

# 4 | WATER RESOURCE ANALYSIS AND WATER USE EFFICIENCY

## INTRODUCTION

The City of Richland (City) acknowledges that water is a valuable and necessary natural resource that must be used wisely. The Water Use Efficiency (WUE) program provides an approach to increase WUE within the City's water system.

## BACKGROUND

### THE WATER USE EFFICIENCY RULE

The Washington State Department of Health (DOH) implemented the WUE Rule, effective on January 22, 2007, as required by the Municipal Water Supply – Efficiency Requirements Act, also known as the Municipal Water Law (MWL), passed by the Washington State Legislature in September 2003. The MWL requires the state to implement the WUE Rule. The intent of the rule is to help reduce the demand that growing communities, agriculture, and industry have placed on the state's water resources, and to better manage these resources for fish and other wildlife. Municipal water suppliers are obligated under the WUE Rule to enhance the efficient use of water by the system and/or its consumers. The requirements of the WUE Rule are set forth in Chapter 246-290 Washington Administrative Code (WAC), Part 8.

### WATER USE EFFICIENCY REQUIREMENTS

The *Water Use Efficiency Guidebook*, published by DOH in January 2011, identifies the water use reporting, forecasting, and efficiency program requirements for public water systems. A WUE program meeting these requirements is a necessary element of a water system plan as required by the DOH and is necessary to obtain water right permits from the Washington State Department of Ecology (Ecology). The *Water Use Efficiency Guidebook* defines the necessary components of a WUE program as four fundamental elements.

1. Planning requirements, which include collecting data, forecasting demand, evaluating WUE measures, calculating distribution system leakage, and implementing a WUE program to meet goals.
2. A distribution system leakage (DSL) standard of 10 percent or less based on a 3-year rolling average.
3. Goal setting and annual performance reporting on progress towards meeting WUE goals.
4. Annual performance reporting on progress towards meeting WUE goals.

# WATER USE EFFICIENCY PROGRAM

## REGIONAL WATER USE EFFICIENCY EFFORTS

Throughout the past 10 years, beginning with the *2005 Interim Regional Water Forecast and Conservation Plan (RWFCP)*, the Cities of Kennewick, Pasco, Richland, and West Richland (quad cities) have implemented water conservation plans to ensure that the region has a reliable supply of water and is using water in an efficient manner. The quad cities have been implementing individual WUE programs since 2007 that comply with the DOH WUE Rule.

The original combined WUE goals and objectives of the quad cities, developed in the 2005 RWFCP, have proven to be effective and will continue to be met through implementation of the WUE measures in each city's WUE program. These goals and objectives, as most recently presented in the 2016 RWFCP, are as follows.

- Inform customers of simple, effective water wise activities.
- Develop a regional marketing campaign.
- Encourage customers to reduce water waste and become more water wise.
- Encourage commercial, industrial, and residential customers to use water wisely.
- Ensure all municipal activities and programs are water wise.
- Encourage wise water use to irrigate large park-like areas.
- Measure the net consumptive water use from the Columbia River.
- Perform a water balance for the region every 6 years as part of each city's comprehensive water system plan update.
- Focus the conservation program on using water efficiently.

## CITY OF RICHLAND WATER USE EFFICIENCY PROGRAM

The City's current WUE program elements are summarized in this section.

### Planning Requirements and WUE Program Activities

The City's water use data, demand forecasts, and other planning requirements are contained in **Chapter 2** of this Water System Plan (WSP). The City is committed to continue collecting water use data beyond that presented in **Chapter 2** for evaluation of its WUE program and water use patterns, and for forecasting demands for future facilities. Consistent with WAC 246-290-810, the WUE program effectiveness will continue to be evaluated within each WSP update.

Recent WUE program activities have involved participation in regional efforts and City-led activities that are presented in the **Selected Measures** section of this chapter.

### Water Use Efficiency Goals and the Public Process

Per WAC 246-290-830, WUE goals must be set through a public process and shall be evaluated and reestablished a minimum of every 6 years. The goals and objectives of the City's previous WUE program, which extends to the approval of this WSP are as follows.

- Maintain DSL at 10 percent or less on an annual basis.
- Promote education on water conservation.
- Offer a residential retrofit program for the public.
- Consider a conservation rate in a water rate study.
- Maintain the average demand per equivalent residential unit (ERU) at 534 gallons per day (gpd) per ERU, based on the combined single-family residential customer classes (combined domestic and separate irrigation classes).

The amount of DSL in the City's system has remained relatively constant at approximately 9 to 13 percent annually since 2010, resulting in 3-year rolling average DSL percentages in excess of 10 percent from 2010 to 2015. These values differ from the values presented in the City's recent annual WUE performance reports as a result of an inconsistency between the volumes reported by the City's billing and operations departments. Although the City's DSL percentage is currently slightly over 10 percent, the City's goal to maintain the average demand per ERU at 534 gpd per ERU has been achieved each year from 2013 to 2015 (510, 526, and 529 gpd/ERU in 2013, 2014, and 2015, respectively). The City currently calculates demand per ERU based on a single-family residential connection that utilizes domestic water for irrigation, resulting in a demand per ERU of 761 gpd based on 2015 data.

Based on the current status of the City's DSL, the City has established the following new goals to reduce DSL. The proposed WUE goals for the 2016 to 2027 water system planning cycle are as follows.

- Reduce the DSL 3-year rolling average to 10 percent or less by 2021.
- Implement the Water Loss Control Action Plan (WLCAP) presented in this chapter.
- Reduce the *average* demand per ERU for single-family residential customers with domestic irrigation to 745 gpd by 2021, and maintain an average demand per ERU below 745 gpd through 2027. This goal equates to reducing and the *summer* demand per ERU for single-family residential customers with domestic irrigation to 1,350 gpd.

In compliance with the new WUE Rule, a public hearing was held on **MONTH DAY**, 2017, at a City Council meeting to present and discuss the new goals. Background on the City's proposed WUE program, water supply characteristics, water demand forecasts, and other elements were made available 2 weeks prior to the public forum date.

### **Water Use Efficiency Program Evaluation and Performance Reporting**

In the past six years (2010 to 2015), the average domestic demand per capita is 280 gpd per capita, based on the values presented in **Table 2-5** of **Chapter 2**. Compared to the previous six years (2004 to 2009), the average domestic demand per was 335 gpd per capita, also shown in **Table 2-5** of **Chapter 2**. The reduction in demand per capita between 2010 to 2015 approximately coincides with time period of the City's current WUE program and goals. It is difficult to quantify how much of this reduction in demand per capita is directly the result of the WUE measures implemented by the City. However, if the average domestic demand per capita of 335 gpd per capita was maintained between 2010 and 2015, and the City's population increased at the same rate, approximately 6.1 billion gallons (BG) of additional water would have been consumed within the City's water

system. Therefore, the water savings from WUE measures over the past 6 years in the City's water system may be as much as approximately 6.1 BG.

The City will continue to evaluate overall demand, per capita water use, and the amount of DSL on an annual basis (coinciding with the production of its Consumer Confidence Report (CCR)). The City will also evaluate the performance of its WUE program and implemented measures at this time by analyzing demand data and determining the long-term trend towards reducing water usage and meeting WUE goals. If the WUE program monitoring shows that progress towards meeting the WUE goals is not being accomplished, more rigorous WUE program implementation or additional WUE items will be considered, along with a cost-effective evaluation of measures.

The City will continue to provide annual WUE performance reports to its consumers in the CCR, and detail the results of water use monitoring and progress towards achieving the system's WUE goals. A copy of the City's 2015 CCR is included in **Appendix L**. The City will comply with DOH annual WUE performance report requirements, due to DOH by July 1<sup>st</sup> of each year.

### **Evaluation and Selection of Water Use Efficiency Measures**

The City's evaluation of WUE measures and selected levels of implementation are presented within this section. The measures fall within three categories of implementation: 1) mandatory measures that must be implemented; 2) measures that must be evaluated; and 3) additional measures selected by the City that either must be evaluated or implemented.

The City served 18,689 water service connections in 2015, which is the base year of the City's WSP. Based on the number of connections, at least nine WUE measures must be evaluated or implemented. Measures that are mandatory cannot be credited towards the system's WUE measures. Since the City implements or plans on implementing all of the evaluated measures presented here, a cost-effective evaluation is not required.

### **Mandatory Measures**

#### **Source Meters**

The volume of water produced by the system's sources must be measured using a source meter or other meter installed upstream of the distribution system. Source meters are currently installed and operating at each of the City's sources. The City services all source meters on an annual basis, and performs repairs or replacements if needed.

All interties that the City’s water system shares with adjacent water systems are metered. This includes seasonal and emergency interties.

|                                      |                                                                                                        |
|--------------------------------------|--------------------------------------------------------------------------------------------------------|
| City of Kennewick – Gage Boulevard   | Emergency only, Two-way                                                                                |
| City of Kennewick – Tapteal Drive    | Emergency only, Two-way (gravity flow to Richland, with temporary pump provisions to supply Kennewick) |
| City of West Richland – Intertie BPS | Supply, One-way, One location                                                                          |
| Badger Mountain Irrigation District  | Supply, One-way, Two locations                                                                         |
| Kennewick Irrigation District        |                                                                                                        |
| Lorayne J Water System               | Emergency only, One-way, One location                                                                  |
| Tri-Cities Estates Water District    | Emergency only, One-way, One location                                                                  |

**Service Meters**

All public water systems that supply water for municipal purposes must install individual service meters for all water users. Service meters are currently installed and operating at all connections throughout the distribution system. All future connections that are installed or activated will be equipped with a service meter.

**Meter Calibration**

The City must calibrate and maintain meters based on generally accepted industry standards and manufacturer information. The City tests all 2-inch meters every 4 years, and all 3-inch meters every 2 years. Meters not meeting generally accepted industry or manufacturer standards are replaced or scheduled for replacement. The City repairs or replaces small meters if they are discovered to be defective or not properly measuring water use. All small meters originally installed prior to 1990 have been replaced. No small meters installed prior to 1990 are currently installed in the City’s water system.

**Water Loss Control Action Plan**

To control leakage, systems that do not meet the DSL standard must implement a WLCAP. The City must implement a WLCAP since the City’s DSL rolling 3-year average was 12.1 percent in 2015. The City is planning to implement an automatic meter reading (AMR) system to more accurately assess the metered consumption throughout the system. The AMR system is anticipated to include DSL detection equipment that will contribute directly to reduced DSL. If the AMR system is deemed feasible, the City anticipates having the system operational in 2019. It is anticipated that the 2015 DSL of 13.6 percent (12.1 percent based on the rolling 3-year average) can be reduced below 10 percent with the implementation of an AMR system.

Since the City’s DSL rolling 3-year average was 12.1 percent in 2015, the water system falls in the category of water systems with greater than 10 percent and less than 20 percent DSL. Water systems in this category are required to evaluate data accuracy and assess data collection methods and errors. The City will calibrate all source meters and flow meters at all booster pump station facilities prior to 2021. Accurate pumped supply data, combined with accurate customer metering data in each

pressure zone will allow the City to identify the location and magnitude of DSL, and make informed decisions regarding improvements to reduce DSL.

The City will strive to reduce the DSL 3-year rolling average to less than 10 percent by 2021.

### Customer Education

Annual customer education regarding the importance of using water efficiently is a required element of all WUE programs. Customer education is provided in each city's annual CCR to customers and includes information on the system's DSL, progress towards meeting WUE goals, and tips for customers on using water more efficiently. Additional customer education and outreach measures are identified in the **Selected Measures** section.

### Measures That Must Be Evaluated

#### Rate Structure

Evaluation of rate structures to increase water demand efficiency is required (WAC 246-290-100(4)(j)(iv)), but actual implementation of a conservation rate structure counts as a WUE measure (WAC 246-290-810(4)(d)). The City's current utility rates are designed to discourage excessive water use, with charges applied to customers based on every 100 cubic feet consumed, counting as a WUE measure. The base rate for residential water for customers within the City limits (as of April 1, 2015) was \$27.25 in a monthly billing cycle, based on a meter size of 1 inch and smaller. Other customers are billed varying base rates based on service meter size, with large users billed the highest base rates. All customers are billed an additional fee for every 100 cubic feet of consumption in each monthly billing cycle. Customers outside the City limits are billed at rates 50 percent greater than customers within the City limits. The current rate structure is shown in **Table 4-1**.

**Table 4-1  
Rate Schedule**

| Service Type                                     | Customer Location  |                     |
|--------------------------------------------------|--------------------|---------------------|
|                                                  | Inside City Limits | Outside City Limits |
| <b>Base Fee</b>                                  |                    |                     |
| 1-inch or Smaller                                | \$27.25            | \$40.88             |
| 1 1/2-inch                                       | \$90.85            | \$136.28            |
| 2-inch                                           | \$145.35           | \$218.03            |
| 3-inch                                           | \$272.50           | \$408.75            |
| 4-inch                                           | \$454.15           | \$681.23            |
| 6-inch                                           | \$908.35           | \$1,362.53          |
| 8-inch or Larger                                 | \$1,453.35         | \$2,180.03          |
| Fire Hydrant Meter                               | \$30.00            | \$45.00             |
| <b>Consumption per 100 Cubic Feet</b>            |                    |                     |
| Residential and Fire Hydrant Meter               | \$0.95             | \$1.43              |
| Multi-family and Irrigation                      | \$0.85             | \$1.28              |
| Commercial and Municipal                         | \$0.70             | \$1.05              |
| <b>Large User Base Fee</b>                       |                    |                     |
| 1-inch or Smaller                                | \$239.80           | \$359.70            |
| 1 1/2-inch                                       | \$799.33           | \$1,199.00          |
| 2-inch                                           | \$1,278.93         | \$1,918.40          |
| 3-inch                                           | \$2,398.00         | \$3,597.00          |
| 4-inch                                           | \$3,996.67         | \$5,995.01          |
| 6-inch                                           | \$7,993.33         | \$11,990.00         |
| 8-inch or Larger                                 | \$12,789.33        | \$19,184.00         |
| <b>Large User Consumption per 100 Cubic Feet</b> |                    |                     |
| All Customer Classes                             | \$0.67             | \$1.01              |

In 2016, the City retained the services of a financial consultant to perform a rate study for all customer classes, with the results of the study incorporated into **Chapter 9**.

**Reclamation Opportunities**

Reclaimed water is treated effluent from a wastewater treatment system that is suitable for a direct beneficial use or a controlled use that would not otherwise occur. The use of reclaimed water is regulated under Chapter 90.46 of the Revised Code of Washington (RCW). Water systems with 1,000 or more connections must evaluate reclamation opportunities (WAC 246-290-100(4)(f)(vii)), but actual use of reclaimed water counts as a WUE measure (WAC 246-290-810(4)(d)) or multiple WUE measures if the reclaimed water is used for multiple purposes.

The City has evaluated using reclaimed water to irrigate golf courses and parks adjacent to the wastewater treatment plant’s Columbia River outfall. However, the City has existing irrigation rights from the Columbia River through a separate non-potable system; using reclaimed water is not cost effective in comparison. The non-potable systems are in place and have very low relative costs.

## Selected Measures

The City has chosen to implement six different WUE measures, many of which are existing measures. For the purposes of water system planning in this document, the City's water billing classes have been combined into four different groups: single-family residential (including customers using domestic water for irrigation and customers who receive irrigation water from a separate system); multi-family residential; commercial/industrial; and municipal/institutional/other. If a single WUE measure is implemented for different customer classes, it counts as multiple WUE measures. Multiplying the six different WUE measures across the customer classes in which they will be implemented, the City will implement a total of 18 WUE measures, as shown in **Table 4-2**. This exceeds the requirement of nine WUE measures based on the number of service connections.

### Plumbing Retrofit Program

The City currently distributes water conservation items to all customer classes, including low flow showerheads, kitchen and bathroom faucet aerators, and toilet dye kits, at no cost to the customers.

### Displays at Fairs and Events

The City currently participates in WUE education by providing information on the City website and in educational brochures and displays at the annual City Fair and the annual Benton-Franklin County Fair. Additionally, Pasco provides educational brochures and displays at the annual Home and Garden Show, which is attended by customers living in the quad cities, which includes Richland.

### Water Use Audits

The City currently has an audit program for large commercial and industrial users, and the City performs audits for City-owned facilities connected to the potable water system.

### Rate Structure

The City has implemented a conservation rate structure for all customer classes, as described in the **Measures That Must Be Evaluated** section.

### School Outreach

Schools within the City are provided WUE education programs presented through a partnership with the Franklin Conservation District. These outreach programs inform students and teachers about water quality and WUE. The City also provides an environmental education school outreach program relating to municipal operations and the environment.

### Water Bill Showing Consumption History

The City currently shows consumption history charts and information on water bills for all customer classes.

### Irrigation Management

The City has installed a centralized irrigation computer system for the City's parks that communicates via radio to automatically shut down laterals or systems that have received



programmed volumes of water, sends alarms in the event of unexpected flows or malfunctions, and remotely controls system flows based on weather conditions.

**Table 4-2  
WUE Measures**

| WUE Measure                                                                                                                          | Implementation Status |    |    |     |
|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----|----|-----|
| <b>Mandatory WUE Measures</b>                                                                                                        |                       |    |    |     |
| Source Meters Installed                                                                                                              | ✓                     |    |    |     |
| Service Meters Installed                                                                                                             | ✓                     |    |    |     |
| Meter Calibration Compliance                                                                                                         | ✓                     |    |    |     |
| Water Loss Control Action Plan                                                                                                       | ✓                     |    |    |     |
| Customer Education                                                                                                                   | ✓                     |    |    |     |
| <b>WUE Measures That Must Be Evaluated</b>                                                                                           |                       |    |    |     |
| Rate Structure                                                                                                                       | ✓                     |    |    |     |
| Reclamation Opportunities                                                                                                            | ✓                     |    |    |     |
| <b>Selected WUE Measures</b>                                                                                                         |                       |    |    |     |
| Measure Description                                                                                                                  | SF                    | MF | CI | MEO |
| Plumbing Retrofit Program                                                                                                            | ✓                     | ✓  | ✓  | ✓   |
| Displays at Fairs and Events                                                                                                         | ✓                     | ✓  | ✓  | ✓   |
| Water Use Audits                                                                                                                     |                       |    | ✓  |     |
| School Outreach                                                                                                                      | ✓                     | ✓  | ✓  | ✓   |
| Water Bill Showing Consumption History                                                                                               | ✓                     | ✓  | ✓  | ✓   |
| Irrigation Management                                                                                                                |                       |    |    | ✓   |
| <b>Total Selected WUE Measures</b>                                                                                                   | <b>18</b>             |    |    |     |
| SF = Single-family Residential<br>MF = Multi-family Residential<br>CI = Commerical/Industrial<br>MEO = Municipal/Institutional/Other |                       |    |    |     |

## Water Use Efficiency Program Schedule and Budget

The WUE measures described above and selected for implementation by the City are summarized in **Table 4-3** with their corresponding schedule and budget. The successful implementation of this WUE program is expected to achieve the goal of reducing the DSL 3-year rolling average to 10 percent or less by 2021, reducing the average demand per ERU to 1,000 gpd by 2021, and maintaining an average demand per ERU below 1,000 gpd through 2025, based on single-family residential customers that utilize domestic water for irrigation.

**Table 4-3**  
**WUE Program Schedule and Budget**

| WUE Measure                                | Schedule | Budget           |
|--------------------------------------------|----------|------------------|
| <b>Mandatory WUE Measures</b>              |          |                  |
| Source Meters Installed                    | Ongoing  | O&M Funded       |
| Service Meters Installed                   | Ongoing  | O&M Funded       |
| Meter Calibration Compliance               | Ongoing  | O&M Funded       |
| Water Loss Control Action Plan             | 2017     | \$10,000/year    |
| Customer Education                         | Ongoing  | \$1,000/year     |
| <b>WUE Measures That Must Be Evaluated</b> |          |                  |
| Rate Structure                             | Ongoing  | Not Applicable   |
| Reclamation Opportunities                  | Ongoing  | Not Applicable   |
| <b>Selected WUE Measures</b>               |          |                  |
| Plumbing Retrofit Program                  | Ongoing  | \$1,000/year     |
| Displays at Fairs and Events               | Ongoing  | Regional Program |
| Water Use Audits                           | Ongoing  | \$2,000/year     |
| Rate Structure                             | Ongoing  | Not Applicable   |
| School Outreach                            | Ongoing  | Regional Program |
| Water Bill Showing Consumption History     | Ongoing  | Not Applicable   |
| Irrigation Management                      | Ongoing  | Not Applicable   |

O&M = operations and maintenance

## DISTRIBUTION SYSTEM LEAKAGE

DSL in the City's water system is described and presented in **Chapter 2**. DSL for the last 3 years is as follows, with a current 3-year rolling average of 12.1 percent.

- 2013 DSL: 11.4 percent.
- 2014 DSL: 11.2 percent.
- 2015 DSL: 13.6 percent.

## WATER RIGHTS SELF-ASSESSMENT

### OVERVIEW

A water right is a legal authorization to use a specified amount of public water for specific beneficial purposes. The water right amount is expressed in terms of instantaneous diversion/withdrawal rate and annual volume. Unless water use started before the applicable water code was enacted (1917 for surface water and 1945 for groundwater) and is documented by a water right claim or adjudicated certificate, Washington State law requires users of public water to receive approval from Ecology prior to actual water use. This approval is granted in the form of a water right permit or certificate. However, a state-issued water right is not required for certain uses of groundwater that are exempt from the permitting process, including the use of 5,000 gpd or less for domestic and industrial purposes, unlimited use for stockwatering, and irrigation of ½ acre or less of lawn or non-commercial garden.

The process for obtaining a water right involves submitting a water right application that is reviewed by Ecology. If the request is approved, a water right is issued to allow for water use to commence. A water right permit provides permission to construct the necessary wells or diversions, pumps, and pipes to start using water. The water right permit remains in effect until the permit holder determines that their project is complete and they have used as much water as they will under the water right. At that time, the permit holder files a proof of appropriation form, which attests to the rate and volume of water used under the water right. A water right certificate is issued by Ecology following a proof of examination and determination that the amount of water put to beneficial use is consistent with the amount and conditions indicated on the water right permit.

A water right permit can only be issued by Ecology if the proposed use meets the following requirements.

- Water will be put to beneficial use.
- There will be no impairment to existing or senior rights.
- Water is physically and legally available for appropriation.
- Issuance of the requested water right will not be detrimental to the public interest.

During preparation of the report of examination, Ecology considers existing basin management plans, stream closures, minimum instream flows, hydraulic continuity (surface water interconnected to groundwater), utilization of existing water sources, water conservation, and availability of alternative water supplies, among other things. The water right decision process is increasingly becoming more complex and time consuming, due to the many competing interests for water, environmental issues, and regulatory requirements.

### MUNICIPAL WATER LAW

The 2003 MWL (Second Engrossed Second Substitute House Bill 1338; Chapter 5, Laws of 2003; 58<sup>th</sup> Legislature; 2003 1<sup>st</sup> Special Session; Municipal Water Supply – Efficiency Requirements) clarified many outstanding questions related to water rights used to supply many water systems. The MWL clarified the definition of what use constitutes a municipal water right and who is a municipal

water supplier. The MWL allowed changes to the water right place of use to occur via the approval of the service area by DOH, as opposed to the previous method of the water right change application process with Ecology. The MWL states that the inchoate (unused) portion of a municipal water supply water right is in good standing if the original water right certificate was issued based on the administrative policy of requiring the pumps and pipes to be in place, but not requiring there to be actual beneficial use. This law was the subject of a lawsuit which questioned the constitutionality of portions of the law; however, on October 28, 2010, the Washington State Supreme Court unanimously ruled that all parts of the MWL are constitutional.

Ecology reissued Water Resources Program Policy 2030 in May 2012 that addressed the implementation of the MWL. This policy document was used to assist with determining if the City's water rights qualify as being for municipal water supply purposes.

Using the definitions provided by the MWL, it has been determined that many of the water rights held by the City are for municipal water supply purposes, as defined under RCW 90.03.015(4), since the water rights are either used to serve 15 or more residential connections, or are for governmental or governmental proprietary purposes. Since the City holds water rights that are for municipal water supply purposes, that makes the City a municipal water supplier as defined under RCW 90.03.015(3).

## EXISTING POTABLE WATER RIGHTS

The City currently utilizes three surface water certificates, one surface water permit, one groundwater claim, four groundwater certificates, and one groundwater permit exclusively for its potable supply system. All of these water rights are for municipal water supply purposes since they are used to serve 15 or more residential connections. A summary of the City's potable water right information is presented below and in **Table 4-4**. Copies of the City's water right documents are included in **Appendix N**.

**Table 4-4  
Existing Potable Water Rights**

| Water Right                 | Document    | Purpose of Use        | Source                                                                                                                                       | Instantaneous Rate (gpm) |              |        | Annual Volume (afy) |              |          |
|-----------------------------|-------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------|--------|---------------------|--------------|----------|
|                             |             |                       |                                                                                                                                              | Additive                 | Non-additive | Total  | Additive            | Non-additive | Total    |
| G4-063205CL                 | Claim       | Municipal             | North Richland Wellfield                                                                                                                     | 1,000                    | 0            | 1,000  | 1,600               | 0            | 1,600    |
| SWC 9005-A                  | Certificate | Municipal             | Water Treatment Plant and Horn Rapids Pump Station                                                                                           | 24,350                   | 0            | 24,350 | 31,528              | 1,600        | 33,128   |
| G4-25960C                   | Certificate | Municipal             | Willowbrook Well                                                                                                                             | 1,000                    | 0            | 1,000  | 0                   | 1,606        | 1,606    |
| S4-26404C                   | Certificate | Municipal             | Water Treatment Plant and Columbia Point                                                                                                     | 7,630                    | 0            | 7,630  | 0                   | 12,257       | 12,257   |
| S4-27121C                   | Certificate | Municipal             | Water Treatment Plant                                                                                                                        | 2,693                    | 0            | 2,693  | 0                   | 4,336        | 4,336    |
| G4-28515C                   | Certificate | Municipal             | Duke Wellfield, Horn Rapids Athletic Complex, and SMART Park Properties                                                                      | 1,400                    | 0            | 1,400  | 0                   | 1,228        | 1,228    |
| G4-28516C                   | Certificate | Municipal             | Wellsian Way Wellfield                                                                                                                       | 2,125                    | 0            | 2,125  | 0                   | 3,422        | 3,422    |
| G4-28517C                   | Certificate | Municipal             | Columbia Well                                                                                                                                | 556                      | 0            | 556    | 0                   | 890          | 890      |
| G4-28554C (potable portion) | Certificate | Group Domestic        | ORV Park Well No. 1                                                                                                                          | 310                      | 0            | 310    | 11.4                | 0            | 11.4     |
| G4-29214P (potable portion) | Permit      | Recreational Domestic | Columbia Point Marina Well                                                                                                                   | 100                      | 0            | 100    | 1.8                 | 0            | 1.8      |
| S4-30976P (Phase 1)         | Permit      | Municipal             | Water Treatment Plant, Energy NW, Battelle, Horn Rapids Pump Station, WSU, SWC 9004, Columbia Point, and Badger Mountain Irrigation District | 1,122                    | 0            | 1,122  | 1,806.75            | 0            | 1,806.75 |
| G4-35244P                   | Permit      | Municipal             | Harrison Well and Duportail Street Well                                                                                                      | 1,500                    | 0            | 1,500  | 0.00                | 2,418        | 2,418    |
| <b>Water Right Total</b>    |             |                       |                                                                                                                                              | <b>43,786</b>            |              |        | <b>34,947.95</b>    |              |          |

Notes:

Purpose of Use is what is identified on the most recent water right document.

SWC 9005-A was originally issued for 32,430 afy. Later, water right decisions on other water right applications created an aggregate cap of 33,128 acre-feet per year (afy). In this table, the additive and non-additive quantities are depicted such that they do not violate the aggregate cap.

S4-30976P is jointly held by the Cities of Kennewick, Richland, Pasco, and West Richland. The first phase of 10 cfs (4,488 gpm) and 7,227 afy was the portion authorized to be utilized by the cities for municipal supply until additional mitigation can be secured to access future phases of the water right. The entire water right, of which one-quarter is owned by the City, is equal to 178 cfs and 96,619 afy.

gpm = gallons per minute. 448.83 gpm is equal to 1 cubic foot per second.

afy = acre-feet per year. One acre-foot is equal to 325,851 gallons or 43,560 cubic feet.

**Ground Water Claim 063205 – North Richland Wellfield**

This ground water claim was filed by the City of Richland in February 1974.

The current attributes of this claim are that it is held by the City of Richland, with a claimed priority date of November, 1943 for municipal water supply year-round at rates of 1,000 gallons per minute (gpm) and 1,600 acre-feet per year (afy) from a well located in the NE ¼ SW ¼, Section 23, Township 10 North, Range 28 East W.M.

The City facilities that correlate with the point of withdrawal location include the North Richland Wellfield.

### **Surface Water Certificate 9005-A – Water Treatment Plant and Horn Rapids**

This surface water right has been held by the City of Richland from application through certification.

The current attributes of this certificate are that it is held by the City with a priority date of January 30, 1962, for municipal water supply year-round at rates of 54.25 cubic feet per second (cfs) (24,350 gpm) and 32,430 afy from the Columbia River. The two points of diversion are located in Government Lot 2, Section 36, Township 10 North, Range 28 East W.M. (Water Treatment Plant Intake) and NE ¼ SE ¼, Section 14, Township 10 North, Range 28 East W.M. (Horn Rapids Intake). A provision from change application CS4-SWC9005@1 limits the annual volume that can be diverted from the point of diversion in Section 14 (Horn Rapids Intake) to no greater than 19,683 afy under this water right.

The City facilities that correlate with the point of diversion locations include the Water Treatment Plant Intake (S01) and Horn Rapids Intake.

In 2001, a drought change application (CS4-SWC9005) was authorized to allow a portion of the water right (23 cfs and 469.5 afy) be diverted by the Badger Mountain Irrigation District from the backwater reach of the Yakima River (NW ¼ SE ¼, Section 23, Township 9 North, Range 28 East W.M.) for irrigation of 2,574 acres of residential land within the City. This change was sought due to regulation of the surface water rights in the Yakima River and to prevent homeowners from cross connecting the non-potable Badger Mountain Irrigation District system with the potable City water system. The change authorization expired on October 15, 2001.

In April 2005, the City filed a change application (CS4-SWC9005@1) to add an additional point of diversion from the Columbia River (Horn Rapids Intake). This application was processed by the Benton County Water Conservancy Board (BCWCB) under tracking number BENT-05-05. The BCWCB approved the requested change on May 10, 2007, while Ecology affirmed the decision on July 6, 2007.

### **Ground Water Certificate G4-25960C – Willowbrook Well**

This ground water right was originally applied for by The Quadrant Corporation. The water right application was approved and a permit issued to The Quadrant Corporation. In March 1983, The Quadrant Corporation assigned the permit to the City of Richland. In November 1983, a certificate was issued to the City.

The current attributes of this certificate are that it is held by the City with a priority date of August 21, 1978, for municipal water supply year-round at rates of 1,000 gpm and 1,606 afy from a well in the S ½ SW ¼, Section 36, Township 9 North, Range 28 East W.M.

The City facility that correlates with the point of withdrawal location is the Willowbrook Well (S10).

### **Surface Water Certificate S4-26404C – Water Treatment Plant and Columbia Point**

This surface water right has been held by the City of Richland from application through certification.

The current attributes of this certificate are that it is held by the City with a priority date of September 20, 1979, for municipal water supply year-round at rates of 17 cfs (7,630 gpm) and 12,257 afy from the Columbia River. The two points of diversion are located in NW ¼ NW ¼, Section 36, Township 10 North, Range 28 East W.M. (Water Treatment Plant Intake) and the SE ¼ NW ¼, Section 13, Township 9 North, Range 28 East W.M. (Columbia Point Intake).

The City facilities that correlate with the point of diversion locations include the Water Treatment Plant Intake (S01) and the Columbia Point Intake.

In June 2001, the City filed a change application (CS4-26404C) to add an additional point of diversion from the Columbia River near the Columbia Point Marina Park (Columbia Point Intake). This application was processed by the BCWCB. The BCWCB approved the requested change on July 30, 2001, while Ecology affirmed the decision on September 19, 2001.

### **Surface Water Certificate S4-27121C – Water Treatment Plant**

This surface water right has been held by the City of Richland from application through certification.

The current attributes of this certificate are that it is held by the City with a priority date of June 24, 1980 (since the annual volume granted was a portion of the water reserved by the adoption of the John Day/McNary Reservation (WAC 173-531A-050)), for municipal water supply year-round at rates of 6 cfs (2,693 gpm) and 4,336 afy from the Columbia River at one point of diversion located in Government Lot 2, Section 36, Township 10 North, Range 28 East W.M. (Water Treatment Plant Intake). A provision states, “The total annual quantity authorized for use under existing rights for municipal water delivery shall not exceed 33,128 acre-feet per year.”

This provision is also found on G4-28515C, G4-28516C, and G4-28517C. These certificates were issued at the same time and the provision is considered to represent an aggregate cap on the City’s potable water rights that existed up to that time.

The City facility that correlates with the point of diversion location is the Water Treatment Plant Intake (S01).

### **Ground Water Certificate G4-28515C – Duke Wellfield, Horn Rapids Athletic Complex, and SMART Park Properties**

This ground water right has been held by the City of Richland from application through certification.

The current attributes of this water right are that it is held by the City with a priority date of August 8, 1984, for municipal water supply year-round at rates of 1,400 gpm and 1,228 afy from two wells in the NW ¼ NW ¼, Section 35, Township 10 North, Range 28 East W.M. (Duke Wellfield), one well in the SW ¼ SE ¼, Section 27, Township 10 North, Range 28 East W.M. (Horn Rapids Athletic Complex), and one well in the SE ¼ NE ¼, Section 26, Township 10 North, Range 28 East W.M. (SMART Park Properties). A provision states, “The annual quantity authorized is not in addition to existing rights beyond the total of 33,128 acre-feet per year.”

The City facilities that correlate with the points of withdrawal locations include the Duke Wellfield (S03), which went inactive in 2009, the Horn Rapids Athletic Complex well, and the SMART Park properties well.

Originally, this water right was just for water use from the Duke Wellfield.

In October 1995, the City filed a change application (CG4-28515C) to add additional points of withdrawal and to change the place of use. The additional point of withdrawal was identified as the 400 Area wells, located in Section 18, Township 11 North, Range 28 East W.M. The place of use change requested to include three wells within the 400 Area of the Hanford Site, which is approximately 9 miles north of the Duke Wellfield. This application was processed by Ecology with a decision reached in May 1996. The requested changes were approved.

In January 2005, the City filed a change application (CG4-28515C@1) to change some of the points of withdrawal from the 400 Area wells, which were not being used by the City, to a well located at the Horn Rapids Athletic Complex (SW  $\frac{1}{4}$  SE  $\frac{1}{4}$  Section 27, Township 10 North, Range 28 East W.M.) and a well located at the SMART Park properties (SE  $\frac{1}{4}$  NE  $\frac{1}{4}$  Section 26, Township 10 North, Range 28 East W.M.). This application was processed by the BCWCB under tracking number BENT-05-01. The BCWCB approved the requested change on April 4, 2006, while Ecology modified and approved the decision on June 22, 2006.

### **Ground Water Certificate G4-28516C – Wellsian Way Wellfield**

This ground water right has been held by the City of Richland from application through certification.

The current attributes of the temporary authorization under this certificate are that it is held by the City with a priority date of August 8, 1984, for municipal water supply year-round at rates of 2,125 gpm and 3,422 afy from wells in the SE  $\frac{1}{4}$  SE  $\frac{1}{4}$ , Section 10 and E  $\frac{1}{2}$  E  $\frac{1}{2}$ , Section 15, Township 9 North, Range 28 East W.M. A provision states, “The annual quantity authorized is not in addition to existing rights beyond the total of 33,128 acre-feet per year.”

The City facility that correlates with the point of withdrawal location includes the Wellsian Way Wellfield (S02), which includes the following active potable supply wells: Wellsian Way Well No. 5 (S13); and Wellsian Way Well No. 14 (S14). This water right also covers Well No. 13-A that was drilled in 1994 and is used for irrigation of the Richland School District grounds at the Carmichael Middle School complex.

In August 1994, the City filed a change application (CG4-28516C) to change the point of withdrawal due to contamination of existing wells. A temporary authorization was issued while the change application is pending. The change application remains pending.

### **Ground Water Certificate G4-28517C – Columbia Well**

This ground water right has been held by the City of Richland from application through certification.

The current attributes of the water right are that it is held by the City with a priority date of August 8, 1984, for municipal water supply year-round at rates of 556 gpm and 890 afy from a well in the E  $\frac{1}{2}$  NE  $\frac{1}{4}$ , Section 35, Township 10 North, Range 28 East W.M. A provision states, “The annual quantity authorized is not in addition to existing rights beyond the total of 33,128 acre-feet per year.”

The City facility that correlates with the point of withdrawal location includes the Columbia Well (S05).



### **Surface Water Permit S4-30976P – Multiple Sources**

The Cities of Kennewick, Richland, Pasco, and West Richland jointly applied for and were granted a surface water right. This new water right was assigned tracking number S4-30976. The permit has a priority date of September 23, 1991, and was issued for 178 cfs and 96,619 afy for municipal supply. The City diverts its portion of the permit from points of diversion and withdrawal associated with the Water Treatment Plant, Energy NW, Battelle, Horn Rapids Pump Station, W.S.U., SWC 9004, Columbia Point surface water and groundwater, and Badger Mountain Irrigation District.

This permit was issued on September 15, 2003, and is commonly referred to as the Quad Cities Permit. This permit was the first municipal water right issued from the Columbia River after a long moratorium. The permit has extensive provisions and mitigation requirements, which include the creation of the Regional Water Forecast and Conservation Plan by the four cities (**Appendix O**).

In order to mitigate low-flow conditions on the Columbia River, Ecology required that the consumptive use under the permit be mitigated when actual river discharge dropped below identified levels. Ecology also specified that the cities' access to water under the permit would be contingent upon there being sufficient mitigation available. For this reason, the permit is designed to be issued in phases, up to the maximum rates of 178 cfs and 96,619 afy. The first phase was issued for 10 cfs and 7,227 afy and was assigned a priority date of June 24, 1980, pursuant to WAC 173-531A-050(3). For the first phase, the City's portion was 2.5 cfs and 1,806.75 afy. See the RWFCP for more details on this permit.

### **Ground Water Permit G4-35244P – Harrison Well and Duportail Street Well**

This ground water right has been held by the City of Richland since the original application was filed.

The current attributes of the permit are that it is held by the City with a priority date of June 1, 2009, for municipal water supply year-round at rates of 1,500 gpm and 2,418 afy from two wells completed in the Saddle Mountain Formation aquifer, located in the SW  $\frac{1}{4}$  SW  $\frac{1}{4}$  Section 23, Township 9 North, Range 28 East W.M. (Harrison Well) and the NW  $\frac{1}{4}$  SE  $\frac{1}{4}$ , Section 16, Township 9 North, Range 28 East W.M. (Duportail Street Well). The water right is provisioned such that the instantaneous rate is identified as being additive, while the annual volume is identified as being non-additive to other water rights held by the City.

The City facilities that correlate with the point of withdrawal locations include the Harrison Well and Duportail Street Well (drilling to be complete in fall 2016, with full production in spring 2017 if the water quality and yield is acceptable).

### **Potable Municipal Supply System Conclusions**

Since these water rights are for municipal water supply purposes, the place of use for the water rights will become the service area described in this WSP.

Water right self-assessment forms for the potable water rights for the existing, 6-year, 10-year, and 21-year forecasted use are included in **Appendix P**.

The City has one active pending new potable water right application and no pending water right change applications on any of the rights discussed above, except for CG4-28516C.

## NEW POTABLE WATER RIGHT APPLICATION

The City jointly owns one new water right application pending before Ecology. The application requests a new surface water right and was applied for jointly by the Cities of Richland, Kennewick, Pasco, and West Richland.

### **S4-33044(B)A**

The City, in conjunction with the Cities of Kennewick, Pasco, and West Richland, applied for a new joint water right from the Columbia River that was assigned tracking number S4-33044. The water right application has a priority date of November 28, 2011, and requested 165 cfs and 86,983 afy for municipal supply. The City requested to divert its portion from diversions identified as Energy Northwest, Battelle, Horn Rapids Pump Station, WSU Pump Station, SWC 9004, Richland WTP, Columbia Point Pump Station, BMID Pump Station, and Columbia Point Marina Park. The instantaneous rate and annual volume requested are equal to the amount of municipal water remaining under S4-30976P beyond the rates that the cities were promised would be mitigated by Ecology in the 2011 Memorandum of Agreement (MOA). The water right was filed to take advantage of the water that was made available for municipal and industrial use through Ecology's Office of Columbia River, Lake Roosevelt Incremental Storage Release Program.

On October 16, 2015, the quad cities administratively split the application such that the City of Pasco was assigned 6.9 cfs and 5,000 afy under the (A) portion of the application, and the remaining 158.1 cfs and 81,983 afy under the (B) portion of the application remains jointly held by all four cities.

Ecology has not yet made a final determination on the (B) portion of the application, in which the City retains joint ownership.

## EXISTING COMBINED POTABLE/NON-POTABLE WATER RIGHTS

The City currently utilizes two ground water rights (one permit and one certificate) that were issued for both potable and non-potable uses. A summary of these two water rights are presented below and in **Tables 4-4** and **4-5**. Copies of the City's water right documents are included in **Appendix N**.

### **Ground Water Certificate G4-28554C – ORV Park**

This ground water right has been held by the City of Richland from application through certification. This water right was originally issued to water down the track at the City's off road vehicle park.

The current attributes of the certificate are that it is held by the City, with a priority date of March 18, 1985, for 310 gpm and 124.4 afy (11.4 afy for group domestic supply for campsites and restrooms year round; 93 afy for dust control/compaction from March 1<sup>st</sup> through October 31<sup>st</sup>; and 20 afy for irrigation of 5 acres from April 1<sup>st</sup> through October 31<sup>st</sup>) from a well in the SE ¼ NW ¼, Section 18, Township 10 North, Range 28 East W.M.

A provision states, "This authorization to use public waters of the state is classified as a PUBLIC WATER ENTITY PERMIT in accordance with Chapter 90.66 RCW (Initiative Measure No. 59)."

The City facility that correlates with the point of withdrawal location includes the ORV Park Well No. 1.

#### **Ground Water Permit G4-29214P – Columbia Point Marina Park**

This ground water right has been held by the City of Richland since the original application was filed.

The current attributes of the permit are that it is held by the City with a priority date of August 8, 1984, for 100 gpm and 37.8 afy (1.8 afy recreational domestic year-round and 36 afy for the landscape irrigation of 9 acres from April 1<sup>st</sup> through October 31<sup>st</sup>) from a well in the SW ¼ NE ¼, Section 13, Township 9 North, Range 28 East W.M. A provision states, “This authorization to use public waters of the state is classified as a PUBLIC WATER ENTITY PERMIT in accordance with Chapter 90.66 RCW (Initiative Measure No. 59).”

The City facility that correlates with the point of withdrawal location includes the Columbia Point Marina Park Well.

### **EXISTING NON-POTABLE WATER RIGHTS**

The City currently utilizes three surface water certificates, two surface water permits, five groundwater certificates, and two groundwater permits exclusively for its non-potable supply system. A summary of the City’s non-potable water rights information is presented below and in **Table 4-5**. Copies of the City’s water right documents are included in **Appendix N**.

**Table 4-5  
Existing Non-potable Water Rights**

| Water Right                     | Document    | Purpose of Use                                    | Source                            | Instantaneous Rate (gpm) |              |        | Annual Volume (afy) |              |        |
|---------------------------------|-------------|---------------------------------------------------|-----------------------------------|--------------------------|--------------|--------|---------------------|--------------|--------|
|                                 |             |                                                   |                                   | Additive                 | Non-additive | Total  | Additive            | Non-additive | Total  |
| SWC 8098-A                      | Certificate | Municipal                                         | Shelterbelt Intake                | 3,007                    | 0            | 3,007  | 4,851               | 0            | 4,851  |
| SWC 9004-A                      | Certificate | Sewer Flushing                                    | 3000 (SSFF) Intake                | 300                      | 0            | 300    | 485                 | 0            | 485    |
| SWC 9592-A                      | Certificate | Irrigation of 190 acres                           | Columbia Point Intake             | 898                      | 0            | 898    | 760                 | 0            | 760    |
| G4-23944C                       | Certificate | Domestic, irrigation, dust and fire control       | Landfill Well                     | 100                      | 0            | 100    | 80                  | 0            | 80     |
| G4-24262C                       | Certificate | Irrigation of 10.3 acres                          | Leslie Groves Park Well           | 180                      | 0            | 180    | 54                  | 0            | 54     |
| G4-24264C                       | Certificate | Irrigation of 17.95 acres                         | Columbia Playfield Well No. 1     | 200                      | 0            | 200    | 93                  | 0            | 93     |
| G4-24265C                       | Certificate |                                                   | Columbia Playfield Well No. 2     | 200                      | 0            | 200    | 0                   | 93           | 93     |
| G4-28463P                       | Permit      | Irrigation of 91 acres                            | Harrison Well                     | 910                      | 0            | 910    | 364                 | 0            | 364    |
| G4-28554C (non-potable portion) | Certificate | Dust Control/Compaction and Irrigation of 5 acres | ORV Park Well No. 1               | 0                        | 310          | 310    | 113                 | 0            | 113    |
| G4-28642C                       | Certificate |                                                   | ORV Park Well No. 2               | 275                      | 0            | 275    | 0                   | 113          | 113    |
| G4-29214P (non-potable portion) | Permit      | Irrigation of 9 acres                             | Columbia Point Marina Well        | 0                        | 100          | 100    | 36                  | 0            | 36     |
| S4-29799P (interruptible)       |             |                                                   | Columbia Point Marina Park Intake | 251                      | 0            | 251    | 0                   | 36           | 36     |
| G4-29925P                       | Permit      | Irrigation of 130 acres and industrial use        | Horn Rapids Triangle Well         | 1,100                    | 0            | 1,100  | 520                 | 0            | 520    |
| S4-29941P (interruptible)       | Permit      | Irrigation of 3,000 acres                         | Horn Rapids Intake                | 20,197                   | 0            | 20,197 | 12,000              | 0            | 12,000 |
| <b>Water Right Total</b>        |             |                                                   |                                   | <b>27,618</b>            |              |        | <b>19,356</b>       |              |        |

Notes:

Purpose of Use is what is identified on the most recent water right document.  
 SWC 8097-A and SWC 9004-A: annual volumes are not specified on the water right documents. Maximum volume possible listed here.  
 G4-28554C and G4-29214P: instantaneous rates are shown as non-additive because they were identified as additive in the potable water right table.  
 In this table the additive and non-additive quantities are depicted such that they do not violate the aggregate cap.  
 S4-30976P is jointly held by the Cities of Kennewick, Richland, Pasco, and West Richland. The first phase of 10 cfs (4,488 gpm) and 7,227 afy was the portion authorized to be utilized by the cities for municipal supply until additional mitigation can be secured to access future phases of the water right. The entire water right, of which one-quarter is owned by the City, is equal to 178 cfs and 96,619 afy.  
 gpm = gallons per minute. 448.83 gpm is equal to 1 cubic foot per second.  
 afy = acre-feet per year. One acre-foot is equal to 325,851 gallons or 43,560 cubic feet.

**Surface Water Certificate SWC 8098-A – Shelterbelt Irrigation**

This surface water right has been held by the City of Richland from application through certification.

The current attributes of the most recent superseding certificate are that it is held by the City with a priority date of November 18, 1960, for 6.7 cfs (3,007 gpm) with no annual limit specified, for municipal supply year-round from a diversion tapping the McNary Pool of the Columbia River in Government Lot 6, Section 15, Township 9 North, Range 28 East W.M.

The water right was originally issued to the City as the source of water that was used to artificially recharge the groundwater near the Wellsian Way Wellfield. This still happens, but now instead of focusing the water on a recharge basin, the water is used to irrigate areas around the shelterbelt trail, which was shown to have similar benefits to the wellfield as direct recharge.

The City facility that correlates with the point of diversion location includes the Shelterbelt Intake.

With older surface water certificates it was common practice for the predecessor to Ecology to only identify the instantaneous rate and not identify an annual volume.

Yakima County Superior Court, under the Acquavella Adjudication, found that this point of diversion, while located within the historic Yakima River channel, is now within the backwater from the McNary Pool of the Columbia River, which extends 6 miles upstream. A superseding certificate was issued on March 25, 1994, identifying the source as the McNary Pool of the Columbia River based on the court's finding.

The superseding certificate has a provision that states, "All diversion shall cease when the flow of the Yakima River falls to 100 cubic feet per second or less as measured directly below the point of diversion."

On February 16, 2016, the City filed a water right change application with the Benton County Water Conservancy Board (Board Change Application Number BENT-16-02, Ecology Change Application Number CS4-SWC08098). This change application requests to add a point of diversion (Badger Mountain Irrigation District intake) and points of withdrawal (Jason Lee, Chief Joseph, Jefferson, Liberty Christian, Frankfort Park, Lewis & Clark, Sacajawea, and Liddell Park & Shelterbelt) to this certificate to allow for irrigation of parks, school grounds, and open space. This change application is currently being processed and the City anticipates it will be completed by spring 2017.

**Surface Water Certificate SWC 9004-A – Sewer Flushing**

This surface water right has been held by the City of Richland from application through certification.

The current attributes of the certificate are that it is held by the City with a priority date of June 15, 1961, for 0.67 cfs (300 gpm), with no annual limit specified, for sewer flushing year-round from a diversion from the Columbia River in the SW ¼ SW ¼ SW ¼, Section 24, Township 10 North, Range 28 East W.M.

With older surface water certificates, it was common practice for the predecessor to Ecology to only identify the instantaneous rate and not identify an annual volume.

The City facility that correlates with the point of diversion location includes the 3000 (SSFF) Intake from the Columbia River that is used to recharge the North Richland Wellfield.

### **Surface Water Certificate SWC 9592-A – Columbia Point Golf Course Irrigation**

This surface water right was originally applied for by Memorial Park Golf Club, Inc., doing business as Columbia Point Golf Courses, for the City of Richland. The water right application was approved and a permit issued to Memorial Park Golf Club, Inc., for the City of Richland. On March 16, 1966, a certificate was issued to the City.

The current attributes of the certificate are that it is held by the City with a priority date of August 11, 1965, for 2 cfs (898 gpm) and 760 afy for irrigation of 190 acres during the irrigation season from a diversion from the Columbia River in Government Lot 4, Section 13, Township 9 North, Range 28 East W.M.

The City facility that correlates with the point of diversion location includes the Columbia Point Intake.

### **Ground Water Certificate G4-23944C – Landfill Well**

This ground water right has been held by the City of Richland from application through certification.

The current attributes of the certificate are that it is held by the City with a priority date of April 22, 1975, for 100 gpm and 80 afy (2.0 afy domestic year-round, and 78 afy dust control on 100 acres of irrigation from April 1<sup>st</sup> through October 31<sup>st</sup>), from a well in the SW ¼ SW ¼, Section 17, Township 10 North, Range 28 East W.M.

The City facility that correlates with the point of withdrawal location includes the Landfill Well. However, the City's regional domestic system has been extended to this facility, which has made the use of the well no longer necessary.

### **Ground Water Certificate G4-24262C – Leslie Groves Park Well**

This ground water right has been held by the City of Richland (as lessee) for U.S. Army Corps of Engineers from application through certification.

The current attributes of the certificate are that it is held by the City for Army Corps of Engineers with a priority date of April 15, 1976, for 180 gpm and 54 afy for the irrigation of 10.3 acres from April 1<sup>st</sup> through October 31<sup>st</sup> from a well in the NW ¼ NW ¼, Section 36, Township 10 North, Range 28 East W.M.

The City facility that correlates with the point of withdrawal location includes the Leslie Groves Park Well.

### **Ground Water Certificate G4-24264C – Columbia Playfield Well No. 1**

This ground water right has been held by the City of Richland from application through certification.

The current attributes of the certificate are that it is held by the City with a priority date of April 15, 1976 for 200 gpm and 93 afy (from Well No. 1 – North) for the irrigation of 17.95 acres from April 1<sup>st</sup> through October 1<sup>st</sup>, from a well in the NE ¼, Section 10, Township 9 North, Range 28 East W.M.

The annual volume under this water right and G4-24265C totals 93 afy for irrigation of the same 17.95 acres.

The City facility that correlates with the point of withdrawal location includes Columbia Playfield Well No. 1.

### **Ground Water Certificate G4-24265C – Columbia Playfield Well No. 2**

This ground water right has been held by the City of Richland from application through certification.

The current attributes of the certificate are that it is held by the City with a priority date of April 15, 1976, for 200 gpm and 93 afy (from Well No. 2 – South) for the irrigation of 17.95 acres from April 1<sup>st</sup> through October 1<sup>st</sup> from a well in the SE ¼, Section 10, Township 9 North, Range 28 East W.M.

The annual volume under this water right is non-additive to the annual volume granted under G4-24264C, both of which total a maximum of 93 afy for irrigation of the same 17.95 acres.

The City facility that correlates with the point of withdrawal location includes Columbia Playfield Well No. 2.

### **Ground Water Permit G4-28463P – Harrison**

This ground water right application was originally filed by W.T. Harrison. Ecology granted W.T. Harrison a permit to appropriate water. In September 2003, the permit was assigned to the City.

The current attributes of the permit are that it is held by W.T. Harrison, with a priority date of May 7, 1984, for 910 gpm and 364 afy for the irrigation of 91 acres from April 1<sup>st</sup> through October 31<sup>st</sup> from a well in the SE ¼ SW ¼, Section 23, Township 9 North, Range 28 East W.M.

The City facility that correlates with the point of withdrawal location includes the Harrison Well.

In March 1994, Harrison and the City jointly filed a change application (CG4-28463) to change the purpose of use and place of use. On March 4, 2004, the City voluntarily withdrew the change application citing the passage of the Municipal Water Law as the reason.

In April 2015, the City filed a change application (CG4-28463@1) requesting to temporarily donate the entire water right into the Trust Water Right Program over the period of May 1, 2015 through April 30, 2020, for instream flow purposes. In a letter dated June 6, 2016, Ecology denied the requested donation.

**Ground Water Certificate G4-28642C – ORV Park Well No. 2**

This ground water right has been held by the City of Richland from application through certification. This water right was originally issued to water down the track at the City's off road vehicle park.

The current attributes of the certificate are that it is held by the City with a priority date of March 18, 1985, for 275 gpm and 113 afy (93 afy dust control/compaction from March 1<sup>st</sup> through October 31<sup>st</sup> and 20 afy for irrigation from April 1<sup>st</sup> through October 31<sup>st</sup>), from a well in the SE ¼ NE ¼, Section 18, Township 10 North, Range 28 East W.M.

A provision states, "This authorization to use public waters of the state is classified as a PUBLIC WATER ENTITY PERMIT in accordance with Chapter 90.66 RCW (Initiative Measure No. 59)."

A provision on this water right indicates that the annual volume is non-additive to the annual volume under G4-28554C, identified as being for irrigation and dust control/compaction. The place of use of both water rights is the same.

The City facility that correlates with the point of withdrawal location includes the ORV Park Well No. 2.

**Surface Water Permit S4-29799P (Interruptible) – Columbia Point Marina Park Intake**

This surface water right has been held by the City of Richland since the original application was filed.

The current attributes of the permit are that it is held by the City with a priority date of June 24, 1980 (since the annual volume granted was a portion of the water reserved by the adoption of the John Day/McNary Reservation (WAC 173-531A-040)), for 0.56 cfs (251 gpm) and 36 afy for the irrigation of 9 acres from March 1<sup>st</sup> through November 1<sup>st</sup> from the Columbia River in the SE ¼ NW ¼, Section 13, Township 9 North, Range 28 East W.M. A provision states, "This authorization to use public waters of the state is classified as a PUBLIC WATER ENTITY PERMIT in accordance with Chapter 90.66 RCW (Initiative Measure No. 59)." Also, this water right is interruptible as required by WAC 173-563-040 and 050. According to the provision, interruptibility occurs when both the March 1<sup>st</sup> forecast of the April through September runoff at The Dalles is 60 million acre feet or less, and when gaged flows are predicted by the Bonneville Power Association (BPA) 30-day power operation plan to violate minimum flows at McNary Dam. Interruption of this water right is anticipated to occur 1 year in every 20 years. The last time the March 1<sup>st</sup> forecast at The Dalles was less than or equal to 60 million acre-feet was in 2001.

The 9 acres of irrigation identified under this permit are for the same 9 acres identified under G4-29214P.

The City facility that correlates with the point of withdrawal location includes the Columbia Point Marina Park Intake.

**Ground Water Permit G4-29925P – Horn Rapids Triangle**

This ground water right has been held by the City of Richland since the original application was filed.



The current attributes of the permit are that it is held by the City with a priority date of February 9, 1989, for 1,100 gpm and 520 afy for the irrigation of 130 acres from March 1<sup>st</sup> through November 1<sup>st</sup> and for industrial use year-round, from two wells in the SE ¼ NW ¼, Section 27, Township 10 North, Range 28 East W.M. A provision states, “This authorization to use public waters of the state is classified as a PUBLIC WATER ENTITY PERMIT in accordance with Chapter 90.66 RCW (Initiative Measure No. 59).”

The City facility that correlates with the point of withdrawal location includes the Horn Rapids Triangle Well.

### **Surface Water Permit S4-29941P (Interruptible) – Horn Rapids Irrigation**

This surface water right has been held by the City of Richland since the original application was filed.

The current attributes of the permit are that it is held by the City with a priority date of June 24, 1980 (since the annual volume granted was a portion of the water reserved by the adoption of the John Day/McNary Reservation (WAC 173-531A-040)), for 45 cfs (20,197 gpm) and 12,000 afy for the irrigation of 3,000 acres from March 1<sup>st</sup> through November 1<sup>st</sup> from the Columbia River in the SE ¼ NE ¼, Section 14, Township 10 North, Range 28 East W.M. (Horn Rapids Intake). A provision states, “This authorization to use public waters of the state is classified as a PUBLIC WATER ENTITY PERMIT in accordance with Chapter 90.66 RCW (Initiative Measure No. 59).” Also, this water right is interruptible as required by WAC 173-563-040 and 050. According to the provision, interruptibility occurs when both the March 1<sup>st</sup> forecast of the April through September runoff at The Dalles is 60 million acre feet or less, and when gaged flows are predicted by the BPA 30-day power operation plan to violate minimum flows at McNary Dam. Interruption of this water right is anticipated to occur 1 year in every 20 years. The last time the March 1<sup>st</sup> forecast at The Dalles was less than or equal to 60 million acre-feet was in 2001.

The City facility that correlates with the point of diversion location includes the Horn Rapids Intake (Columbia River).

## POTABLE WATER SUPPLY EVALUATION

An evaluation of the City's existing potable water rights was performed to determine the sufficiency of the water rights to meet both existing and future water demands. **Table 4-6** compares the combined maximum instantaneous water right amounts of the sources with the maximum day demand of the system, and the combined maximum annual water right amounts of the sources with the average day demand of the system. As shown in the table, the City has sufficient water rights (both instantaneous and annual amounts) to meet the demands of its existing customers.

**Table 4-6**  
**Existing Potable Water Rights Evaluation**

| Description                   | Instantaneous Rights /<br>Maximum Day Demand | Annual Rights /<br>Average Day Demand |        |
|-------------------------------|----------------------------------------------|---------------------------------------|--------|
|                               | (gpm)                                        | (acre-feet)                           | (gpm)  |
| Total Potable Water Rights    | 43,786                                       | 34,948                                | 21,666 |
| Existing (2015) Water Demand  | 27,444                                       | 19,031                                | 11,798 |
| Surplus (or Deficient) Rights | 16,342                                       | 15,917                                | 9,868  |

**Table 4-7** summarizes the results of the future water rights evaluation, which compares the water rights of the existing sources with the system's future 6-year, 10-year, 12-year, and 21-year demand projections. The analysis considered future demand projections with and without water use reductions from the City's planned water use efficiency efforts, as shown in the table. The results of the future water rights evaluation indicate the City has sufficient water rights to meet demands through the year 2036.

**Table 4-7  
Future Potable Water Rights Evaluation**

| Description                                       | Instantaneous Rights /<br>Maximum Day Demand | Annual Rights /<br>Average Day Demand |        |
|---------------------------------------------------|----------------------------------------------|---------------------------------------|--------|
|                                                   | (gpm)                                        | (acre-feet)                           | (gpm)  |
| <b>Year 2021 (+6 years) Without Conservation</b>  |                                              |                                       |        |
| Total Potable Water Rights                        | 43,786                                       | 34,948                                | 21,666 |
| Projected Water Demand                            | 31,640                                       | 22,419                                | 13,899 |
| Surplus (or Deficient) Rights                     | 12,146                                       | 12,529                                | 7,767  |
| <b>Year 2025 (+10 years) Without Conservation</b> |                                              |                                       |        |
| Total Potable Water Rights                        | 43,786                                       | 34,948                                | 21,666 |
| Projected Water Demand                            | 33,445                                       | 23,919                                | 14,829 |
| Surplus (or Deficient) Rights                     | 10,341                                       | 11,029                                | 6,837  |
| <b>Year 2027 (+12 years) Without Conservation</b> |                                              |                                       |        |
| Total Potable Water Rights                        | 43,786                                       | 34,948                                | 21,666 |
| Projected Water Demand                            | 34,348                                       | 24,679                                | 15,300 |
| Surplus (or Deficient) Rights                     | 9,438                                        | 10,269                                | 6,366  |
| <b>Year 2036 (+21 years) Without Conservation</b> |                                              |                                       |        |
| Total Potable Water Rights                        | 43,786                                       | 34,948                                | 21,666 |
| Projected Water Demand                            | 38,540                                       | 28,303                                | 17,547 |
| Surplus (or Deficient) Rights                     | 5,246                                        | 6,645                                 | 4,120  |
| <b>Year 2021 (+6 years) With Conservation</b>     |                                              |                                       |        |
| Total Potable Water Rights                        | 43,786                                       | 34,948                                | 21,666 |
| Projected Water Demand                            | 31,519                                       | 22,333                                | 13,845 |
| Surplus (or Deficient) Rights                     | 12,267                                       | 12,615                                | 7,821  |
| <b>Year 2025 (+10 years) With Conservation</b>    |                                              |                                       |        |
| Total Potable Water Rights                        | 43,786                                       | 34,948                                | 21,666 |
| Projected Water Demand                            | 33,316                                       | 23,828                                | 14,772 |
| Surplus (or Deficient) Rights                     | 10,470                                       | 11,120                                | 6,894  |
| <b>Year 2027 (+12 years) With Conservation</b>    |                                              |                                       |        |
| Total Potable Water Rights                        | 43,786                                       | 34,948                                | 21,666 |
| Projected Water Demand                            | 34,215                                       | 24,585                                | 15,242 |
| Surplus (or Deficient) Rights                     | 9,571                                        | 10,363                                | 6,425  |
| <b>Year 2036 (+21 years) With Conservation</b>    |                                              |                                       |        |
| Total Potable Water Rights                        | 43,786                                       | 34,948                                | 21,666 |
| Projected Water Demand                            | 38,390                                       | 28,196                                | 17,481 |
| Surplus (or Deficient) Rights                     | 5,396                                        | 6,752                                 | 4,186  |

## WATER RIGHT RECOMMENDATIONS

Although the City has sufficient potable water rights to supply the water system through 2036 and beyond, some administrative paperwork and facility improvements are necessary to fully utilize the City's existing water rights. The following list identifies actions the City should take to preserve, protect, and clarify existing water rights and to continue to diligently develop existing water right permits.

- Obtain a permanent decision on change application CG4-28516C for the Wellsian Way Wellfield. Currently, the City is operating Well No. 13-A under a temporary authorization from Ecology from November 1994, while the change application is still pending.
- Start a discussion with Ecology about the Public Water Entity Permit provision included on certificates G4-28554C and G4-28642C associated with the ORV Park, and permits G4-29214P and S4-29799P associated with the Columbia Point Marina Park. These water rights were either applied for, or perfected by, the City of Richland and do not include any agricultural irrigation. The Family Farm Water Act (Chapter 90.66 RCW) was specifically intended to provision water rights that were issued for agricultural irrigation after December 8, 1977. With these four water rights, that provision appears to have been erroneously applied since the water rights are for non-agricultural irrigation. If Ecology agrees that this provision was erroneous, the City should request that Ecology issue a superseding certificate or permit that identifies the purpose of use as municipal water supply purposes and removes the provision.
- Request that Ecology issue conforming documents for all of the City's water right certificates that are used for governmental and governmental proprietary purposes to specifically state that they are for municipal water supply purposes. The water rights to be included are all non-potable water right certificates listed in **Table 4-5**.
- Plan for how interruptibility of S4-29799P (Columbia Point Marina Park) and S4-29941P (Horn Rapids Irrigation) will be dealt with when that scenario occurs in the future and determine if this will impact the potable water system.
- For permits that have been used either up to the water right limit or up to the maximum amount the City plans to use, file a proof of appropriation form with Ecology and hire a Certified Water Right Examiner to prepare a Proof Report of Examination and Recommendations for submittal and review by Ecology to allow for issuance of a certificate.
- When a source will no longer be used, request to transfer that water right to a source that is or will be used, as opposed to letting those water rights go unused.
- Take steps to improve the recapture capability of the 3000 SSFF, or to move demand to other sources.
- Continue to look for opportunities to obtain additional water rights as mitigation for the Quad Cities permit.

## **WATER SUPPLY RELIABILITY ANALYSIS**

### **SOURCE OF SUPPLY ANALYSIS**

The existing source of supply is adequate for the current and projected 21-year demand based on the projected population growth. As the City moves forward, its intention is to rehabilitate and upgrade its facilities to allow for full utilization of its City-owned sources up to the water right limits.