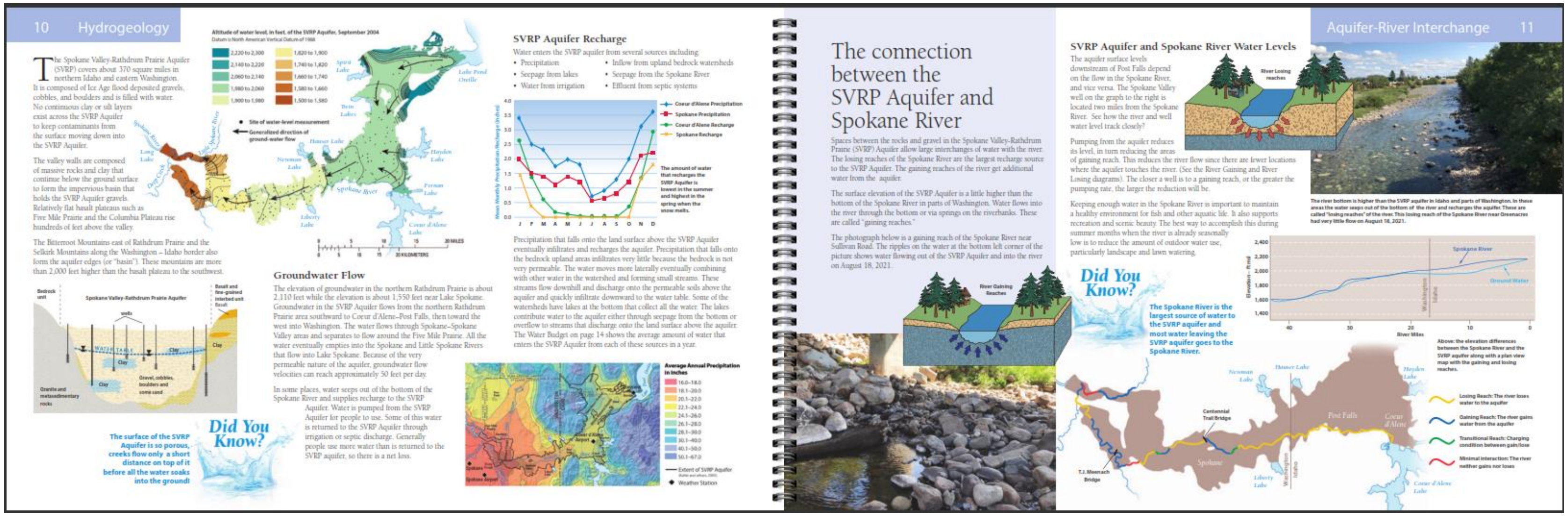

The Spokane Valley-Rathdrum Prairie Aquifer (SVRP) covers about 370 square miles in northern Idaho and eastern Washington. It is composed of Ice Age flood deposited gravels, cobbles, and boulders and is filled with water. No continuous clay or silt layers exist across the SVRP Aquifer to keep contaminants from the surface moving down into the SVRP Aquifer.

The valley walls are composed of massive rocks and clay that continue below the ground surface to form the impervious basin that holds the SVRP Aquifer gravels. Relatively flat basalt plateaus such as Five Mile Prairie and the Columbia Plateau rise hundreds of feet above the valley.

The Bitterroot Mountains east of Rathdrum Prairie and the Selkirk Mountains along the Washington – Idaho border also form the aquifer edges (or "basin"). These mountains are more than 2,000 feet higher than the basalt plateau to the southwest.

Did You Know?
The surface of the SVRP Aquifer is so porous, creeks flow only a short distance on top of it before all the water soaks into the ground!

Groundwater Flow

The elevation of groundwater in the northern Rathdrum Prairie is about 2,110 feet while the elevation is about 1,550 feet near Lake Spokane. Groundwater in the SVRP Aquifer flows from the northern Rathdrum Prairie area southward to Coeur d'Alene–Post Falls, then toward the west into Washington. The water flows through Spokane–Spokane Valley areas and separates to flow around the Five Mile Prairie. All the water eventually empties into the Spokane and Little Spokane Rivers that flow into Lake Spokane. Because of the very permeable nature of the aquifer, groundwater flow velocities can reach approximately 50 feet per day.

In some places, water seeps out of the bottom of the Spokane River and supplies recharge to the SVRP Aquifer. Water is pumped from the SVRP Aquifer for people to use. Some of this water is returned to the SVRP Aquifer through irrigation or septic discharge. Generally people use more water than is returned to the SVRP aquifer, so there is a net loss.

SVRP Aquifer Recharge

Water enters the SVRP aquifer from several sources including:

- Precipitation
- Seepage from lakes
- Water from irrigation
- Inflow from upland bedrock watersheds
- Seepage from the Spokane River
- Effluent from septic systems

Precipitation that falls onto the land surface above the SVRP Aquifer eventually infiltrates and recharges the aquifer. Precipitation that falls onto the bedrock upland areas infiltrates very little because the bedrock is not very permeable. The water moves more laterally eventually combining with other water in the watershed and forming small streams. These streams flow downhill and discharge onto the permeable soils above the aquifer and quickly infiltrate downward to the water table. Some of the watersheds have lakes at the bottom that collect all the water. The lakes contribute water to the aquifer either through seepage from the bottom or overflow to streams that discharge onto the land surface above the aquifer. The Water Budget on page 14 shows the average amount of water that enters the SVRP Aquifer from each of these sources in a year.

The connection between the SVRP Aquifer and Spokane River

Spaces between the rocks and gravel in the Spokane Valley-Rathdrum Prairie (SVRP) Aquifer allow large interchanges of water with the river. The losing reaches of the Spokane River are the largest recharge source to the SVRP Aquifer. The gaining reaches of the river get additional water from the aquifer.

The surface elevation of the SVRP Aquifer is a little higher than the bottom of the Spokane River in parts of Washington. Water flows into the river through the bottom or via springs on the riverbanks. These are called "gaining reaches."

The photograph below is a gaining reach of the Spokane River near Sullivan Road. The ripples on the water at the bottom left corner of the picture shows water flowing out of the SVRP Aquifer and into the river on August 18, 2021.

SVRP Aquifer and Spokane River Water Levels

The aquifer surface levels downstream of Post Falls depend on the flow in the Spokane River, and vice versa. The Spokane Valley well on the graph to the right is located two miles from the Spokane River. See how the river and well water level track closely?

Pumping from the aquifer reduces its level, in turn reducing the areas of gaining reach. This reduces the river flow since there are fewer locations where the aquifer touches the river. (See the River Gaining and River Losing diagrams). The closer a well is to a gaining reach, or the greater the pumping rate, the larger the reduction will be.

Keeping enough water in the Spokane River is important to maintain a healthy environment for fish and other aquatic life. It also supports recreation and scenic beauty. The best way to accomplish this during summer months when the river is already seasonally low is to reduce the amount of outdoor water use, particularly landscape and lawn watering.

The river bottom is higher than the SVRP aquifer in Idaho and parts of Washington. In these areas the water seeps out of the bottom of the river and recharges the aquifer. These are called "losing reaches" of the river. This losing reach of the Spokane River near Greenacres had very little flow on August 18, 2021.

Did You Know?
The Spokane River is the largest source of water to the SVRP aquifer and most water leaving the SVRP aquifer goes to the Spokane River.

Above: the elevation differences between the Spokane River and the SVRP aquifer along with a plan view map with the gaining and losing reaches.

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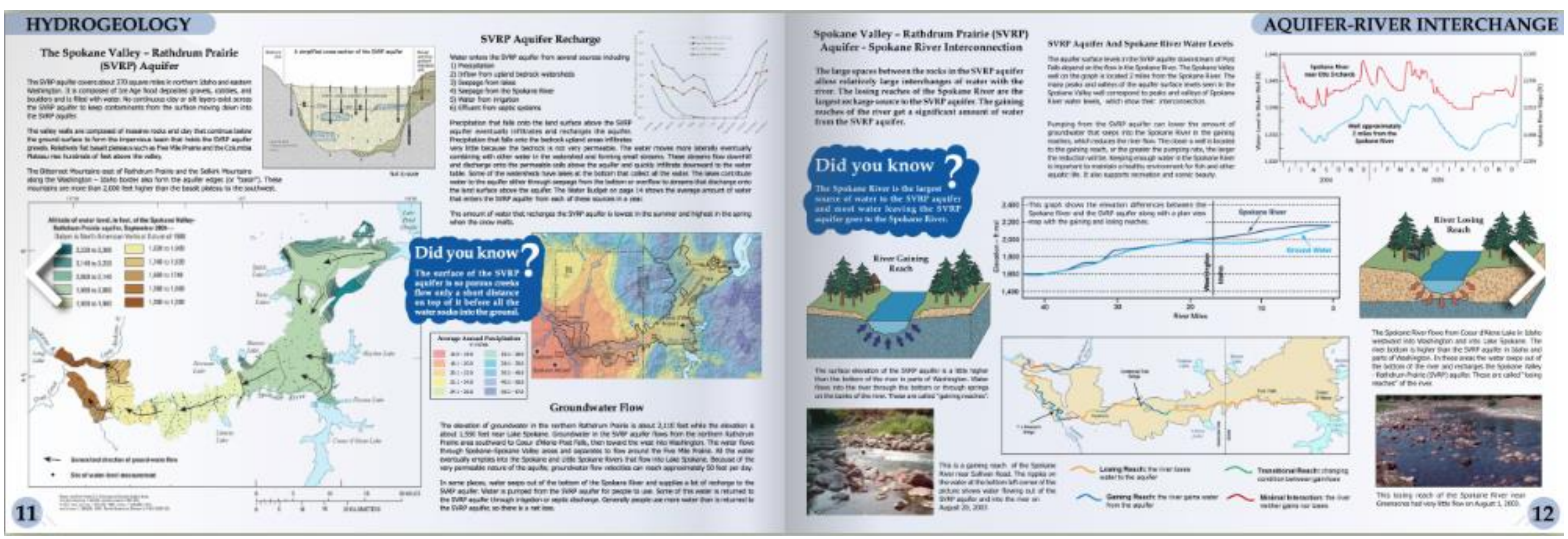

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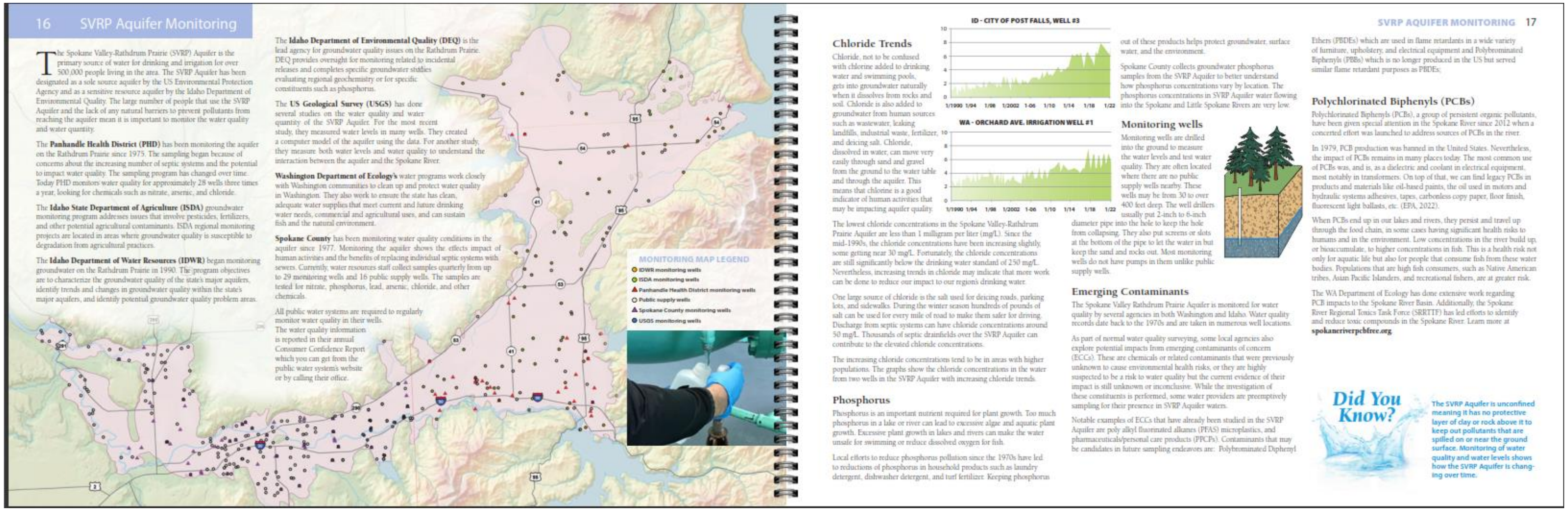


16 SVRP Aquifer Monitoring

The Spokane Valley-Rathdrum Prairie (SVRP) Aquifer is the primary source of water for drinking and irrigation for over 500,000 people living in the area. The SVRP Aquifer has been designated as a sole source aquifer by the US Environmental Protection Agency and as a sensitive resource aquifer by the Idaho Department of Environmental Quality. The large number of people that use the SVRP Aquifer and the lack of any natural barriers to prevent pollutants from reaching the aquifer mean it is important to monitor the water quality and water quantity.

The **Panhandle Health District (PHD)** has been monitoring the aquifer on the Rathdrum Prairie since 1975. The sampling began because of concerns about the increasing number of septic systems and the potential to impact water quality. The sampling program has changed over time. Today PHD monitors water quality for approximately 28 wells three times a year, looking for chemicals such as nitrate, arsenic, and chloride.

The **Idaho State Department of Agriculture (ISDA)** groundwater monitoring program addresses issues that involve pesticides, fertilizers, and other potential agricultural contaminants. ISDA regional monitoring projects are located in areas where groundwater quality is susceptible to degradation from agricultural practices.

The **Idaho Department of Water Resources (IDWR)** began monitoring groundwater on the Rathdrum Prairie in 1990. The program objectives are to characterize the groundwater quality of the state's major aquifers, identify trends and changes in groundwater quality within the state's major aquifers, and identify potential groundwater quality problem areas.

The **Idaho Department of Environmental Quality (DEQ)** is the lead agency for groundwater quality issues on the Rathdrum Prairie. DEQ provides oversight for monitoring related to incidental releases and completes specific groundwater studies evaluating regional geochemistry or for specific constituents such as phosphorus.

The **US Geological Survey (USGS)** has done several studies on the water quality and water quantity of the SVRP Aquifer. For the most recent study, they measured water levels in many wells. They created a computer model of the aquifer using the data. For another study, they measure both water levels and water quality to understand the interaction between the aquifer and the Spokane River.

Washington Department of Ecology's water programs work closely with Washington communities to clean up and protect water quality in Washington. They also work to ensure the state has clean, adequate water supplies that meet current and future drinking water needs, commercial and agricultural uses, and can sustain fish and the natural environment.

Spokane County has been monitoring water quality conditions in the aquifer since 1977. Monitoring the aquifer shows the effects impact of human activities and the benefits of replacing individual septic systems with sewers. Currently, water resources staff collect samples quarterly from up to 29 monitoring wells and 16 public supply wells. The samples are tested for nitrate, phosphorus, lead, arsenic, chloride, and other chemicals.

All public water systems are required to regularly monitor water quality in their wells. The water quality information is reported in their annual Consumer Confidence Report which you can get from the public water system's website or by calling their office.

SVRP AQUIFER MONITORING 17

Chloride Trends

Chloride, not to be confused with chlorine added to drinking water and swimming pools, gets into groundwater naturally when it dissolves from rocks and soil. Chloride is also added to groundwater from human sources such as wastewater, leaking landfills, industrial waste, fertilizer, and deicing salt. Chloride, dissolved in water, can move very easily through sand and gravel from the ground to the water table and through the aquifer. This means that chlorine is a good indicator of human activities that may be impacting aquifer quality.

The lowest chloride concentrations in the Spokane Valley-Rathdrum Prairie Aquifer are less than 1 milligram per liter (mg/L). Since the mid-1990s, the chloride concentrations have been increasing slightly, some getting near 30 mg/L. Fortunately, the chloride concentrations are still significantly below the drinking water standard of 250 mg/L. Nevertheless, increasing trends in chloride may indicate that more work can be done to reduce our impact to our region's drinking water.

One large source of chloride is the salt used for deicing roads, parking lots, and sidewalks. During the winter season hundreds of pounds of salt can be used for every mile of road to make them safer for driving. Discharge from septic systems can have chloride concentrations around 50 mg/L. Thousands of septic drainfields over the SVRP Aquifer can contribute to the elevated chloride concentrations.

The increasing chloride concentrations tend to be in areas with higher populations. The graphs show the chloride concentrations in the water from two wells in the SVRP Aquifer with increasing chloride trends.

Phosphorus

Phosphorus is an important nutrient required for plant growth. Too much phosphorus in a lake or river can lead to excessive algae and aquatic plant growth. Excessive plant growth in lakes and rivers can make the water unsafe for swimming or reduce dissolved oxygen for fish.

Local efforts to reduce phosphorus pollution since the 1970s have led to reductions of phosphorus in household products such as laundry detergent, dishwasher detergent, and turf fertilizer. Keeping phosphorus out of these products helps protect groundwater, surface water, and the environment.

Spokane County collects groundwater phosphorus samples from the SVRP Aquifer to better understand how phosphorus concentrations vary by location. The phosphorus concentrations in SVRP Aquifer water flowing into the Spokane and Little Spokane Rivers are very low.

Monitoring wells

Monitoring wells are drilled into the ground to measure the water levels and test water quality. They are often located where there are no public supply wells nearby. These wells may be from 30 to over 400 feet deep. The well drillers usually put 2-inch to 6-inch diameter pipe into the hole to keep the hole from collapsing. They also put screens or slots at the bottom of the pipe to let the water in but keep the sand and rocks out. Most monitoring wells do not have pumps in them unlike public supply wells.

Emerging Contaminants

The Spokane Valley Rathdrum Prairie Aquifer is monitored for water quality by several agencies in both Washington and Idaho. Water quality records date back to the 1970s and are taken in numerous well locations.

As part of normal water quality surveying, some local agencies also explore potential impacts from emerging contaminants of concern (ECCs). These are chemicals or related contaminants that were previously unknown to cause environmental health risks, or they are highly suspected to be a risk to water quality but the current evidence of their impact is still unknown or inconclusive. While the investigation of these constituents is performed, some water providers are preemptively sampling for their presence in SVRP Aquifer waters.

Notable examples of ECCs that have already been studied in the SVRP Aquifer are poly alkyl fluorinated alkanes (PFAS) microplastics, and pharmaceuticals/personal care products (PPCPs). Contaminants that may be candidates in future sampling endeavors are: Polybrominated Diphenyl Ethers (PBDEs) which are used in flame retardants in a wide variety of furniture, upholstery, and electrical equipment and Polybrominated Biphenyls (PBBs) which is no longer produced in the US but served similar flame retardant purposes as PBDEs.

Polychlorinated Biphenyls (PCBs)

Polychlorinated Biphenyls (PCBs), a group of persistent organic pollutants, have been given special attention in the Spokane River since 2012 when a concerted effort was launched to address sources of PCBs in the river.

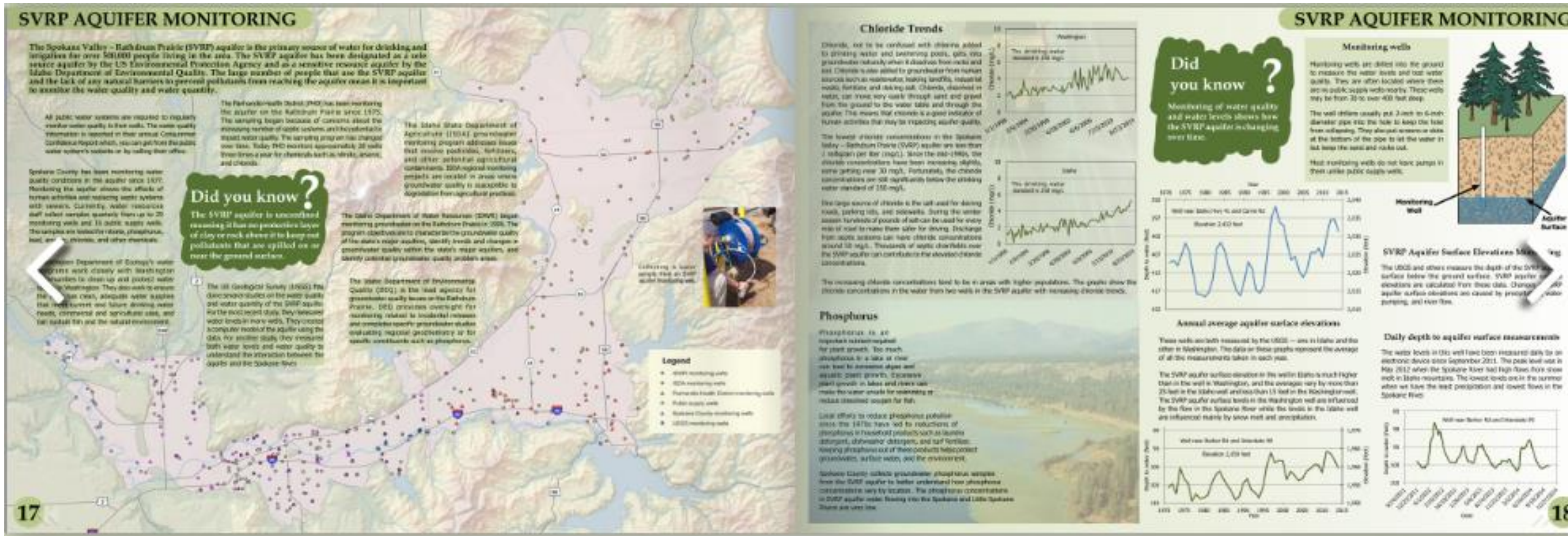
In 1979, PCB production was banned in the United States. Nevertheless, the impact of PCBs remains in many places today. The most common use of PCBs was, and is, as a dielectric and coolant in electrical equipment, most notably in transformers. On top of that, we can find legacy PCBs in products and materials like oil-based paints, the oil used in motors and hydraulic systems adhesives, tapes, carbonless copy paper, floor finish, fluorescent light ballasts, etc. (EPA, 2022).

When PCBs end up in our lakes and rivers, they persist and travel up through the food chain, in some cases having significant health risks to humans and in the environment. Low concentrations in the river build up, or bioaccumulate, to higher concentrations in fish. This is a health risk not only for aquatic life but also for people that consume fish from these water bodies. Populations that are high fish consumers, such as Native American tribes, Asian Pacific Islanders, and recreational fishers, are at greater risk.

The WA Department of Ecology has done extensive work regarding PCB impacts to the Spokane River Basin. Additionally, the Spokane River Regional Toxics Task Force (SRRTTF) has led efforts to identify and reduce toxic compounds in the Spokane River. Learn more at **spokaneriverpcbfree.org**

Did You Know? The SVRP Aquifer is unconfined meaning it has no protective layer of clay or rock above it to keep out pollutants that are spilled on or near the ground surface. Monitoring of water quality and water levels shows how the SVRP Aquifer is changing over time.

2015 Atlas Pages Below



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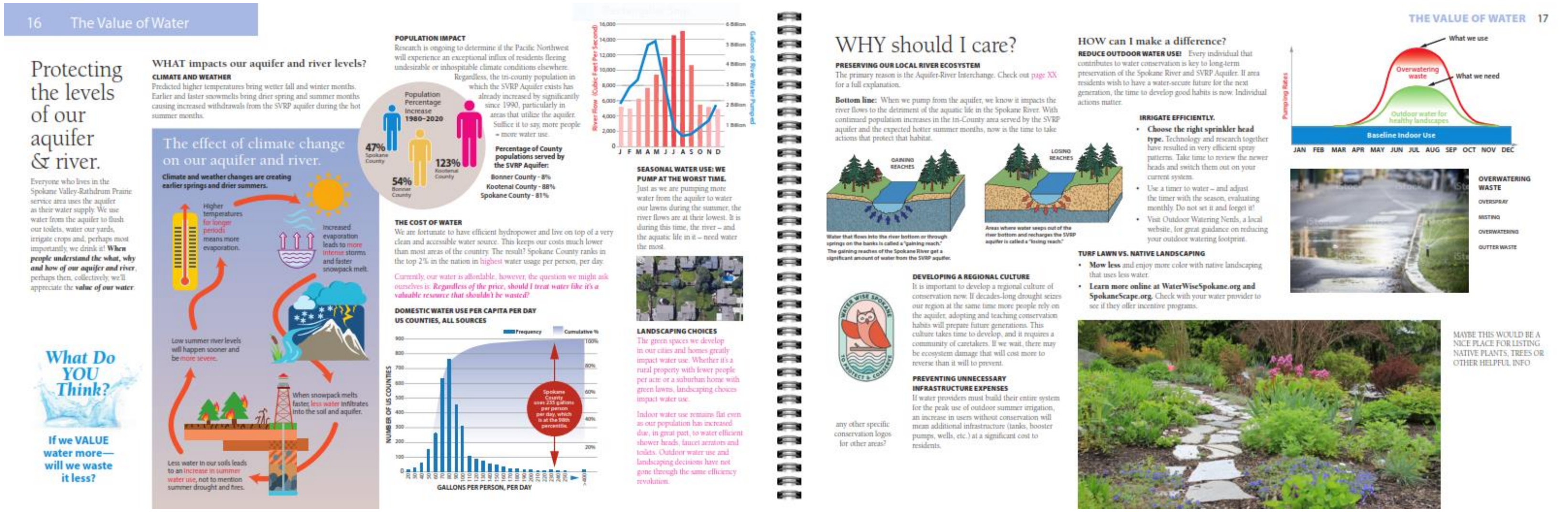


Protecting the levels of our aquifer & river.

Everyone who lives in the Spokane Valley-Rathdrum Prairie service area uses the aquifer as their water supply. We use water from the aquifer to flush our toilets, water our yards, irrigate crops and, perhaps most importantly, we drink it! ***When people understand the what, why and how of our aquifer and river***, perhaps then, collectively, we'll appreciate the ***value of our water***.

What Do YOU Think?

If we VALUE water more—will we waste it less?

WHAT impacts our aquifer and river levels?

CLIMATE AND WEATHER

Predicted higher temperatures bring wetter fall and winter months. Earlier and faster snowmelts bring drier spring and summer months causing increased withdrawals from the SVRP aquifer during the hot summer months.

The effect of climate change on our aquifer and river.

Climate and weather changes are creating earlier springs and drier summers.

POPULATION IMPACT

Research is ongoing to determine if the Pacific Northwest will experience an exceptional influx of residents fleeing undesirable or inhospitable climate conditions elsewhere. Regardless, the tri-county population in which the SVRP Aquifer exists has already increased by significantly since 1990, particularly in areas that utilize the aquifer. Suffice it to say, more people = more water use.

Percentage of County populations served by the SVRP Aquifer:

Bonner County - 8%
Kootenai County - 88%
Spokane County - 81%

THE COST OF WATER

We are fortunate to have efficient hydropower and live on top of a very clean and accessible water source. This keeps our costs much lower than most areas of the country. The result? Spokane County ranks in the top 2% in the nation in highest water usage per person, per day.

Currently, our water is affordable, however, the question we might ask ourselves is: ***Regardless of the price, should I treat water like it's a valuable resource that shouldn't be wasted?***

DOMESTIC WATER USE PER CAPITA PER DAY US COUNTIES, ALL SOURCES

SEASONAL WATER USE: WE PUMP AT THE WORST TIME.

Just as we are pumping more water from the aquifer to water our lawns during the summer, the river flows are at their lowest. It is during this time, the river – and the aquatic life in it – need water the most.

LANDSCAPING CHOICES

The green spaces we develop in our cities and homes greatly impact water use. Whether it's a rural property with fewer people per acre or a suburban home with green lawns, landscaping choices impact water use.

Indoor water use remains flat even as our population has increased due, in great part, to water efficient shower heads, faucet aerators and toilets. Outdoor water use and landscaping decisions have not gone through the same efficiency revolution.

WHY should I care?

PRESERVING OUR LOCAL RIVER ECOSYSTEM

The primary reason is the Aquifer-River Interchange. Check out page XX for a full explanation.

Bottom line: When we pump from the aquifer, we know it impacts the river flows to the detriment of the aquatic life in the Spokane River. With continued population increases in the tri-County area served by the SVRP aquifer and the expected hotter summer months, now is the time to take actions that protect that habitat.

Water that flows into the river bottom or through springs on the banks is called a "gaining reach." The gaining reaches of the Spokane River get a significant amount of water from the SVRP aquifer.

Areas where water seeps out of the river bottom and recharges the SVRP aquifer is called a "losing reach."

any other specific conservation logos for other areas?

DEVELOPING A REGIONAL CULTURE

It is important to develop a regional culture of conservation now. If decades-long drought seizes our region at the same time more people rely on the aquifer, adopting and teaching conservation habits will prepare future generations. This culture takes time to develop, and it requires a community of caretakers. If we wait, there may be ecosystem damage that will cost more to reverse than it will to prevent.

PREVENTING UNNECESSARY INFRASTRUCTURE EXPENSES

If water providers must build their entire system for the peak use of outdoor summer irrigation, an increase in users without conservation will mean additional infrastructure (tanks, booster pumps, wells, etc.) at a significant cost to residents.

HOW can I make a difference?

REDUCE OUTDOOR WATER USE! Every individual that contributes to water conservation is key to long-term preservation of the Spokane River and SVRP Aquifer. If area residents wish to have a water-secure future for the next generation, the time to develop good habits is now. Individual actions matter.

IRRIGATE EFFICIENTLY.

- **Choose the right sprinkler head type.** Technology and research together have resulted in very efficient spray patterns. Take time to review the newer heads and switch them out on your current system.
- Use a timer to water – and adjust the timer with the season, evaluating monthly. Do not set it and forget it!
- Visit Outdoor Watering Nerds, a local website, for great guidance on reducing your outdoor watering footprint.

TURF LAWN VS. NATIVE LANDSCAPING

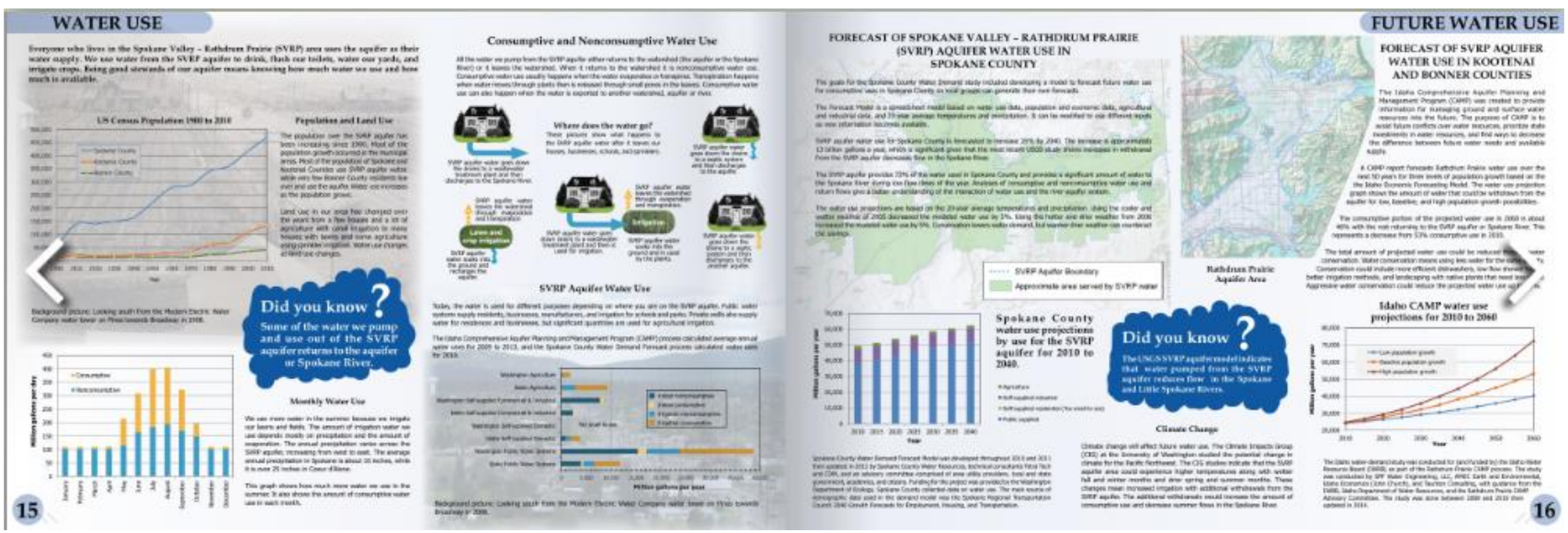
- **Mow less** and enjoy more color with native landscaping that uses less water.
- **Learn more online at WaterWiseSpokane.org and SpokaneScape.org.** Check with your water provider to see if they offer incentive programs.

OVERWATERING WASTE

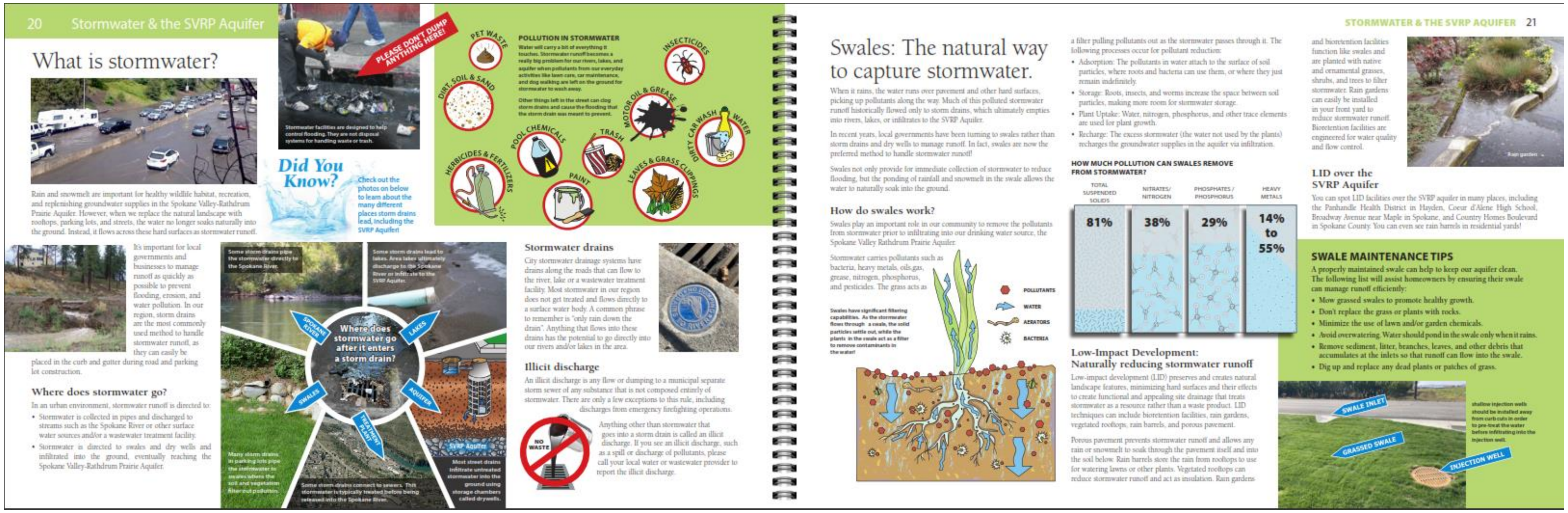
OVERSPRAY
MISTING
OVERWATERING
GUTTER WASTE

MAYBE THIS WOULD BE A NICE PLACE FOR LISTING NATIVE PLANTS, TREES OR OTHER HELPFUL INFO

2015 Atlas Pages Below



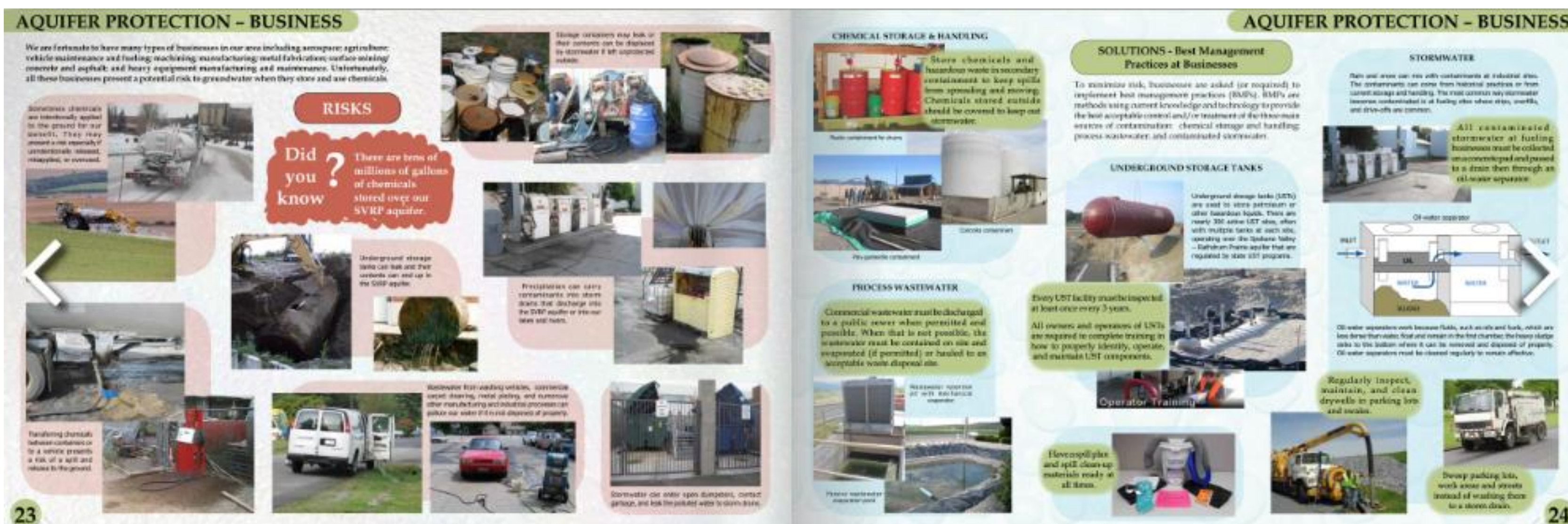
2023 Stormwater pages 20-21



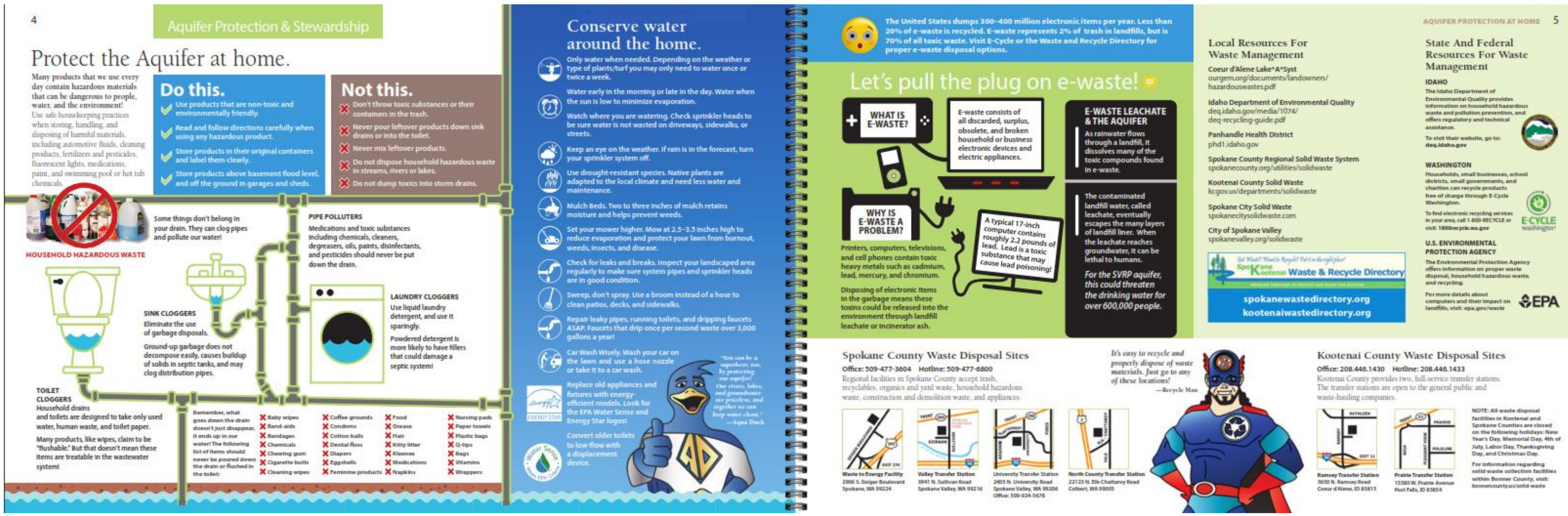
2015 Atlas Pages Below

2023 Business Protection & Stewardship pages 24 - 25

2015 Atlas Pages Below



2023 Protect the Aquifer at Home pages 26-27



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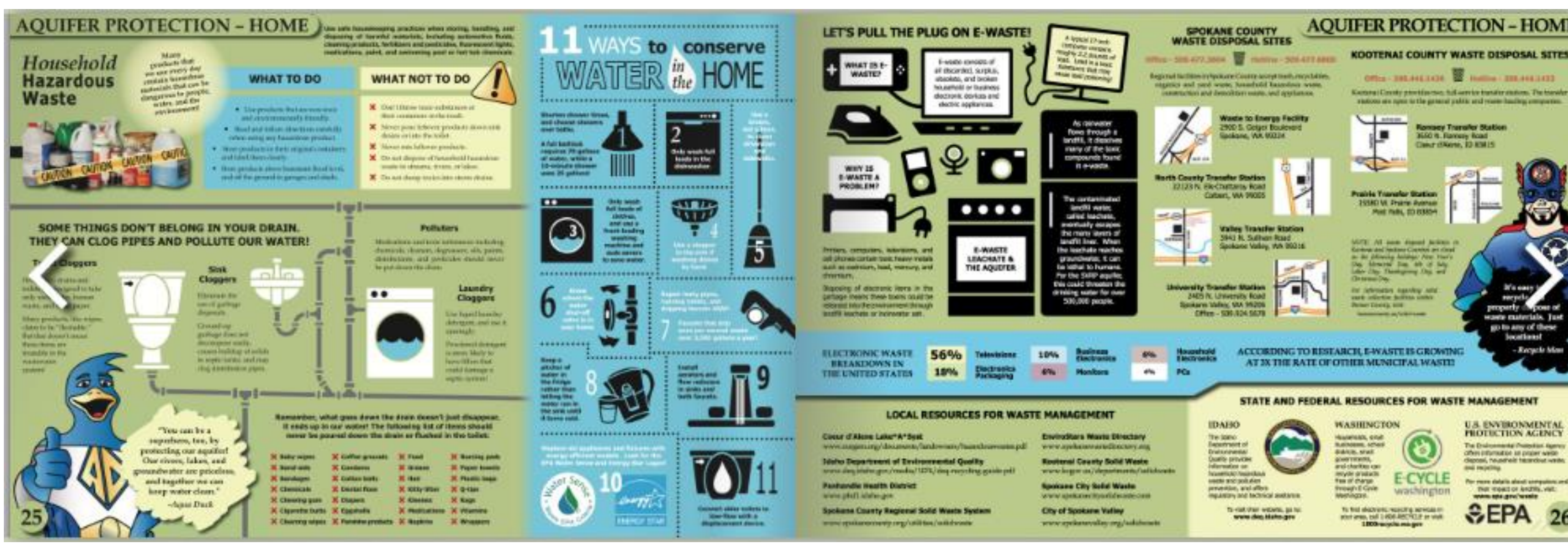


PHASE3 digital

Monthly Digital Marketing Performance

Prepared for:

SAJB

September 2022

September 2022 Media Campaign
Home Backflow Protection Video

Online Targeted Display Video

$1,800
90,208 Impressions
100% video thruplays 48,264
Clicks 37

Social Advertising

$1,400
35,359 Impressions
100% video thruplays 13,689
Clicks 84

The video was watched for 1 minute and 12 seconds to the end 61,935 times

Enviro Certified℠

Purpose: To recognize Food Service Establishments that reduce institutional food waste by:

1) properly donating needed food resources to Spokane County hunger relief organizations,
2) for farm use
3) for compost

KSPS Food Rescue Video

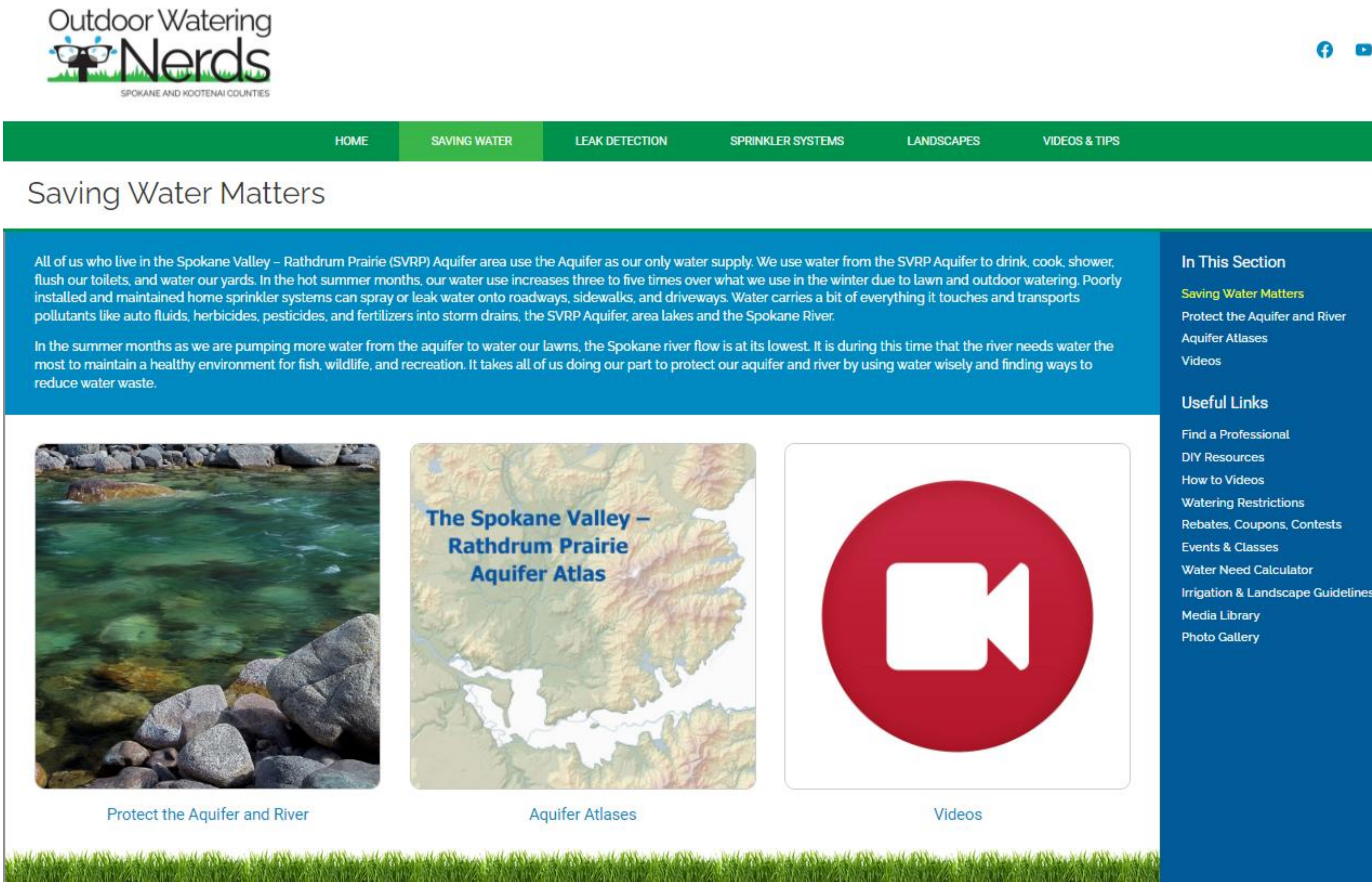
- 10/13 2nd Harvest
- 10/18 Safeway – E. Sprague
- 10/19 Whitworth University – Sodexo
- 10/25 Super 1 Foods - 29th
- 10/28 Grocery Outlet - Cheney

KSPS Filming - Food Rescue Video

2nd Harvest - Eric Williams

Whitworth Dining - Sodexo

Also in video:
Safeway on East Sprague, Super 1 Foods on East 29th and Grocery Outlet in Cheney



[Go to Website]


See you
November 17, 2022