

## **AWWA EXEMPLARY SOURCE WATER PROTECTION AWARD**

Deadline for Submission: January 15, 2014

Submission Requirements: Four (4) full copies each of this entry form and the application report

Submit To: Staff Secretary, AWWA Water Resource Sustainability Division  
American Water Works Association  
6666 W. Quincy Avenue  
Denver, CO 80235



Name of organization: Spokane Aquifer Joint Board

State(s)/Province(s) in which the organization operates: Washington

Organization Contact:

Name: Ty Wick

Title: President

Mailing Address: 1521 N. Argonne Road Suite C PMB 250

City: Spokane Valley State: WA Zip Code: 99212

Tel: (509) 536-0121 Fax: ( 509) 534-3760

E-mail: info@spokaneaquifer.org

### **Is your organization a water system? NO**

The Spokane Aquifer Joint Board (SAJB) is comprised of 21 water utilities, irrigation districts and private industry systems all of whom draw water from the Spokane Valley Rathdrum Prairie Aquifer, a "sole source" aquifer. SAJB members provide water for irrigation, large industry, small businesses, cities and residents.

### **If the organization is a water system, is it a Utility or Small System Member of AWWA?**

**NO**, The Spokane Aquifer Joint Board is not a member of AWWA, however, 16 of the 18 voting SAJB member water systems, are AWWA members. Many SAJB member water systems have multiple employees who are AWWA members. Three SAJB non-voting members are private industries. For example, "Kaiser Aluminum is a private industry and supplies drinking water to its more than 850 employees. Kaiser sees participation in the Spokane Aquifer Joint Board as one way in which it can help protect the aquifer".

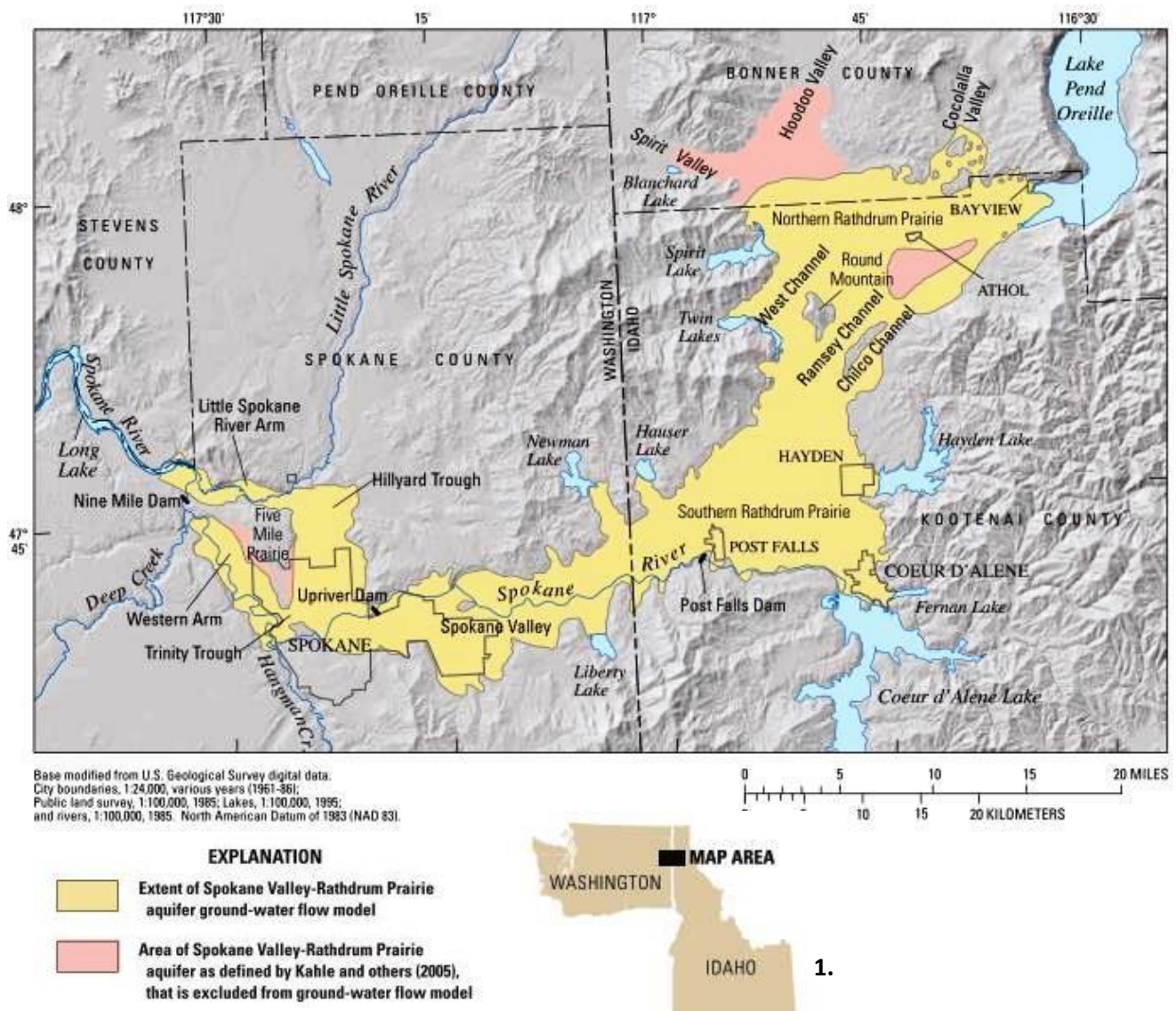
This application applies primarily to the protection of **groundwater** but due to the interchange between the Spokane River and the Spokane Valley Rathdrum Prairie Aquifer, water quality and quantity in the surface water is monitored for any impacts on the aquifer.

The next page contains a chart detailing the 21 SAJB member names, representatives, AWWA Membership Number (s), Population served by the 21 water system(s) and the Average Daily Water Production for each water system represented in millions of gallons pumped per day. The population numbers (390,727) are calculated for the Washington State Department of Health based on 2.5 people per service connection.



Name	Public Water Provider SAJB Voting Members	Service Connections	Population Served	AWWA Member No.	2012 Average MGD
Terry Squibb	Carnhope Irrigation District #7	530	1,750	00261901	0.49
Bill Rickard	City of Spokane Water District	85,231	227,455	00333096	57.50
Bob Ashcraft	Consolidated Irrigation District #19	9,240	21,930	00071485	20.00
Rick Adkins	East Spokane Water District #1	1,141	4,050	00617914	1.04
Terry Squibb	Hutchinson I.D. #16	889	2,180	00438129	0.88
Glen Terry	Irvin Water District #6	1063	3,569	00405573	1.16
BiJay Adams	Liberty Lake Sewer & Water Dist.	2624	8,720	02515749 02454578	2.60
Paul Allen	City of Millwood	858	1,720	00312060	0.63
Scott Inch	Moab Irrigation District #20	730	1,790	00362151	0.89
Jim Lahde	Model Irrigation District #18	2,532	6,067	00084196 00533655	1.90
Bryan St Clair	Modern Electric & Water Co	5,226	18,560	00258026	5.79
Gary Lowe	North Spokane Irrigation District #8	879	1,668	01555603	.71
Mike Klein	Orchard Avenue Irrigation District #6	1,259	2,983	No	1.28
Bruce Davidson	Pasadena Park Irrigation District #17	2,366	5,817	00274167	2.06
Ty Wick	Spokane County Water District #3	10,609	25,343	00050335	7.29
Mike Klein Jr.	Trentwood Irrigation District #3	1,889	4,188	No	1.52
Todd Henry	Vera Water and Power	7,880	24,692	00251352	7.90
Susan McGeorge	Whitworth Water District #2	9,446	26,903	00037920	7.70
Name	Private Purveyors Non-Voting SAJB Members	Service Connections	Population Served		Average MGD
Lisa Naccarato	Honeywell Electronic Materials	1	240	Private	0.50
Todd Bennatt	Kaiser Aluminum- Trentwood	5	850	Private	0.19
Cale Hawkinson	Spokane Business & Industrial Park	5	252	Private	3.30
<b>Totals</b>		<b>144,403</b>	<b>390,727</b>		<b>125.31</b>

**Introduction** - The **Spokane Aquifer Joint Board (SAJB)** has demonstrated a commitment to and implementation of an exemplary source water protection program by uniting 21 water utilities over a period of 18 years to ensure the highest standards for drinking water. Spokane Aquifer Joint Board members maintain safeguards and work to improve water quality through interlocal agreements, contingency planning and bi-state collaboration. Spokane Aquifer Joint Board's measurable accomplishments include funding studies that employ cutting edge technology, sharing information designed to educate and inform a wide range of audiences and working with elected officials and agency leaders to shape source water protection policy for the Spokane Valley Rathdrum Prairie Aquifer. The Spokane Valley Rathdrum Prairie Aquifer encompasses 321 square miles (831 km<sup>2</sup>); and was one of the first groundwater aquifers nationally to receive a sole-source designation from the U. S. Environmental Protection Agency in 1978. The Spokane Valley Rathdrum Prairie Aquifer is the only source of drinking water for a population of 609,000 people within portions of the states of Washington and Idaho. The Spokane Aquifer Joint Board's wellhead protection program is a truly regional effort designed to ensure a consistent potable water supply for consumers today and for generations to come across the Spokane Valley Rathdrum Prairie Aquifer our "sole source" of drinking water.



2. Please describe your source water protection program *vision* and how it was developed. [5 points]

**“Local Water Utilities United for Safe Drinking Water”** is the motto that emerged in 1995, when 17 public and private water suppliers in the Spokane Valley formed the Spokane Aquifer Joint Board to address groundwater quality issues in the portions of the Spokane Valley Rathdrum Prairie Aquifer located in Washington. The Spokane Aquifer Joint Board was formed under RCW 39.34 known as the Washington Interlocal Cooperation Act. The entire Agreement for Formation can be found at [http://www.spokaneaquifer.org/wp-content/uploads/2012/04/SAJB-Agreement-For-Formation\\_1995\\_opt.pdf](http://www.spokaneaquifer.org/wp-content/uploads/2012/04/SAJB-Agreement-For-Formation_1995_opt.pdf) Article 3.2 summarizes the Spokane Aquifer Joint Board’s vision and purpose as follows: ***“The Spokane Aquifer Joint Board is organized to protect the Spokane Valley Rathdrum Prairie Aquifer public water supply by coordinating efforts, performing and sponsoring studies and investigation, and providing a discussion forum with respect to developing and implementing public water supply programs such as wellhead protection, conservation, and for protecting the associated Water Rights; and by such other means as the Joint Board may deem proper to carry out this purpose.”***

Spokane Aquifer Joint Board President, Ty Wick, describes the development process as follows. *“In 1994, my vision was to create a regional wellhead protection program. The City of Spokane had already started developing their own wellhead protection program and had received a grant, hired a consultant and selected a ground water model. In my opinion each of the smaller entities was not going to be able to ultimately be successful in implementing their own wellhead protection program; as it would be too confusing to the general public if the messaging was different depending upon who your water supplier was.*

*“The mandatory wellhead protection program adopted by the Washington State Department of Health also required each water purveyor to develop a groundwater model that would scientifically determine each of their well’s capture zones. The law gave large utilities 2 years to complete the modeling and smaller utilities 5 years to complete their modeling. Since we all withdraw water from the Spokane Valley Rathdrum Prairie Aquifer, it did not make sense to me for each purveyor to pay for a separate groundwater modeling effort. I had just returned to the Spokane area, after a ten year absence, to take my current job at Spokane County Water District No. 3. During this ten year absence, I had been working for the City of Yakima. The City of Yakima was a member of the Yakima River Basin Joint Board. The Yakima River Basin Joint Board was created in the early 1980s because numerous governmental entities within the Yakima River Basin were all trying to develop low head hydroelectric power generation projects; and they soon realized coordination between the governmental entities was badly needed as several different entities were planning to install low head hydroelectric power generating projects at the same exact location. Over these ten years, I had witnessed the advantages that were able to be realized by this type of governmental entity, made up of many governmental entities, versus numerous governmental entities going it alone with different ideas, visions and goals.”*

*“An additional requirement in the mandatory wellhead protection law was that an “inventory” of potential contaminant sources located over the wellhead capture zones had to be created and maintained so that every two years a “required notice” could be mailed to each location reminding the business or property owner that they were using/storing potential contaminants that had the ability to impact the water quality of the region’s drinking water supply.”*

*“In order be successful in protecting our wells from contamination and to comply with this new law, I believed that we had to recreate such a governmental entity as the Yakima River Basin Joint Board here in Spokane that would work to benefit all of the water purveyors and most of all, protect the Spokane Valley*



*Rathdrum Prairie Aquifer from becoming contaminated. Creating a **regional** wellhead protection program would allow us to develop an aquifer protection program that was beyond the ability of any individual water purveyor to implement and sustain. Fortunately, I was able to persuade my peers to see a similar vision and because of our collective efforts, the Spokane Aquifer Joint Board was formed in 1995 and since that time, we have succeeded in implementing an ongoing regional wellhead protection program that far exceeds anything that we could have ever imagined individually."*

One of the first efforts by the Spokane Aquifer Joint Board was to secure a grant from the Washington State Department of Ecology to develop a regionally consistent wellhead protection program for the area outside the City of Spokane. In 1997, recognizing that a combined regional effort would be more effective and sustainable, the Spokane Aquifer Joint Board and the City of Spokane joined forces to share information and technical data to be used in the development and implementation of their individual wellhead protection plans. Eventually, one regional wellhead protection plan was completed after the City joined the Spokane Aquifer Joint Board in 1999. The resulting 2000 Spokane Aquifer Joint Board wellhead protection program (WHPP) was built upon years of aquifer research and protection efforts by the City of Spokane and Spokane County in Washington, and the Panhandle Health Department in Idaho.

Public education and involvement was essential to developing the wellhead protection program. Spokane Aquifer Joint Board Members exhibited and distributed information at public functions, such as, the 8<sup>th</sup> Annual Environmental Forum -"Expo 97", and the 1997 Spokane County Fair. A slide presentation was developed, and presented to local groups like the Sierra Club, Lion's Club, and League of Women Voters. Newsletters were published under the Spokane Aquifer Joint Board identity and distributed to public libraries, major businesses, groups, and persons who expressed interest in the program. Press releases, media information packets, and a public information video were developed, and used for television, radio, and newspaper interviews, public and business meetings, WHPP training, and school programs. Contaminant source inventory letters of notification were used to solicit focus group members and to inform the businesses and facilities in wellhead protection areas about their potential to contaminate the water supply. **For the entire wellhead protection plan, go to <http://www.spokaneaquifer.org/about-sajb/wellhead-protection-plan/>. WHPP Chapter 8** contains the vision, purpose and development process.

### 3. Please describe your source water *characterization*. [5 points]

The Spokane Valley-Rathdrum Prairie Aquifer encompasses 321 square miles (831 km<sup>2</sup>); and was one of the first groundwater aquifers nationally to receive a sole-source designation from the U. S. Environmental Protection Agency (EPA) in 1978. The Spokane Valley Rathdrum Prairie Aquifer is the only source of drinking water for a population of 609,000 people within portions of the states of Washington and Idaho. Delineation of the entire Aquifer and related watershed has been an ongoing process. In 1980 the USGS estimated that the total volume of water in the Spokane Valley Rathdrum Prairie Aquifer is 10 trillion gallons (37.8 trillion L). Because of the coarse nature of the alluvial deposits in the Spokane Valley Rathdrum Prairie, the flow rate of the aquifer is extremely fast, as much as 60 feet per day (18.3 m/day). The depth to the water table ranges from about 50 (15.2 m) feet below the ground surface throughout the Spokane Valley to as much as 600 feet (182.9 m) below the ground surface in the north extremes of the Rathdrum Prairie.

[http://www.spokaneaquifer.org/wp-content/uploads/2012/04/AwwaRF.CaseStudy\\_Spokane-2004.pdf](http://www.spokaneaquifer.org/wp-content/uploads/2012/04/AwwaRF.CaseStudy_Spokane-2004.pdf)

#### **Inventory of the Source Water Protection Area**

Spokane Aquifer Joint Board **WHPP Chapter 2** describes the extensive data collection efforts used to inventory aquifer characteristics for the technical assessment and to provide a basis for the groundwater

modeling. **WHPP Chapter 3** details the approach and procedures employed for wellhead protection area delineation in the 1990's. Special Wellhead Protection Areas were delineated for each Spokane Aquifer Joint Board water utility using the water rights pumping scenario. The special wellhead protection areas represent the groundwater capture zone for the full well field. For some Spokane Aquifer Joint Board water utilities, their well fields are in close proximity to, or are located within, the well/well-fields of other members. Consequently, some special wellhead protection areas overlap each other.

**Special wellhead protection areas** were recommended for Spokane Aquifer Joint Board member wells because of the aquifer's highly transmissive characteristics. The special wellhead protection area time allotment is specific to each member well and is based on the reaction time required to supplement lost production if one or more of a member's wells are contaminated. This type of special wellhead protection area is allowed by the Washington Department of Health. In addition to the special wellhead protection areas, the Spokane Aquifer Joint Board agreed to delineate an aquifer wide protection area. **WHPP Figure 1-3** outlines this area. **Figures 3-22 through 3-42** represent the special wellhead protection areas for each member water utility. In general, the special wellhead protection areas extend smoothly in an up-gradient direction from each well. Some capture zones also broaden as they extend further up-gradient, and some appear to branch. Generally, capture zone irregularities and branching occur for wells with a) long travel times b) high pumping rates or c) locations close to other pumping wells. **Figure 3-43** represents all of Spokane Aquifer Joint Board's proposed special wellhead protection areas, in 2000, and the aquifer wide protection area. The figure shows that the combined capture zones for all member wells and well-fields, in 2000, covered virtually the entire aquifer east of Fancher Avenue to the Washington/Idaho border.

**Surface Water Influence** - The 2007 USGS bi-state study developed a complex understanding of the relationship between the Aquifer and the Spokane River from Lake Coeur d'Alene to the confluence of the Little Spokane River. The Spokane River is the largest contributor to the Aquifer, providing an average of 464 million gallons daily, about 49% of the total Aquifer inflow. The Spokane River is also the largest destination for Aquifer water, receiving an average of 556 million gallons per day about 58% of the total outflow. Therefore, contaminated stormwater runoff into the River has the potential to impact ground water quality. In an attempt to manage stormwater, dry wells, (UICs) underground injection control wells and more recently, low impact development grassy swales are being used to move surface water into the ground before it can reach the river. The highly transmissive, unconfined sand and gravel soils provide minimal to no treatment of contaminants entering groundwater.

**Existing and potential sources of contamination, location, travel time to public water supplies and vulnerability/susceptibility assessment** - A **potential contaminant source inventory process** was developed in 2000, to identify sites that contain potential pollution sources. The first inventory contained over 8,000 records of potential contaminant sites within the aquifer sensitive area. As required, all potential contaminant sources in the special wellhead protection areas and the associated aquifer wide protection area were notified. Additionally, regulatory agencies with jurisdiction over each contaminant source were mailed listings of potential contaminant sources within local special wellhead protection areas boundaries.

**Wellhead Risk Ranking and Assessment** - Once the potential contaminant source inventory was developed, the lists of sources were ranked on the available information as to their potential threat to groundwater pollution. The ranking code ranges from 1 to 4, with four being a high risk or known groundwater contaminant problem. The Spokane Aquifer Joint Board wellhead protection plan contains individual contingency plans for each member and a master contingency plan that encompasses all

individual plans. The Spokane Aquifer Joint Board members individually complete, submit and maintain susceptibility assessments with the Washington State Board of Health. **[WHPP Chapter 5]**

Land uses above the Spokane Valley Rathdrum Prairie Aquifer include light to heavy industrial, commercial, residential, and agricultural. Spokane Aquifer Joint Board's well fields are located adjacent to business and transportation corridors such as railways, high pressure petroleum pipelines, and highways, making water supply vulnerable to contamination from a variety of sources. In many areas, the only protection of groundwater from a spill is a relatively thin layer of permeable sand and gravel that creates an unsaturated zone above the aquifer's water table. Contaminants released at or near the surface can rapidly migrate downward through this unsaturated zone and eventually impact the groundwater and, potentially, the drinking water supply. Contamination transported through permeable sand and gravel, or by recharge, originates from many sources, including surface spills, use of agricultural chemicals, leaking underground storage tanks, landfills, septic system effluents, and dry wells. Potential contaminant source data about these diverse land uses were gathered from a variety of information sources. The database of information collected by Spokane County's Water Quality Management Program and the Spokane County Health Department (circa 1992) was used as baseline information. This information was supplemented and updated using regulatory agencies' surveys and databases. Other information sources included: US EPA and Washington State Department of Ecology tracking systems and surveys; Washington State Department of Agriculture pesticide licensing systems; City of Spokane Solid Waste Management survey; City of Spokane Fire Department inventory; Historical maps and newspapers; and Local Water Purveyor surveys. **[WHPP Chapter 6]**

4. **Please describe your source water protection goals and how they were developed. [5 points] - Overarching Goal** - The Spokane Aquifer Joint Board source water protection goal is to protect the Spokane Valley Rathdrum Prairie Aquifer groundwater supply for people now and in the future who depend on this resource for the benefit of their health and livelihoods. The wellhead protection program intends to proactively prevent contamination of groundwater used for drinking water by providing management zones around water supply wells. Motivation for implementing this WHPP program includes the potentially large financial impacts caused by a contaminated public water supply. Experience demonstrates that it is considerably more cost-effective to implement proactive pollution prevention than to pay for an alternative drinking water supply or to initiate groundwater remediation efforts. Specific source water protection goals include regulatory /policy goals and wellhead protection goals.

**Regulatory Policy Goals** – The Spokane Aquifer Joint Board does not have the authority to create land use ordinances or policies, and therefore can only make recommendations to elected officials. In 2000, the Spokane Aquifer Joint Board established two regulatory goals:

- Protect the aquifer from “high risk” business activities within special wellhead protection areas.
- Protect the aquifer from direct injection sources within 500 feet of potable water supply wells

#### **Spokane Aquifer Joint Board Groundwater Protection and Public Involvement Goals**

**Goal No. 1 - Education and Awareness Campaign** – Increase understanding of the physical features of the Spokane Aquifer; how the “system” of the groundwater operates; the impacts each individual can have on the quality of their drinking water; and how easily the aquifer can be affected by each individual and business by implement and maintaining a sustainable, long term awareness campaign for the residents of the regional Spokane area.

**Goal No. 2 - Enhanced Neighborhood Household Hazardous Waste Removal** – Reduce the impact of household chemicals on groundwater by providing assistance to homeowners with disposal of chemicals and augmenting collection efforts of the Spokane Regional Solid Waste Program.

**Goal No. 3 - Proactive Business Assistance & Chemical Reduction** - Provide assistance, not enforcement, to educate small businesses about proper and timely chemical disposal methods and procedures and focus efforts near the potable water supply wells and within defined special wellhead protection areas.

**Goal No. 4 - Contaminant Source Inventory** - Identify and determine potential threats to the drinking water resource by developing and maintaining a regional contaminant source inventory database. Under current Washington State regulations for wellhead protection, water purveyors are required to bi-annually notify potential contaminant sources (businesses) that reside within defined wellhead protection areas. This information is also required to be sent to regulatory agencies (Health, Ecology, EPA), and emergency incident responders (Police, Fire, Health District).

**How the Spokane Aquifer Joint Board Source Water Goals Were Developed** -The groundwater protection and public involvement goals were developed by the Policy Coordinating Committee which included representatives of the member water purveyors along with agency and jurisdictional participants. [WHPP Chapter 8.7] The groundwater protection goals came in response to lost public drinking water supply wells due to contamination; regulatory guidelines for wellhead protection and in preparation for future water demand forecasts. The public involvement goals were further refined by recommendations from the Citizen's Wellhead Committee [WHPP Chapter 8.4] and the KXLY public survey [WHPP Chapter 8.6]. These goals, developed between 1995 and 2000 remain active in 2014; however the implementation processes have expanded, evolved and changed over the intervening years.

5. **Please describe your source water protection *action plan* and how it was developed. [20 points]** – The action plan for implementing the Spokane Valley Rathdrum Prairie Aquifer wellhead protection program was the result of efforts undertaken by Spokane Aquifer Joint Board members, the City of Spokane Water Department, agency and regulatory partners and interested citizens. The plan documents the goals, operational procedures, anticipated costs, funding mechanisms, and operating guidelines. This action plan is not meant to limit or disallow future changes to the program goals, as needed for improvement. [WHPP Chapter 8.7.2]

**Action Plan for Regulatory /Policy to Mitigate Existing and Future Threats to the Spokane Valley Rathdrum Prairie Aquifer** In 2000, Spokane Aquifer Joint Board requested for adoption by the City of Spokane, Spokane County, and the Town of Millwood two action items that are ordinance/policy related items. The members of the Spokane Aquifer Joint Board do not have the authority to create land use ordinances/policies, and therefore can only make recommendations to elected officials. The Spokane Aquifer Joint Board members convened informational meetings, prepared scientific documents, and testified at appropriate hearings to request the following changes/ordinance adoption items:

1. An ordinance change requiring a special/conditional use permit for the following ten (high risk) activities that are proposed within special wellhead protection areas: Petroleum Bulk Storage; Engine & Vehicle Repair/Service/Salvage; Chemical/Agricultural Chemical Warehousing; Electronics Manufacturing; Electroplating; Metal Fabrication; Paint Manufacturing and Wholesale Storage; Dry cleaning (performed on location); Composite ("fiberglass") Products Manufacturing; Printing and Lithography. Existing activities within these areas will be allowed without additional changes, unless expansion of the facility is requested.
2. A change to the stormwater policy/guideline that would not allow direct injection drywells (i.e. without a '208' infiltration swale) for stormwater disposal within 500 feet of a potable water supply well, and the removal or rehabilitation of any existing direct injection drywells during normal street rehabilitation activities



**Action Plan for Spokane Aquifer Joint Board's Wellhead Protection Program (WHPP)** - The wellhead protection program action plan guides and coordinates the efforts of Spokane Aquifer Joint Board to accomplish the goals identified as 1) Education & Awareness Campaign, 2) Enhanced Household Hazardous Waste Removal, 3) Proactive Business Assistance and Chemical Reduction, and 4) Contaminant Source Inventory. Implementation goals 1-4 and the related action items differ from the policy action items mentioned above because the Spokane Aquifer Joint Board manages, financially funds and evaluates the implementation. The budget for the wellhead protection program action items is funded by Spokane Aquifer Joint Board water purveyors on a per connection basis. The total fee for each service connection is budgeted and approved annually by each member's elected body. The fee has ranged from \$0.12 to \$0.17 cents per connection per month. A flat fee was also established in special cases. Activities change as needed, and are approved by a majority vote of the members, when the annual Spokane Aquifer Joint Board budget is adopted. Implementation of the action items is the responsibility of the Spokane Aquifer Joint Board Program Manager formerly called Program Leader.

**Action Plan Goal No. 1 - Education and Awareness Campaign [WHPP Chapter 8.7.3 p124]**

**Personal Awareness Campaign** - Conduct a sustainable awareness campaign for the general public and also target identified demographic groups of citizens as defined in the 1999 citizen survey. This awareness campaign will provide educational materials to ensure understanding of the local source water resource.

**Business Level Campaign** - Enhance and use the existing Spokane Aquifer Joint Board presentation to provide information to local businesses. The Program Manager will take a proactive role and personally visit businesses within the wellhead protection areas to inform the owners and employees of the impacts that they have on the aquifer.

**Road Signage** - Develop messages to remind citizens of the aquifer, wellhead protection zones, and the need for maintaining local water quality. Place signs along major traffic corridors (I-90, Trent, Division, etc.) and possibly near potable water supply wells indicating the location of the aquifer our source of drinking water, and the need for vigilance toward protection of the resource. The sign messages will be consistent with the education and awareness campaign.

**Media Partnership** - Develop a partnership with the local media to assist in the delivery of public spot messages and events. The purpose of the media coverage is to provide broad-based awareness to all citizens about protection of the water resource.

**School Program** - Investigate the feasibility of supporting groundwater education programs in local public schools and summer camps.

**Aquifer Model** - Construct two semi-portable scale models of the Spokane Aquifer system that would include features of the aquifer, operable pump stations at well sites, and other identifiable physical features of the Spokane region. The self-contained operable models will be placed in public locations, such as malls, libraries, and public buildings to allow interactive learning and participation by the general public.

**Action Plan Goal No. 2 - Enhanced Neighborhood Household Hazardous Waste Removal**

**Household Pickup** - Develop a plan in consultation and coordination with the Spokane Regional Solid Waste Program. The Regional Solid Waste Department will conduct this activity with financial support from Spokane Aquifer Joint Board as determined by the wellhead committee.

**Action Plan Goal No. 3 - Proactive Business Assistance & Chemical Reduction**

**Proactive Business Assistance Program** - The Program Manager will seek out small businesses located near drinking water wells that have a high level of risk to degrade water quality if materials are spilled and develop a working relationship with the business to determine proper disposal methods, locations, or changes to business practice. The program shall be developed and coordinated with the Regional Solid Waste Program.

**Action Plan Goal No. 4 - Contaminant Source Inventory**

**Contaminant Source Inventory** - Contract with and provide financial support to Spokane County Utilities to conduct an annual update of the potential contaminant source inventory following the recommendations in the Spokane County Coordinated Water System Plan (CWSP) dated 1999. Details of the plan are described within the CWSP. <http://www.spokanecounty.org/WQMP/content.aspx?c=2229>

**Management Program to Control Known and/or Potential Sources of Contamination** - The majority of Spokane Aquifer Joint Board members do not possess the authority to control business and development through regulations and zoning ordinances. Further, the public involvement process strongly rejected “new” regulations in addition to the aquifer protection measures already in place. The Spokane Aquifer Joint Board will work with businesses and homeowners to ensure mitigation or elimination of their potential to contaminate the groundwater. Additional regulations and groundwater protection policies to reduce the potential for future contamination incidents can only be put into place by working effectively with local land use authorities.

**Wellhead Protection Plan Management to Control New Potential Sources of Contamination** - From 2000-2014, a bi-annual mailing of 3,000+ contaminant source letters, a business assistance information insert and updating the contaminant source map are continuous efforts to manage new sources of contamination. <http://www.spokaneaquifer.org/business-assistance/potential-contaminant-source-inventory/>. Delineation of special wellhead protection areas enabled the creation of management strategies for pollution prevention and risk reduction to address different types of contaminant threats within areas close to the well site and aquifer wide. Action Goal No. 3 Proactive Business Assistance focused on three major strategies. From 2000-2006 Spokane Aquifer Joint Board partnered with the Washington State Department of Ecology, Eastern Region Office, Hazardous Waste and Toxics Reduction Program to conduct an average of 250 Increased Generator Contact (IGC) visits per year looking at all business types located in both special wellhead protection areas and aquifer-wide. In 2004, given the growing medical industry in Spokane, the focus included developing and distributing best management practices for medical wastes. From 2009 to the present Spokane Aquifer Joint Board has partnered to develop the Spokane EnviroStars Program focusing on voluntary certification for small quantity hazardous waste generators who agree to a local source control visit. Technical assistance is provided to ensure proper disposal and management of hazardous and other wastes. [www.spokaneenvirostars.org](http://www.spokaneenvirostars.org)

**Emergency and Contingency Plans** - As part of the complete wellhead protection program, each Spokane Aquifer Joint Board purveyor developed individual contingency plans [WHPP Appendices Q1-Q20]. The individual plans were integrated into an overall plan that is outlined in WHPP Chapter 7. The overall plan includes general emergency response action plans and flow charts, communication priorities, and a phone list. As such, the overall wellhead protection contingency plan acts as a standardized plan for all Spokane Aquifer Joint Board members to be used in the event of an imminent or actual contamination threat to the groundwater. The contingency plans are updated as required. The interlocal agreements provide immediate response for the infrastructure and equipment needed to maintain a safe supply of drinking water. For a comprehensive summary, see the 2004 Case Study, page 29. [http://www.spokaneaquifer.org/wp-content/uploads/2012/04/AwwaRF.CaseStudy\\_Spokane-2004.pdf](http://www.spokaneaquifer.org/wp-content/uploads/2012/04/AwwaRF.CaseStudy_Spokane-2004.pdf)

**Source water protection program for potential future water sources** -The Spokane Valley Rathdrum Prairie Aquifer is designated as a “sole source” aquifer because there are no other economically viable sources of potable water for this bi-state region. The Washington Department of Ecology has placed a restriction on new water rights. These two factors have required innovative ideas for addressing future water sources. Spokane Aquifer Joint Board was instrumental in the 2013 formation of the Idaho

Washington Aquifer Collaborative (IWAC) which is a non-profit collaborative of Idaho and Washington drinking water and waste water purveyors. The Aquifer as a bi-state resource requires bi-state management. Therefore, protection of future water supplies is currently being addressed by working with the Idaho Washington Aquifer Collaborative in three ways 1) Spokane River instream flow, 2) Reclaimed water /reuse, and 3) Conservation and future water demand forecast.

**Instream Flow** - The Spokane River interchanges with the Spokane Valley Rathdrum Prairie Aquifer and instream flows in the Spokane River experience high seasonal fluctuation. The Washington State Department of Ecology is moving forward in 2014 with instream flow rulemaking and a study has been funded in Idaho to evaluate the possible effects on instream flows by reduced pumping from wells near the river. Spokane Aquifer Joint Board commissioned a parallel study that will be field tested by members during the low flow season to see if pumping changes have any significant impact on instream flow.

<http://www.spokaneaquifer.org/wp-content/uploads/2013/10/Instream-Flow-Rulemaking-IWAC-7-9-13.pdf>

**Reclaimed water and reuse** – Spokane Aquifer Joint Board, working with Idaho Washington Aquifer Collaborative, is initiating discussions among Idaho and Washington drinking water and reclaimed water purveyors to understand regulations and opportunities for reuse of reclaimed water for irrigation and wetlands recharging. This could potentially increase the amount of future potable water available for consumption. A water reuse presentation and discussion is scheduled for the 1/14/14 meeting.

**Conservation** – Spokane County has developed a future water demand forecast model and Idaho Washington Aquifer Collaborative members in Idaho are interested in working through the Idaho Comprehensive Aquifer Management Plan (CAMP) to fund a comparable water demand forecast. [https://www.idwr.idaho.gov/waterboard/WaterPlanning/CAMP/RP\\_CAMP/RathdrumCAMP.htm](https://www.idwr.idaho.gov/waterboard/WaterPlanning/CAMP/RP_CAMP/RathdrumCAMP.htm). A joint meeting of these groups is scheduled for March 11, 2014. When a regional water demand forecast is available, Spokane Aquifer Joint Board and the Idaho Washington Aquifer Collaborative will work together to develop regional recommendations for water conservation. <http://www.spokaneaquifer.org/wp-content/uploads/2013/10/SC-Water-Demand-Forecast-Model-IWAC-Presentation-10-8-131.pdf>

**Ongoing stakeholder education and involvement program** - The Spokane Aquifer Joint Board began in 1995 and has been engaged in an extensive, on-going public education and involvement campaign to inform and include the public in protecting our “sole source aquifer.” Education activities include an extensive website, with virtual field trips for students; print campaigns newsletters, press releases, TV, radio and billboard media campaigns; sponsoring environmental forums and public meetings, and presenting an aquifer program to school & community groups. A cartoon character super hero “Aqua Duck, Defender of the Aquifer” was created to make personal appearances, star in comic books, television PSAs, and billboards and now he can become your friend on Facebook. For full details see Program Implementation question 5, pages 11-14.

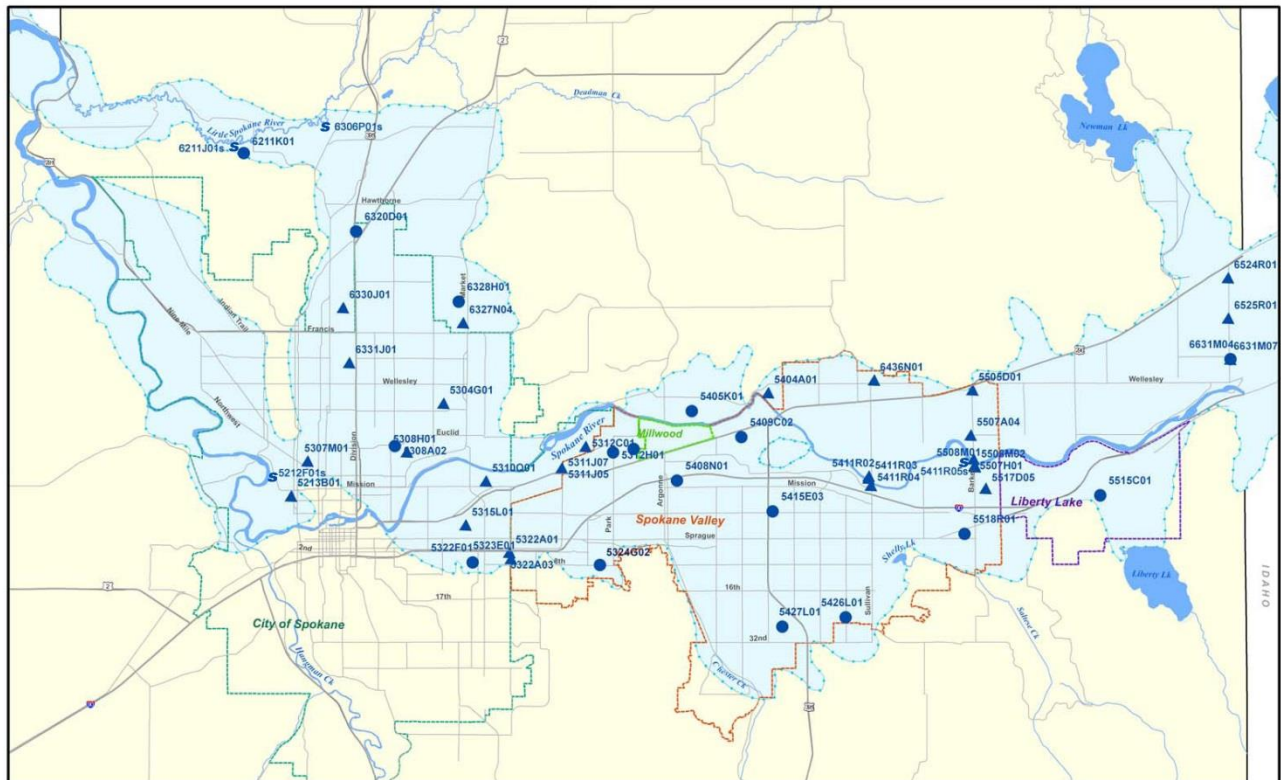
#### **Coordination with county, state, regional, tribal and national authorities that regulate potential sources of contamination within the Spokane Valley Rathdrum Prairie Aquifer**

Spokane Aquifer Joint Board receives SEPA notices from the Cities of Spokane, Millwood and Spokane Valley and ensures that member purveyors are notified. Bi-annual potential contaminant source data bases and maps are provided to all emergency responders and regulators involved. Spokane Aquifer Joint Board works with the Washington State Department of Ecology, Spokane River Forum, Spokane Regional Health District, City of Spokane, Spokane Regional Clean Air Agency, Spokane County, Spokane Regional Solid Waste System, and Spokane River Keeper to sponsor the Spokane EnviroStars small quantity generator business certification program.

**Spokane Valley Rathdrum Prairie Aquifer Groundwater Monitoring Program** - Spokane Aquifer Joint Board members monitor the quality of the drinking water on the Washington Department of Health

testing schedule and produce a water quality or “Consumer Confidence Report” every year. The Report is provided to customers of each district. Spokane Aquifer Joint Board members have wells spread across the entire Washington portion of the aquifer and thus maintain water quality monitoring for major portions of the aquifer. The Spokane Aquifer Joint Board website is beginning to add reports to purveyor contact pages. <http://www.spokaneaquifer.org/city-of-spokane-water-department/>.

From 1997-1999, as part of the WHPP data collection and delineation phase, Spokane Aquifer Joint Board worked with Spokane County and the City of Spokane to develop an expanded water level monitoring network. Fifteen new monitoring wells were installed. Aquifer tests were performed using existing production wells and existing or newly installed monitoring wells. Discrete and continuous groundwater level-monitoring events were conducted near the Idaho and Washington state-line area and a Field Data Collection Plan and QA/QC Plan [WHPP Appendix B] was prepared to help guide and direct the data collection efforts of the wellhead protection plan. Spokane County Water Resources staff participates regularly in Spokane Aquifer Joint Board monthly meetings and provides technical support through interlocal agreements.



Since 1977 Spokane County has been monitoring water quality conditions in the Spokane Valley Rathdrum Prairie Aquifer. Currently Spokane County Water Resources staff collects samples on a quarterly basis from 29 monitoring wells and 16 public supply wells. Objectives of the groundwater monitoring program include: 1) Establish the areal distribution of groundwater quality from a network of wells covering the Aquifer recharge area; 2) Identify water quality impacts from activities on the land surface; 3) Collect long term data from wells to establish water quality trends; and 4) Evaluate the potential water quality impacts of aquifer discharge on river quality. The monitoring well map, list of analytes, Quality Assurance Program plan and quarterly quality data monitoring results can be viewed at [www.spokanecounty.org/wgmp/content.aspx?c=1804](http://www.spokanecounty.org/wgmp/content.aspx?c=1804).

6. **Please describe your *implementation of the action plan*. [20 points]** - Spokane Aquifer Joint Board's action plan is being implemented along a continuum of, **"Identifying Issues...Piloting Activities...Evaluating Results...Creating Systematic Approaches"** and it will come as no surprise that even when systematic approaches are established, new issues arise to be addressed. Implementation of the four wellhead protection plan goals, has addressed many issues, pilots, evaluations and systems since 2000. What follows is an overview of implementation actions with links to supporting information.

**Goals No. 1 – 4** are systematically addressed on our website [www.spokaneaquifer.org](http://www.spokaneaquifer.org). Spokane Aquifer Joint Board members were actively involved in the content decisions for each iteration of the website which was launched in 2000, updated in 2003 and reconfigured in 2012. Using a Word Press platform the expanded website allows for sustained updating by the Program Manager with scientific studies, reports, calendar, photos of education and awareness events, videos, news, and features to support each goal. In addition, archives of meeting agendas, minutes and resolutions dating back to 2000 are available. Archives from 1995-2000 are being added as time allows.

**Goal No. 1 - Education and Awareness Campaign**

**Increase Understanding of the Physical Features of the Spokane Aquifer** – Spokane Aquifer Joint Board, based on data from surveys and Citizen's Wellhead Committee meetings, decided upon an active campaign to educate the general public about the unique process of formation, physical geology and hydrogeology of the aquifer with the intention that an educated public will protect our source water.

**Spokane Valley Rathdrum Prairie Aquifer Atlas** - Spokane Aquifer Joint Board participated in and contributed to a region wide initiative to develop and publish Spokane Valley Rathdrum Prairie Aquifer Atlases (Atlas) in 2000, 2004, and 2009. Each Atlas has provided the most up to date information and understanding of the aquifer available at the time. The 2009 Aquifer Atlas was developed in response to new data provided by the 2007 USGS bi-state study and a commitment to translate the scientific findings into interesting and understandable information for the general public. The 2009 Atlas is available electronically and free print copies are available by request or given out at school and community events. <http://www.spokaneaquifer.org/category/aquifer-atlas/> A 2015 Atlas is in the initial design phase. Stormwater, instream flow and their impact on the aquifer; indigenous peoples' history, culture and stories comprise new content for the 2015 Atlas. The Atlas is used by teachers, students, citizens and people from all walks of life.

**Centennial Trail Signage** 2003 and 2012 - Five signs were designed using information from the Aquifer Atlases and installed at popular locations along the 111 mile bike trail. The 2012 sign designs can be seen at <http://www.spokaneaquifer.org/centennial-trail-interpretive-signs/>

**Personal Awareness Campaign to understand the impact each individual has on the quality of their drinking water - Presentations, lectures, and displays** - Each year, from 1995 to 2014, Spokane Aquifer Joint Board has participated in 5 to 25 unique Community Events. The Aquifer publications, business and household hazardous waste disposal information and ideas for protecting our drinking water are the core messages. 2012-13 events are found at <http://www.spokaneaquifer.org/education-and-awareness-events/>.

**Aqua Duck** - In 2000, the Spokane Aquifer Joint Board gave a face to Aquifer protection with the creation of a cartoon character, Aqua Duck, Defender of the Aquifer. A lake or river can be seen or shown in photographs but having children and adults visualize an aquifer can be challenging. The wife of one member came up with the idea of a "super hero" to capture the attention and interest of children and for



13 years, Aqua Duck has been spreading the vision and message,  
**“Don’t pollute our water. It’s beneath you!”**

**Aqua Duck Mottos** – The Spokane Aquifer Joint Board has tested a few motto variations for Aqua Duck over the years to address emerging issues and campaign initiatives for pollution prevention and conservation.

**“Help Protect the Aquifer...And Our Drinking Water!”**

**“Don’t Pollute Our Water. It’s Beneath You!”**

**“Don’t Waste Our Water. It’s Beneath You!”**

**Aqua Duck** was so well received as the aquifer protection public persona that his image and motto were published on fliers, magnets, billboards, and television public service announcements. The live performance costume has gone through several design changes to end up with a very huggable super hero duck that is recognized wherever he goes in Spokane County. From 2005 to 2011 a series of **Aqua Duck Comic Books** were commissioned from graphic artist David Kelley. Annually, thousands of the Aqua Duck comic books with their engaging aquifer protection messages are distributed to students throughout the Spokane Region. Requests have also come from places like India and Japan for copies of the comic books.

<http://www.spokaneaquifer.org/education-awareness/coloring-comic-books/>

2005 Comic #1 Aqua Duck Defender of the Aquifer!

2006 Comic #2 Aqua Duck Join the Team in Protecting our Drinking Water!

2007 Comic #3 Aqua Duck Join the Team in a Race Through Time to Conserve Water!

2008 Comic # 4 Aqua Duck and the Return of Sludge!

2009 Comic #5 Aqua Duck Subterranean Showdown!

2010 Comic #6 Aqua Duck Battle for the Aquifer!

2011 Aqua Duck Activity Book!

2012 We Love Water Coloring Book by Georgette Graham

<http://www.spokaneaquifer.org/wp-content/uploads/2012/06/WeLoveWater.pdf>



**2006 and 2013 Poster Contests** - The 2013 contest, developed for National Clean Drinking Water Week, featured Aqua Duck. 247 posters were entered and winners from each grade 2-6 were selected. Designs <http://www.spokaneaquifer.org/clean-drinking-water-poster-contest-winners/> KSPS video <http://www.spokaneaquifer.org/protect-our-drinking-water-poster-contest-winners/>

**Road Signage** – Aquifer influence areas have been labeled and signs erected near major arterial roads around the entire aquifer boundary. Additionally, Spokane Aquifer Joint Board contracts with Emerald Outdoor to place billboards along major traffic corridors (I-90, Trent, Division, etc.) The billboards, developed from 2006-2009, are continuously on display with messages to remind citizens of the need for protecting local water quality and dealing with emerging issues. Emerald Outdoor regularly rotates the signs, changing the message locations throughout the region. Every sign has an image of Aqua Duck and his core message **“Don’t pollute our water. It’s beneath you!”** Six billboards can be viewed at <http://www.spokaneaquifer.org/aqua-ducks-message-on-billboards/>. Content includes the following messages: *Choose Non-Hazardous Materials for Your Home; Wash Vehicles with Biodegradable Soap on a Grassy Area; Take Hazardous Waste to Solid Waste Transfer Stations for Safe Disposal; Set Lawn Mower Height to Leave Grass 2-3 Inches Tall; Pick Up After Your Pets; Use Phosphate-Free Fertilizers and Keep All Fertilizer on Lawn.*

**Media Partnership – Radio & TV Jingles and Public Service Announcements** - From 1995 to the present, Spokane Aquifer Joint Board has developed and maintained partnerships with local media to assist in

delivering aquifer protection public service announcements and providing broad-based awareness to all citizens. TV and radio media has been produced by the following media partners: KDK One Digital Media Video and Radio Productions, KHQ Channel 06 and KSPS Public Television. Media examples are available at <http://www.spokaneaquifer.org/category/videos/>.

**School Program** – Spokane Aquifer Joint Board has worked over the years to support a variety of school programs for public, and private schools as well as YMCA, Spokane Parks and Recreation, Girl and Boy Scout Camps and Home School groups. Below are samples of the school programs.

#### **Groundwater Education Programs to Show How the Aquifer Operates**

2004-2013 KSPS “*Aquifer in a Cup*” workshops are conducted by a specialist in 50 classrooms each year. Students learn about the aquifer and build their own aquifer in a cup. The classroom receives a set of 5 water related books. All students receive an aquifer folder, Aqua Duck comic book and a groundwater learning packet entitled, “*The Wonder Down Under*.” View the 8 minute video that summarizes the learning experiences. <http://www.spokaneaquifer.org/aquifer-in-a-cup-workshop-summary/>. 2008 Pasadena Park Irrigation District No. 17’s well #1 was decommissioned, refurbished and donated as a teaching facility. 2008-2013 West Valley Outdoor Learning Center Aquifer Curriculum activities were funded reaching approximately 2,500 students per year, or a total of 12,500 students 1<sup>st</sup> through 12<sup>th</sup> grades.

**Virtual Field Trips & Teacher Resources** – Aquifer and Conservation virtual fieldtrips for elementary and middle school students were designed in 2002-2003 and updated in 2012 along with teacher resources. The Virtual Field Trips, teacher resources and aquifer fact pages are consistently the most actively viewed. For example, between November 2012 and November 2013, of the 90,400 total website page views; 30,500 participated in a virtual field trip. See:

<http://www.spokaneaquifer.org/education-awareness/elementary-aquifer/field-trip/>

<http://www.spokaneaquifer.org/education-awareness/middle-aquifer/field-trip/>

<http://www.spokaneaquifer.org/education-awareness/elementary-water-conservation/field-trip/>

<http://www.spokaneaquifer.org/education-awareness/middle-water-conservation/field-trip/>

<http://www.spokaneaquifer.org/education-awareness/elementary-aquifer/teachers-resources/>

<http://www.spokaneaquifer.org/education-awareness/middle-aquifer/teachers-resources/>

**Aquifer Curriculum Development** – In 2006, funding was provided to the West Valley Outdoor Learning Center to develop 25 Spokane Valley Rathdrum Prairie Aquifer Lessons for Grades 3-6 which are distributed through North East Washington ESD 101, University of Idaho, local school districts and online. <http://www.spokaneaquifer.org/wp-content/uploads/2012/06/Aquifer-Unit-3-6-SVRPA.pdf>

**Environmental Camps** - Recent examples include: 2010 Central Valley School District – An Environmental Camp was held for 35 teachers who received training in the aquifer curriculum. 2013 Mead School District 5<sup>th</sup> Grade Environmental Camp at Bear Lake 8 full days, serving 8 schools, 25 teachers and approximately 650 students and 40 adults. 2013 Girl Scout Day Camp 132 scouts experienced 7 environmental lessons.

**Aqua Duck Appearances** – Aqua Duck lends his support and enthusiasm for aquifer protection to a wide range of community events. Environmental events such as Earth Day and school science nights are the most frequent requests. Audiences for the aquifer message can also be found in a variety of other events such as Humane Society fundraisers, the annual Interstate Fair and Spokane River Clean-up. Aqua Duck is always a “Yes” to sharing the aquifer protection message. Paid and volunteer performers, male and female, old and young bring Aqua Duck to life and he is a much loved local hero. Check out his photo albums. <http://www.spokaneaquifer.org/category/photo-galleries/>

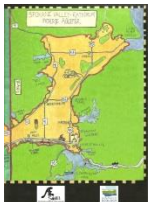
**Aquifer Models** – Spokane Aquifer Joint Board first constructed and later purchased semi-portable models to demonstrate physical features of aquifers with lakes, pump stations, well sites, underground storage tanks, septic systems and other identifiable physical features. The self-contained operable models are displayed at public events to allow interactive learning and participation. The models are used by water resource specialists and teachers to demonstrate how easily the aquifer can be affected by each individual and business. From 2007-2013 two aquifer models have been housed at the West Valley Outdoor Learning Center [olc.wvsd.org/](http://olc.wvsd.org/). Teacher training and student classes are sponsored by Spokane Aquifer Joint Board using the aquifer models.



The aquifer models are shown above at West Valley Outdoor Learning Center in 2011 and below Mobius Children's Science Museum 2006 and St. Aloysius Caring for Creation April 2012.



**Spokane Valley Rathdrum Prairie Aquifer Folders** – Folders were designed in 2004 and revised in 2009 for student use. Spokane Aquifer Joint Board distributes approximately 3,500 folders every year to public and private schools. The aquifer folders are used in Central Valley School District with all 2<sup>nd</sup> grade students during their study of water. In 2013 Spokane Public Schools District No. 81, used the folders with middle school earth science classes. At Gonzaga University the Environmental Science course used the folders and the 2009 Aquifer Atlas. Catholic schools in 2012 gave every student the aquifer folder as part of a science class.





**Goal No. 2 - Enhanced Neighborhood Household Hazardous Waste Removal-Hazardous Waste Pick-Up Program**

- Spokane Aquifer Joint Board developed a partnership with the YMCA of the Inland Northwest Retired and Senior Volunteers Program (RSVP) and provided funding to assist homeowners with disposal of chemicals by coordinating with the Spokane Regional Solid Waste System to sponsor Hazardous Waste Pick up Events from 2001 to 2006 and dispose of the wastes at County Transfer sites. A hazardous waste hotline was maintained for a number of years. In the first years of the collection program, pick-up loads of household wastes totaling 3,000 lbs annually, (as seen in the photos to the right) were collected and properly disposed of. By 2007, the transfer stations were well used and the household pick up program was re-evaluated. Most of the waste being picked up in 2006 was latex paint which is not hazardous. The program was considered a success and the decision was made to discontinue household pick-up. KHQ was contracted to create the following public service announcement to educate the public about managing household hazardous waste.

[www.spokaneaquifer.org/managing-household-waste/](http://www.spokaneaquifer.org/managing-household-waste/)



**Household Contaminants Brochure** - Produced in 2001, the brochure has been in continuous distribution since that time. The information provided in the brochure is available on our website.

<http://www.spokaneaquifer.org/household-contaminant-disposal/alternative-products-tips/>

**Drug Drop Off Events** - In 2011, medicines became the household hazardous waste focus. Spokane Aquifer Joint Board worked with the Spokane Valley Police Department, Spokane Regional Health District and KSPS to co-sponsor and publicize two "Prescription Take Back and Shred" events in April and November of 2012. Spokane Valley Police Department reported 402 pounds of prescription drugs were collected and burned. The public service announcement can be viewed at

<http://www.spokaneaquifer.org/2012-prescription-drug-drop-off-day/>

**Goal No. 3 - Proactive Business Assistance & Chemical Reduction Implementation** Proactive Business Assistance Program has been implemented in three major phases described below.

**Increased Generator Contact Program** - From 2000-2006 Spokane Aquifer Joint Board partnered with the Washington State Department of Ecology, Eastern Region Office, Hazardous Waste and Toxics Reduction Program to conduct an average of 250 Increased Generator Contact (IGC) visits per year looking at all business types located in both special wellhead protection areas and aquifer-wide. Over 1,300 total businesses were visited and provided technical assistance for proper waste disposal. Samples of program reports and findings are at <http://www.spokaneaquifer.org/increased-generator-contact-visits-2001-2006/>

**Best Management Practices for Hospital Waste** – From 2004 to 2005, given the growing medical industry in Spokane, the business assistance focus included developing and distributing best management practices for medical waste to hospitals. <http://www.spokaneaquifer.org/wp-content/uploads/2012/04/Hospital-Best-Management-Practices-ECY-0504013.pdf>

**Spokane EnviroStars Small Quantity Generator Program** - From 2009 to the present Spokane Aquifer Joint Board is partnering with nine agencies and non-profits to develop sustain and expand the Spokane EnviroStars Program. EnviroStars is a voluntary certification for small quantity hazardous waste generators (SQGs) who agree to a local source control visit. Technical assistance is provided to ensure proper disposal and management of hazardous and other wastes and stormwater. Spokane EnviroStars is a member of the King County EnviroStars Coop [www.envirostars.org](http://www.envirostars.org). However, business certification applications for Spokane were modified to address aquifer and river protection. From 2010 to 2012 Spokane ran a 2 star pilot program and from February of 2012 – June of 2013 5 star checklists were developed incorporating the contaminant concerns of all nine sponsors. Certification ranges from 2-5 stars.



- To earn **2-Stars**, a business properly manages all hazardous or dangerous wastes and sets a goal to increase environmentally responsible practices.
- To earn **3-Stars**, a business demonstrates best management practices for general housekeeping, inventory management and employee training for managing products & waste.
- To earn **4-Stars**, a business develops systems to reduce, reuse and/or recycle all wastes, conserves resources and educates customers
- To earn **5-Stars**, a business demonstrates environmental/community leadership among associations, peers, vendors, industry and comprehensive environmental protection.

**Certified Businesses Benefits:** Free advertising and promotion a) EnviroStars Business Directory, b) EnviroStars Certified logo to use in marketing, c) EnviroStars window decal, d) EnviroStars certificate of recognition, e) Website promotion on three websites [www.spokaneenvirostars.org](http://www.spokaneenvirostars.org) [www.envirostars.org](http://www.envirostars.org) [www.spokaneaquifer.org](http://www.spokaneaquifer.org), f) Facebook promotion g) 30+ annual events, e.g., Interstate Fair, Valley Fest, Earth Day, Family Science Nights, etc. h) Feature News Articles

**Goal No. 4 - Contaminant Source Inventory** - Beginning in 1998 and continuing to present, the Spokane Aquifer Joint Board has maintained an aquifer- wide potential contaminant source inventory. Bi-annually a letter is mailed to all identified businesses with a technical information insert to assist in properly managing waste. Bi-annually a map is prepared identifying the locations of all current and archived locations. This map is made available to all first responders. Potential contaminant source inventory data is gathered through an interlocal agreement with the Spokane County Water Resources division. Businesses are identified using the sources such as: Department of Ecology Hazardous Waste Generator; Business Permits issued by Liberty Lake, Spokane, Spokane Valley & Spokane County; Special Permits e.g., Dentist, Dairy, UST, LUST, Landfill, Sand & Gravel, and Oil Storage; Department of Revenue, RCRA, Toxics Release Inventory, Federal Clean-up Site or CERCLIS, Formerly Used Defense Site, and EPA. A full list of business information sources, a sample bi-annual potential contaminant source letter and insert can be found at <http://www.spokaneaquifer.org/business-assistance/potential-contaminant-source-inventory/>

**7. Please describe your periodic *evaluation and revision* of the entire program. [10 points]**

The 2004 Spokane Aquifer Joint Board case study, pages 32-44, details the Evaluation of Costs/Benefits in these categories: monetary and non-monetary; improved water quality, 14% decline in spills reported, increased waste collection at County transfer stations, increased waste oil collected, increased private environmental and engineering consultant activities, changes in land use patterns, habitat improvements, no impact on property values, improved relationships between governmental authorities and water suppliers, and public acceptance of wellhead protection. [http://www.spokaneaquifer.org/wp-content/uploads/2012/04/AwwaRF.CaseStudy\\_Spokane-2004.pdf](http://www.spokaneaquifer.org/wp-content/uploads/2012/04/AwwaRF.CaseStudy_Spokane-2004.pdf)





**Physical Characterization Evaluation** - The Spokane Aquifer Joint Board recognized the need for evaluating and revising the aquifer's physical characterization to better understand the interchange between the river and the aquifer. The "2007-5044 USGS Groundwater Flow Model for the Spokane Valley Rathdrum Prairie Aquifer, Spokane County, WA and Bonner & Kootenai Counties, ID" commonly referred to as the "Bi-State aquifer" study, a 90 page report, enhances the 2000 aquifer characterizations. It uses a computer MODFLOW model to detail groundwater flow in the aquifer and the interactions between ground water and surface water. Multi agencies across state lines collaborated to advance scientific aquifer data. See <http://www.spokaneaquifer.org/wp-content/uploads/2012/09/BiStateModelUSGSSir20075044SMALLER.pdf>. In 2012 City of Spokane/ Spokane Aquifer Joint Board Wellhead Protection Groundwater flow model was expanded and refined in part by grant funding by the Washington Department of Health. Below is a link to a power point presentation describing the MicroFEM modeling refinements and updated graphics showing the special wellhead protection areas. <http://www.spokaneaquifer.org/wp-content/uploads/2013/08/2012-Groundwater-Flow-Model-GSI-IWAC-08-13-2013.pdf>

**Education and Awareness, Business Assistance and Household Contaminants Evaluation and Revisions** are described in questions 5-Implementation, 7-Effectiveness, and 8-Innovation. Over the eighteen years of implementation many program changes have occurred due to the evaluation of effectiveness and need for innovation. In 2000, the potential contaminant source letter was sent to 8,000 businesses. Over time and with the effectiveness of the source water protection message the number of letters mailed averages 3,000 per year. The Household Contaminants Pick-up and disposal was a vital program component from 2001-2006 at which time it was dropped because the Spokane Regional Solid Waste System Transfer Stations and the aquifer protection message became well established.

**8. How effective is your program, and how do you measure this effectiveness? [10 points]**

Spokane Aquifer Joint Board continues to evaluate the effectiveness of its programs on a yearly basis in October and November as a part of developing the next year's budget. The initiatives below are current indicators of program effectiveness and the initiatives have changed many times in the years since 2000 because of the yearly internal program evaluations. Program changes mentioned in the goals described above can be found in more detail in the monthly Meeting Minutes.

<http://www.spokaneaquifer.org/category/sajb-meeting-agenda-minutes/>

**KSPS "Aquifer in a Cup" Workshops** - Teachers, requesting each of the 50 workshops per year, complete an evaluation and the majority of the responses rate all questions at 5 on a scale of 1-5 with 5 being the highest. The comments are full of appreciation. Evaluation samples can be found in KSPS End of Year reports at [ ]. Funding for KSPS was increased in the 2014 budget to meet teacher requests and add 10 more workshops. On 12/15/13 the workshops were already booked into April of 2014.

**Spontaneous Comments** from the general public at community and school events indicate a long term familiarity for the aquifer protection message and affection for Aqua Duck. Students overwhelmingly report seeing Aqua Duck when they are watching PBS Kids. The photo gallery provides evidence of the affection which Aqua Duck receives from people of all ages.

**Requests for Participation and Aqua Duck Appearances** – 30+ yearly event requests are another way of assessing the value placed on Spokane Aquifer Joint Board materials and the Aqua Duck persona. <http://www.spokaneaquifer.org/education-and-awareness-events/>

**Pro-Active Business Assistance - The Spokane EnviroStars Small Quantity Generator Program** began in June of 2010 funded by the Department of Ecology, Spokane Regional Health District, the Spokane River Forum and Spokane Aquifer Joint Board. EnviroStars success in promoting local source control with small

quantity generators has resulted in 5 additional sponsoring agencies and an EPA Public Participation Grant to develop an EnviroStars waste directory website for both business and residential. Spokane Aquifer Joint Board was one of the first funders in 2009 partnering to pilot EnviroStars in Spokane County. In June 2013, based on the program success, Ecology increased the funding for Local Source Control visits from 0.65 FTE to 1.4 FTE. The City of Spokane Wastewater Management and Spokane County Water Resources added an additional \$15,000 in funding to support EnviroStars.

**Website statistics** are one way Spokane Aquifer Joint Board tracks the effectiveness of the four wellhead protection goals. <http://www.spokaneaquifer.org/website-statistics-1112-to-1113/>. Monthly access averages 2,500 unique visitors to the website who view an average of 2.5 pages. To date the most traffic has been to the Elementary and Middle School Aquifer Virtual Field Trips. A new website feature, our searchable service map for water providers across the Spokane Valley Rathdrum Prairie Aquifer, is taking the lead on website traffic. The question, “Who provides my water?” is challenging with 21 members and scores of small private water companies in Spokane County and 15 or more in Kootenai County. The office personnel for member and non-member purveyors expressed a need to deal with the large volume of inquiries they received searching for the right water provider. Spokane Aquifer Joint Board responded by working with Spokane County Water Resources and purveyors in Idaho to develop a searchable map replacing the 2009 pdf. The map was launched November 7, 2013 and is still being refined. The website statistics show 950 uses of the map in the first month of operation.

<http://www.spokaneaquifer.org/contact/service-area-map/>

9. **How is your program innovative? [10 points]** - For 18 years the Spokane Aquifer Joint Board has led the way in progressive, cutting edge, new and forward thinking innovations to protect our “sole source” aquifer and address emerging issues. Many of these innovations were introduced in the earlier program action plan and implementation sections of this report. Below is a partial list of innovations:

**Bi-State Initiatives** - Working across state lines with the Idaho water purveyors; a 3.5 million dollar 2007 USGS Bi-State Spokane Valley Rathdrum Prairie Aquifer study; sharing aquifer curriculum developed for schools; participating in the Aquifer Protection Council and most recently strategic involvement in the formation of the Idaho Washington Aquifer Collaborative. Participants include Idaho and Washington drinking and waste water purveyors, Coeur d’Alene and Spokane Tribes, Avista (hydro-power company), regulatory agencies DOH and Ecology planning for regional solutions and the unimaginable.

<http://www.spokaneaquifer.org/idaho-washington-aquifer-collaborative/purpose-goals/>

**Sponsorship of Spokane River Forum Conferences** – Spokane River Forum Conferences were held in 2008, 2010, 2012 and 2013 and the Spokane Aquifer Joint Board contributed funding, session presentations and panel participation. In 2012, the Spokane River Forum held an H2O Bi-State Breakfast in Coeur d’Alene, Idaho with featured speaker Pat Mulroy from Southern Nevada Water Authority. Spokane River Forum conferences bring together 250+ participants from a range of interests to discuss the latest research and regulations on water quality, quantity and recreation.

[http://www.spokaneriver.net/?page\\_id=147](http://www.spokaneriver.net/?page_id=147)

**Aquifer Atlas** – The Spokane Aquifer Joint Board participates in a multi-agency design group to develop, print and distribute the 2000, 2004, 2009 and soon to come the 2015 Atlas editions.

<http://www.spokaneaquifer.org/category/aquifer-atlas/>

**Searchable Service Area map for Idaho and Washington water purveyors** – We created a searchable google map on our website which does not require the user to download Google Earth. This was developed as a service to all residents in Spokane and Kootenai Counties due to the large number of water providers and the irregular boundaries. In the first month of being on-line it was accessed 950 times. <http://www.spokaneaquifer.org/contact/service-area-map/>

**Business Assistance** – The increased Generator Contact program an innovative pilot with Ecology to



provide technical assistance for the proper management and disposal of hazardous waste to businesses within the aquifer boundary. Between 2001 and 2006, approximately 1,300 businesses were visited. From 2009 to 2014 Spokane Aquifer Joint Board worked to implement the Spokane EnviroStars Business certification program based on Local Source Control visits and comprehensive industry best management practices checklists. This innovation required a comprehensive set of applications that reflect the proper management of hazardous and other wastes for nine different small quantity generator industries.

**Education and Awareness program** for groundwater protection is both expansive and comprehensive. Innovations have occurred along with the need to address new issues and audiences. See 5 above and <http://www.spokaneaquifer.org/education-awareness/>

**Virtual Field Trips** were created in 2003 and used cutting edge technology to provide teachers with a fun and engaging way for students to access the aquifer without leaving the classroom. In 2012, the once cutting edge field trips were reformatted with a new interface to keep them engaging to students. The next phase will be a tablet and smart phone application.

**Aqua Duck** “Defender of the Aquifer” gives a face and persona to the aquifer and a call to action, “**Don’t pollute our water. It’s beneath you!**” Aqua Duck personal appearances, comic books, billboards and TV public service announcements are tailored to emerging issues and audiences.

**Media Campaigns** using print copy, comic books, news releases, the <http://www.spokaneaquifer.org> website, billboards, videos, radio, TV PSAs and Facebook have systematically incorporated the latest media innovations to bring the aquifer protection message to all audiences. <http://www.spokaneaquifer.org/category/photo-galleries/> <http://www.spokaneaquifer.org/category/videos/>.

Finally, while it may not seem innovative to some regions of the country, the fact that in Spokane County, WA twenty-one separate, privately and publicly owned water and irrigation districts, 2 cities and major private industrial companies came together as the Spokane Aquifer Joint Board is remarkably innovative in eastern Washington where “going it alone” is the norm. To sustain a collaborative and evolving wellhead protection program for eighteen years across a bi-state “sole source” aquifer has required a constant state of innovation.

**10. What was the environment (political, social, environmental, and economic settings) in which this program was developed and has operated, what obstacles and difficulties existed, and how were these obstacles and difficulties overcome? [10 points]**

**Political and Environmental Setting:** The Spokane Valley Rathdrum Prairie Aquifer “a sole source aquifer” and the Spokane River (River) with which groundwater interchanges are under the jurisdictions of EPA, Ecology, States of ID and WA, the Coeur d’Alene and Spokane Tribes; Spokane and Kootenai Counties, Spokane County Health District in WA and Panhandle Health District in ID, numerous municipalities and the watchful eyes of the Spokane RiverKeeper. The River watershed serves a total population of 609,000 located in six urbanized areas across Idaho and Washington. The Aquifer/River system is one of the inland Northwest’s most valuable natural and economic resources. The River headwaters are located at the outlet of Lake Coeur d’Alene in North Idaho, the ancestral lands of the Coeur d’Alene Tribe, and at the mouth of the river is the Spokane Tribe of Indians reservation. Historically, the River was a gathering place and salmon fishing ground for a number of Tribes in the Inland Northwest. Today, the river is §303 (d) listed under the Clean Water Act for numerous water quality impairments such as heavy metals, phosphorus and has WA DOH fish advisories based on toxics found in fish tissue. As a result of these impairments, the River is an EPA, Region 10 priority. In 2014, in-stream flow rulemaking by Ecology is scheduled to occur which could impact water quantity for new drinking supply wells.

**Social & Economic Setting:** The Spokane Valley Rathdrum Prairie Aquifer unites Spokane and Kootenai Counties as an interdependent social and economic bi-state region. Families may live in Post Falls, ID and

work in Spokane, WA or vice versa. From 2000 to 2007 the region experienced rapid growth which is detailed in the 2004 Case Study pages 9-10. Growth declined in 2008 in proportion to the national housing crisis and economic decline. In 2013, a slight increase in business permits and housing sales show promising signs of growth. Spokane Aquifer Joint Board, working with the Idaho Washington Aquifer Collaborative, is studying water demand forecasts and discussing how to plan for an unimaginable increase in population due to the shrinking water supplies in the U.S. southwest and a perception of abundant potable water from the Spokane Valley Rathdrum Prairie Aquifer. <http://www.spokaneaquifer.org/wp-content/uploads/2013/10/SC-Water-Demand-Forecast-Model-IWAC-Presentation-10-8-131.pdf>

**Obstacles and Difficulties and how these obstacles and difficulties are managed** - Spokane Aquifer Joint Board purveyors, range in type from municipal to private, and in service size from less than 25 connections to more than eighty thousand connections. Historically, many of the water purveyors were competitors and relationships between some water purveyors were often adversarial or poor at best. However, recognizing that groundwater protection was a common concern for each water supplier and that there were distinct economies of scale and benefits in conducting regional wellhead planning, the water utilities began to work cooperatively in the mid-1990s toward this common goal. Some people interviewed during a 2004 AWWA case study (page 38) expressed the opinion that, *"attitudes and relationships between the individual water utility member of the Spokane Aquifer Joint Board have drastically improved."* [http://www.spokaneaquifer.org/wp-content/uploads/2012/04/AwwaRF.CaseStudy\\_Spokane-2004.pdf](http://www.spokaneaquifer.org/wp-content/uploads/2012/04/AwwaRF.CaseStudy_Spokane-2004.pdf)

Spokane Aquifer Joint Board purveyors, with the exception of the Cities of Millwood and Spokane, do not have "land use authority". They face challenges when attempting to implement a wellhead protection program that a municipally owned and operated utility does not face. Political agreement, across the various regulatory agencies and jurisdictions on policies and procedures to protect the aquifer, has been and continues to be challenging. Spokane Aquifer Joint Board, Spokane County and the Cities of Millwood, Spokane and Spokane Valley meet regularly at the Wellhead Protection Policy Coordinating Committee and continue the effort to develop recommendations and reach regional agreement on implementing wellhead protection area ordinances and regulations. The size of proposed wellhead protection areas has decreased and the number of potentially regulated business activities has increased as this consensus seeking process has proceeded. The current issues for policy discussion are regarding stormwater management, dry wells and low impact development. The river water quality is degraded due to contaminants in stormwater run-off and in the City of Spokane, a combined sewer outfall system. Low impact development is a desirable solution unless it degrades the groundwater and the Wellhead Protection Policy Coordinating Committee has been working to develop aquifer wide ordinances that require agreement among cities competing for economic development. Spokane Aquifer Joint Board members and the Program Manager participate in management groups (e.g., Aquifer Protection Council, WRIA 54-57 Watershed Planning, Spokane River Regional Toxics Task Force, City of Spokane Integrated management Planning, Idaho Washington Aquifer Collaborative and etc.,) which are considering various aspects of the complex aquifer/river regional issues.

- 10. Does your source water protection program have a person(s) responsible for carrying out the effort (e.g., a Source Water Protection Program Manager)? Yes** - Spokane Aquifer Joint Board has invested in program management of the Wellhead Protection Implementation Plan since 2000. Titles and duties have changed over time as the implementation needs have evolved.

2000-2006 Julia McHugh-Program Leader /Manager

2006-2011 Erin Casci - Wellhead Implementation Plan Program Manager

2011-Present Tonilee Hanson - Wellhead Implementation Plan Program Manager

Contact information: [sajbinfo@gmail.com](mailto:sajbinfo@gmail.com), 509-847-4337, 2206 S. Sherman St. Spokane, WA 99203