SOUTH KITSAP WATER RECLAMATION FACILITY

Reclaimed Water Operation, Procedures & Maintenance Manual

December 2013

Foreword

This Reclaimed Water Procedure, Operation and Maintenance Manual when used in conjunction with Washington State Department of Ecology regulations chapter 173-219 WAC, outlines the South Kitsap Water Reclamation Facilities Reclaimed Water Program.

Table of Contents

FIGURES

APPENDICES

ACRONYMS/ABBREVIATIONS

AWWA	American Water Works Association
BAT	Backflow Assembly Tester
City	City of Port Orchard
CCC	Chlorine Contact Chamber
CCP	Cross Connection Program
CCS	Cross Connection Control Specialist
District	West Sound Utility District
DOH	Washington State Department of Health
Ecology	Washington State Department of Ecology
GPD	Gallons per Day
GPM	Gallons per Minute
MGD	Million Gallons per Day
NPDES	National Pollutant Discharge Elimination System
Psi	Pounds per Square Inch
RCW	Revised Code of Washington
RW	Reclaimed Water
SKWRF	South Kitsap Water Reclamation Facility
SOP	Standard Operating Procedure
WAC	Washington Administrative Code
WSUD	West Sound Utility District

Section 1

PURPOSE AND SCOPE

The South Kitsap Water Reclamation Facility (SKWRF) is committed to advancing the use of reclaimed water to reduce dependence on potable water for non-potable uses

The SKWRF and the State of Washington do not consider reclaimed water as wastewater. Reclaimed water is derived from wastewater which is adequately and reliably treated so it can be used for beneficial purposes.

This manual serves as the reference document for the Reclaimed Water Program. This Manual has been prepared to provide guidance and recommendations to assist:

- Plant staff that carry out maintenance, repairs or operate the system within the SKWRF to provide understanding, operation and maintenance of the Reclaimed Water production system.
- Managers/ Supervisors who will provide oversight.

This manual is intended to be supplemented with and used in conjunction with published documents and materials developed by the Washington State Department of Ecology (Ecology); Washington State Department of Health (DOH); American Water Works Association (AWWA); Water Reuse Association; Water Environment Federation and other organizations with interest in the production, distribution and use of reclaimed water. **Appendix A** provides a list of agency contacts.

DEFINITIONS

The following words are frequently used throughout this manual:

"Authority having jurisdiction" means the local official, board, department, or agency authorized to administer and enforce the provisions of the Uniform Plumbing Code as adopted under chapter 19.27 RCW (Revised Code of Washington). For West Sound Utility District, this is Kitsap County Building Department.

"Cross connection" means any actual or potential physical connection between a public water system or the consumer's water system and any source of non-potable liquid, solid, or gas that could contaminant the potable water supply by backflow.

"Customer" means a user of reclaimed water. See also **End User**.

"Delivery Point" as defined in the means the physical location(s) designated where reclaimed water is provided to an end user.

"Distribution Main" means a pipe that carries reclaimed water from a transmission main to an individual customer. It also means a pipe that carries reclaimed water from a transmission main to service lines that then connect to more than one customer.

"End User" means a customer who uses reclaimed water.

"End User Agreement" means a two-way binding agreement between the water purveyor and the customer. It is required by SKWRF's Reclaimed Water Permit and defines WSUD's, the end user's, and SKWRF's roles and responsibilities.

"Intergovernmental Agreement" means the Agreement for Operation, maintenance, Management and financial affairs of the SKWRF. The spirit of the agreement includes broad policy- and management-level provisions for SKWRF partners to facilitate reclaimed water distribution and use.

"SKWRF partners" means City of Port Orchard (City) and West Sound Utility District (WSUD) or (District).

"Purveyor" means an agency, subdivision of the state, municipal corporation, firm, company, mutual or cooperative association, institution, partnership, or person or other entity owning or operating a public water system. Purveyor also means the authorized agents or these entities.

"Service line" means a pipe that carries reclaimed water from a distribution main to a customer or customers reclaimed water meter(s).

"Transmission main" means a pipe used to convey reclaimed water from the SKWRF reclaimed water plant.

Section 2

Introduction and Background

The City of Port Orchard and West Sound Utility District jointly own the SKWRF which provides wastewater treatment for City and District service areas.

WSUD operates and manages the SKWRF. This is predicated by an intergovernmental agreement between the partners. The agreement provides for an arrangement appropriate to manage the daily operation, maintenance and financial affairs of SKWRF and to carry out its future capital improvements, the existing wastewater transmission, treatment and discharge facilities serving the residents of the City, customers of the District and capable of serving future growth areas that are identified within the City and District's comprehensive plans.

The governance body of the SKWRF is by an Advisory Committee which is charged with oversight of the organization's audit and control functions. The purpose of the committee is to make recommendations and advise the City and District regarding the operation and management of the SKWRF.

SKWRF provides wastewater treatment with two separate treatment trains using different treatment processes:

(i) Conventional Activated Sludge Process, and
(ii) Membrane Bioreactor (MBR) Process.

RW production is facilitated by the MBR process. SKWRF discharges treated and disinfected effluent from both processes to Sinclair Inlet, Puget Sound.

SKWRF and its discharge of treated water to Puget Sound are regulated under a National Pollutant Discharge Elimination System (NPDES) Permit, which regulates wastewater discharge to surface waters. NPDES permits place limits on the quantity and concentrations of contaminants that may be discharged, and require certain levels of treatment for wastewater or impose other operating conditions to ensure that permit limits are met. The U.S. Environmental Protection Agency, the federal agency that regulates NPDES Permits, delegated NPDES permit authority to Ecology. NPDES Permits are renewed every five years.

With the move toward production, distribution, and use of reclaimed water, the SKWRF is also governed by State Reclaimed Water Permits, which are issued jointly by Ecology and DOH under the Reclaimed Water Act established by legislation. Reclaimed Water Permits are also renewed every five years. The Reclaimed Water Permit for the SKWRF is incorporated within the facilities NPDES Permit.

Section 3

Reclaimed water is to be used according to the most current revisions of state and local rules, regulations, requirements, policies and SKWRF permits.

Standards

REQUIREMENTS

State Regulations:

- RCW 90.46 – Reclaimed Water Use
- Chapter 173-219 WAC – Reclaimed Water Permitting and Use (currently in rule-making process)
- RCW 18.106 – Washington State Plumbers Code
- RCW 19.27 – Washington State Building Code
- Chapter 51-56 WAC – Uniform Plumbing Code: State building code adoption and amendment of the 2012 edition of the uniform plumbing code

Permits:

- South Kitsap Water Reclamation Facility – NPDES Waste Discharge and Reclaimed Water Permit Number WA0020346 was issued on October 22, 2013; effective January 1, 2014 (**Appendix B**).

Agreements:

- The End User Agreement is a two-way agreement between the water purveyor and each of the reclaimed water customers. It is a binding requirement of SKWRF's State Reclaimed Water Permits. The End User Agreement defines the roles and responsibilities of the purveyor and each customer regarding reclaimed water distribution and use (**Appendix C**).

Note: Closely tied to the distribution and use of reclaimed water is the purveyors authority to protect public health through its Cross Connection Control Program. DOH has not established a requirement for cross connection control on reclaimed water lines; instead, cross connection control is installed on the potable water system.

STATE GUIDANCE

- Water Reclamation and Reuse Standards, Department of Health and Department of Ecology, Publication #97-23, September 1997
- Implementation of Reclaimed Water Use, 2007 Report to the Governor and State Legislature, Publication #07-10-098, December 2007
- Criteria for Sewage Works Design, Department of Ecology Publication #98-37 WQ, August 2008
- Reclaimed Water Facilities Manual, The Purple Book, Department of Ecology, Publication (draft 2011)

PROFESSIONAL ORGANIZATIONS

The American Water Works Association (AWWA) offers guidance and technical support in planning, engineering, financing, managing, and operating reclaimed-water distribution systems.

The Water Reuse Association focuses on advocacy, education and outreach, research, and organization and membership.

Section 4

Reclaimed water is viewed as a resource and as such, the partners have invested in public education efforts. Education efforts are focused on strengthening public acceptance and capitalizing on opportunities to enhance the visibility and recognition of reclaimed water being put to beneficial use.

State reclaimed water regulations require signage where reclaimed water is used. Signs are to be placed at permitted use locations. **Figure 1** shows the typical signage to be provided to the reclaimed water customers.

In addition, the web continues to be a valuable source for information about reclaimed water.

- Ecology website: www.ecy.wa.gov/programs/wq/reclaim
- DOH website: www.doh.wa.gov/ehp/ts/WW/wrr/default.htm

Section 5

The City/ District prioritize provision of reclaimed water on its availability from SKWRF; and even if reclaimed water is available, provision is secondary to that of potable water.

The reclaimed water infrastructure system generally consists of piping, valves, and meters. Regarding terminology, this procedures manual is consistent with terms for piping as defined in **Section 1**.

The concept of a "delivery point" is important for understanding ownership. The definition of delivery point is the physical location(s) designated where SKWRF conveys reclaimed water to an end user. The term also refers to "any points of withdrawal or diversion identified in the future by the Parties to recover reclaimed water stored underground and/or conveyed along a surface water body." By definition, SKWRF operates, and maintains the reclaimed water plant and all associated facilities up to the delivery point. Currently WSUD, owns, operates and maintains all facilities on the downstream side of the delivery point, up to and including the End Users' water meters.

WSUD Utility staff (versus SKWRF staff) installs and maintains the reclaimed water distribution mains, valves and meters given Utility staff expertise in distribution systems. Specifically, Utility staff is typically involved with advancing reclaimed water service by tapping into the transmission main, extending a distribution main or service line, and installing the necessary valves and meters.

Utility staff has the authority to interrupt or stop reclaimed water service after making a reasonable attempt to inform the customer of the disruption to service. Utility staff is involved with unlocking and locking meters at the beginning and the end of the irrigation season.

Regarding cross connection control, for customers requesting new reclaimed water service connections, an initial evaluation of the premises' planned or future potable water service is done by the district's Cross Connection Control Specialist per **Appendix D**. Proper selection and installation of a backflow prevention assembly is a condition of allowing a new reclaimed water service connection. All cross connection control activities follow the Districts most recent revision of the Cross Connection Control Procedures Manual.

CURRENT RW INFRASTRUCTURE

The SKWRF and District maintain an as-built file of the SKWRF's reclaimed water system infrastructure.

Currently, only WSUD uses reclaimed water generated by the SKWRF. One transmission main exits the plant: the transmission main extends south from the plant serving the Retsil Veterans Home, Kitsap Transit Base and the Kitsap Transit at the Port Orchard Armory. The transmission main from the plant is owned by SKWRF. The SKWRF transmission main provides the water that irrigates the three mentioned sites. SKWRF operates its Reclaimed Water Plant to provide reclaimed water at a pressure of ≥50 psi when it leaves the plant site**. Figure 2** shows the current reclaimed water transmission pipeline.

WATER QUALITY MONITORING

The Reclaimed Water requirements contained in SKWRF's NPDES/Reclaimed Water Permit requires chlorine residual to be maintained in the reclaimed water during conveyance to the use area. The permit specifies a minimum daily chlorine residual of at least 0.5 mg/L.

During the irrigation season, staff will monitor sampling stations at each site. This will require 1/Day

chlorine residual sampling during times of RW distribution. **Appendix E** describes the procedure staff follows to measure chlorine residual.

NOTIFICATION

FOR INTERRUPTION OF SUPPLY
The End User Agreement (see **Section 8**) between the district and the district's reclaimed water customer specifies the district may interrupt or change the supply of reclaimed water only after notifying all affected reclaimed water customers. However, the district may interrupt service without notification in the case of an emergency or unplanned disruption to service by SKWRF.

SIGNAGE
The End User Agreement also requires standard notification signs to be posted in all reclaimed water use areas. This is a requirement of SKWRF's Reclaimed Water Permit. The SKWRF provides the signs and any mounting hardware, while the customers are responsible for installing them. **Figure 1** shows the typical signage provided to the reclaimed water customers.

FIGURE 1

Typical Reclaimed Water Sign

Posted by End Users at Reclaimed Water Use Sites

Figure 2: Reclaimed Water Transmission Line

Section 6

This section builds on **Section 2** to further clarify the relationship between the partners and SKWRF as shared providers of reclaimed water. It also sets the stage for **Chapter 7** by generally describing how the partners implement the Reclaimed Water Program. Currently, the City will not be conveying, nor has any immediate plans to distribute RW to its customer base.

ROLES

As a wastewater treatment facility, SKWRF is not a water purveyor; West Sound Utility District serves that role. Basically, SKWRF provides reclaimed water through the SKWRF-owned transmission main. Relative to the reclaimed water system infrastructure, the District's responsibility typically extends from a distribution main connection off the SKWRF transmission main to (and including) the End User's meter. The End User's responsibility extends downstream of the reclaimed water meter. See **Chapter 1** for definitions and **Chapter 5** for additional description of the infrastructure and the concept of a delivery point.

As the District regulates customers' use of reclaimed water through legally binding End User Agreements tailored to each customer. The District coordinates with SKWRF to ensure Reclaimed Water Permit requirements are met and adequate supply is delivered to customers. The District coordinates with customers to ensure the system is tested, operated and maintained as required under SKWRF's permit. See **Chapter 8** for more information about End User Agreements.

CLASS "A" RECLAIMED WATER

SKWRF's reclaimed water has been treated to Class "A" standards and is clean enough for public contact and almost any use except drinking. Reclaimed water is ideal for many high-demand non-drinking purposes, and can stretch our water supply by matching the type of water used to actual needs. Class "A" Reclaimed Water can be used for:

- Irrigation (such as golf courses, parks, and landscaping)
- Toilet flushing
- Commercial and industrial processes (such as make-up water for cooling systems)
- Dust suppression, street sweeping, and pressure washing
- Decorative fountains and ponds
- Stream flow and wetland enhancement
- Groundwater recharge

SOUTH KITSAP WATER RECLAMTION FACILITY RECLAIMED WATER PLANT

The SKWRF Reclaimed Water Plant features a membrane bioreactor system which has ultra-filtration membranes cleaning the water to meet Washington State's Class "A" Reclaimed Water standards. This reclaimed water is beneficially used for landscape irrigation under the current NPDES Permit. Currently, the facility can produce up to 648,000 gallons per day or 450 gallons per minute. The system has the potential to be expanded in the future.

RESPONSIBILITIES

Broadly stated, the functions of the SKWRF's Reclaimed Water Program include:

- Developing strategies to advance the use of reclaimed water
- Operating and maintaining reclaimed water system infrastructure
- Coordinating with the water purveyor to ensure Permit requirements are met

- Keeping records of consumption, and for reporting purposes
- Public information and education

The City and District carry out the functions of the public water supply. Because reclaimed water use is an important component of water supply management, staffs within the City and District implement the Reclaimed Water Program within their service area. The program requires staff with administrative expertise in policy development, rule (ordinance) adoption, coordination with partners and customers and contract management. The program is also supported by staff with technical expertise in inspections, cross connection control, distribution system maintenance, water quality monitoring, and meter reading. Those positions with drinking water certification requirements include cross connection control and water quality monitoring.

The District is already charged with protecting public health; reclaimed water lines often run next to the potable water system; and their staff has experience with water infrastructure, meters, water quality monitoring, and cross-connection control.

Section 7

As mentioned above, the Reclaimed Water Program requires participation by staff from a variety of disciplines. This section describes the roles and responsibilities of staff within various entities. This section also references Standard Operating Procedures (SOPs) provided as Appendices. SOPs have been developed to ensure compliance, service and enforcement needs are met.

Implementation – Staff Roles and Standard Operating Procedures

The following departments and staff are necessary to implement the Reclaimed Water Program.

SKWRF/ WSUD Operations

SKWRF

- Primary contact and coordinator for all reclaimed water activities and issues.
- Responsible for developing and implementing the Reclaimed Water Program and advancing reclaimed water use.
- Ensures adherence to reclaimed water requirements and standards, including SKWRF's permits, partner agreements, and Ecology and DOH regulations.
- Representative at reclaimed water meetings
- Representative to attend reclaimed water-related professional association activities.

WSUD Operations

Cross Connection Control

- Contacts SKWRF to inform about and coordinate on reclaimed water activities and issues.
- Responsible for implementing reclaimed water system cross connection control responsibilities
- Installs and maintains reclaimed water meters.
- Conducts cross connection inspections at sites with both reclaimed water and potable water systems.
  Note: Installation, testing and maintaining of cross connection assemblies is the responsibility of the property owner.
- Locks and unlocks reclaimed water meters, for example, as needed for irrigation season (per the start-up/shut-down procedure in **Appendix F**).
  Note: Locking and unlocking meters is accomplished by either the Cross Connection Control Specialist or a meter reader.
- See **Appendix D** for reference to Cross Connection Control Standard.

Water Meter Readers

- Read reclaimed water meters every month during irrigation season.
- Read meters quarterly when they have been turned off and/or locked, in an effort to detect broken meters or illegal use
- Log meter readings
- Provide readings to the Operations Supervisor who then provides to SKWRF
- Reports inaccessible, broken, or faulty meters to generate a work order or an email requesting service to address the reclaimed water meter (for example, maintenance or investigation as to illegal use).
- Locks and unlocks reclaimed water meters, for example, as needed for irrigation season (per the start-up/shut-down procedure in **Appendix F**).
  Note: Locking and unlocking meters is accomplished by either the Cross Connection Control Specialist or a meter reader.

Distribution System Operations

- Contacts SKWRF to inform about and coordinate on reclaimed water activities and issues.
- Implements reclaimed water system responsibilities.
- Approves, installs, tests, and inspects extensions of and connections of distribution mains and service lines to the reclaimed water system, including all piping and valves. These actions can also be done by a contractor.
- Flushes reclaimed water lines, conducts blow-offs, fixes line breaks, and leaks.
- Installs and maintains owned reclaimed water pipes and valves, including distribution system leak detection and repair.
- Oversees pipes and appurtenances (other than meters) installed by developers.
- Responsible for measuring total residual chlorine concentration at the designated reclaimed water compliance point location.
- Records residual chlorine concentration on "Reclaimed Water Residuals" spreadsheet and provides records to SKWRF.
- See **Appendix E** for the reclaimed water system chlorine residual monitoring procedure.
- See **Appendix G** for the procedure to flush a reclaimed water line.
- Reports inaccessible, broken or faulty compliance sampling locations. Arranges for work orders and repairs.
- Provides tank truck and staff to assist with flushing reclaimed water distribution mains and service lines (for example, on start-up for seasonal use).
  Note: Truck is outfitted with purple colored appurtenances and a hose dedicated for use with reclaimed water only.

Reclaimed Water Incident Response

The SKWRF and WSUD have an agreement authorizing SKWRF to refer to the emergency repair service responses involving SKWRF owned reclaimed water transmission lines.
Each reclaimed-water customer-specific End User Agreement stipulates allowable volumes and uses of reclaimed water, use area requirements, and restrictions on use. Incidents requiring response would most likely stem from either uncontrolled release of reclaimed water (with respect to volume and/or location) or inadequate cross connection control. An uncontrolled release could include, for example, a main break or malfunction of a user's system, such as a broken irrigation sprinkler head. Inadequate cross connection control could result from a compromise of "premises isolation" (between the reclaimed water and potable water systems); for example, resulting from depressurized pipe due to a main break or installation of the wrong type of backflow prevention assembly. Or it could result from a compromise of "in-premises protection" (within a building or facility); for example, resulting from incorrectly installed or maintained backflow prevention device. Response initially involves stopping the flow of water (for outdoor incidents) and evaluating whether cross connection has been compromised (for indoor incidents).

Reporting

SKWRF reclaimed water plant NPDES permit requires SKWRF to report releases of reclaimed water at Reclaimed Water Use Locations which cause runoff to Ecology, DOH and Kitsap County Environmental Health. SKWRF staff follows their same internal spill incident reporting procedure for reclaimed water as for sanitary sewer system releases.

The SKWRF has two reporting forms for reclaimed water incidents depending on the type of incident.
For uncontrolled releases: *Reclaimed Water Release Information Form* (**Appendix H.1**).
For cross connection incidents: *Reclaimed Water Cross Connection Incident Report Form* (**Appendix H.2**). The Reclaimed Water Purveyor is responsible for completing the forms with assistance as needed from other staff involved in the incident response.

The District will include all reclaimed water incidents in its annual reporting responsibilities to SKWRF. SKWRF will complete the annual report every year in March beginning in 2015 (**See Section 9**).

Notifications
The timeframe for all notifications is as soon as possible and no later than the morning of the next business day

A Reclaimed Water e-distribution list resides on the District's Exchange Server. It serves to efficiently notify all persons key to reclaimed water incident response: the SKWRF, the Operations Manager, the Cross Connection Control Specialist, the Water Quality Specialist and the Drinking Water Operations Supervisor and/or Lead. At appropriate times as noted in the procedures, this e-distribution list will serve to notify all key staff when a reclaimed water incident has occurred.

Contacts for SKWRF and District reclaimed water customers (as specified in End User Agreements) are provided in **Appendix A**. The locations/addresses of buildings/facilities and areas where reclaimed water is used are provided in **Appendix H**.

INCIDENT RESPONSE

UNCONTROLLED RELEASES

The District will not contain or recover a release of reclaimed water to the environment in the same manner as for hazardous substances. SKWRF's reclaimed water permit requires a minimum of 0.5 mg/L chlorine in the reclaimed water conveyance system. The District chlorinates potable water and maintains a free chlorine residual of 0.50 mg/L to 1.50 mg/L throughout the distribution system, meeting all DOH treatment requirements. When a potable water main breaks, the District does not contain and recover the "spilled" water as if it were an illicit discharge. Therefore, based on the chlorine level, reclaimed water that has been released will not be contained or recovered as if it were an illicit discharge.

Figure 3 illustrates the response procedure for whether the uncontrolled release occurs during or outside of normal working hours. **Appendix H** is a list of locations/addresses where reclaimed water is used.

1. **WSUD** (360-876-2545 during normal working hours) or **Cencom** (911 outside normal working hours) receive a call about an apparent water main break. (At this point, distinction is not expected to have been made as to whether the water is potable, reclaimed or sewer.)

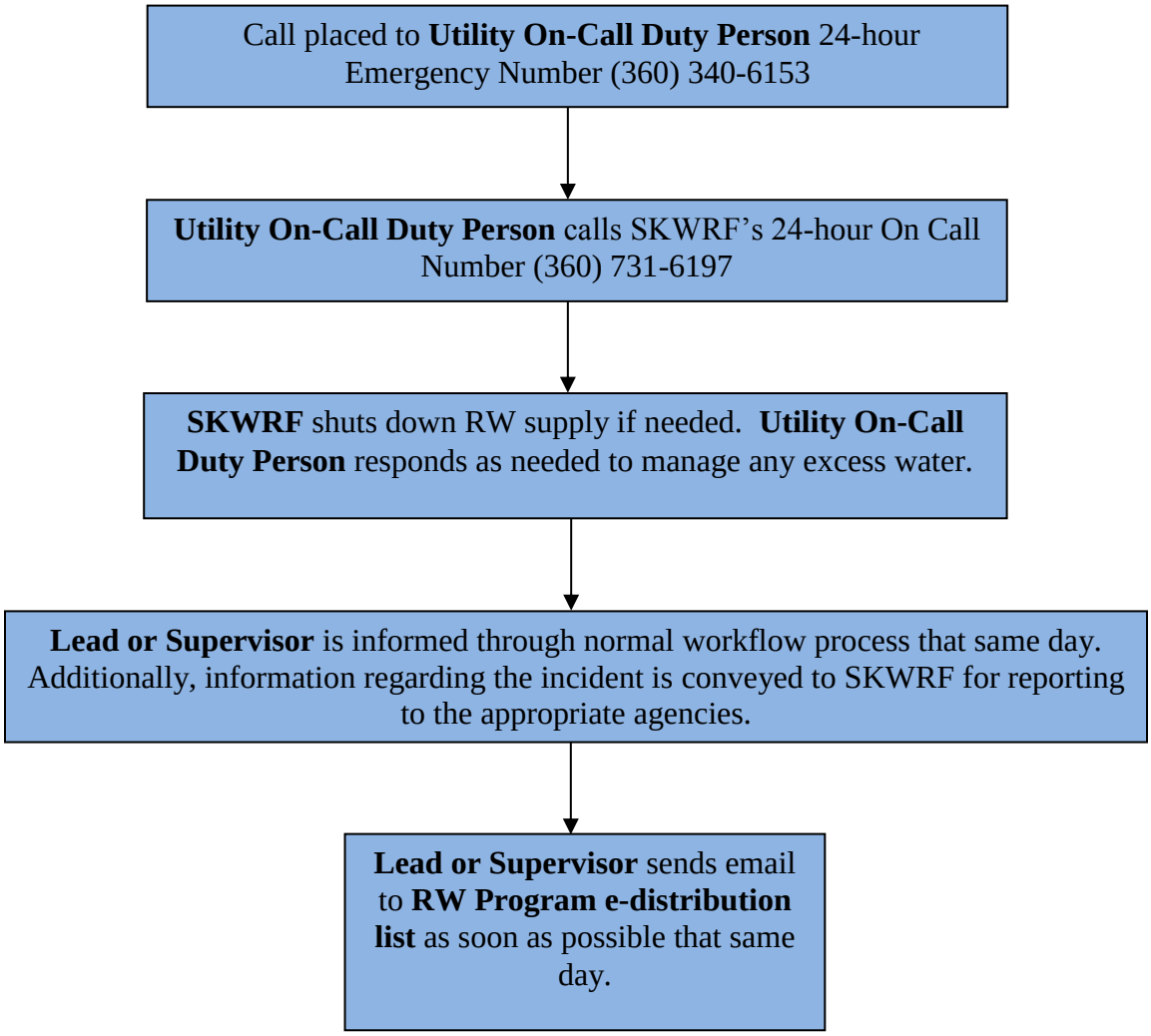
2. Notification is provided to WSUD Operations Utility On-Call Duty Person.

3. The Utility On-Call Duty Person determines the release has involved reclaimed water.

   <u>For incidents occurring both during and outside of normal working hours</u>, the **Utility On-Call Duty Person** calls SKWRF's 24-hour On Call Operator – (360) 527-5700 – and informs the call recipient of the reclaimed water release, providing as much information as is possible at the time.

   If deemed necessary, SKWRF staff will shut down the reclaimed water supply. The **Utility On-Call Duty Person** follows up with appropriate response needed, for example, to manage any excess water in the roadway or other area.

FIGURE 3: Uncontrolled Release Flow Chart



CROSS CONNECTION CONTROL INCIDENT

Incidents involving indoor use of reclaimed water could be related to a broken reclaimed water line and/or a compromise in cross connection protection with the potable water supply. Note it is possible and likely probable for the caller not to know the incident involves reclaimed water, as compared with potable water or even storm-water or wastewater. As indicated in the procedure below, the responder would determine that the incident involves reclaimed water.
Reclaimed water cross connection control incidents could occur downstream of the potable water supply meter, in which case, response would require "premises isolation." WSUD Operations Department is responsible for premises isolation per WAC 246-290-490(1) (d) and under this authority would require the customer to test the backflow prevention assembly and ensure it is functioning properly.

Reclaimed water cross connection control incidents could also occur within the Districts drinking water customer's facility, in which case, response would require "in-premises protection." The Districts Operations Department is responsible for in-premises protection per WAC 246-290-010(13), WAC 246-290-490(1) (e) and Chapter 19.27 RCW.

The State Department of Health WAC 246-290-490(2)(i)(i) gives the District the authority to deny or discontinue potable water service to a consumer's premises until a cross connection hazard is eliminated or controlled to the satisfaction of the purveyor, commensurate with the degree of hazard. Also, if an incident involves in-premises protection, the Districts Cross Connection Control Specialist (CCS) will operate only within the Districts authority to test in-premises reduced pressure assemblies; the CCS typically does not conduct work on customer-owned backflow prevention devices. The CCS can require the customer to have in-premises protection tested by customer's choice of a Washington State-certified backflow assembly tester (BAT).

As provided in WAC 246-290-490(2) (j), in the event of an emergency (including a cross connection control incident involving reclaimed water), the CCS is not required to notify SKWRF or WSUD Operations staff prior to denying or discontinuing water service to a consumer's premises if warranted by the degree of hazard, or if the consumer fails to meet their regulatory requirements regarding customer-owned backflow prevention devices (WAC 246-290-490(2) (h)).

When a water quality complaint is received from a building or facility with use of reclaimed water, the Water Quality Specialist will implement the standard response for water quality complaints; screening for reclaimed water via measuring field parameters will not be conducted. The standard response for water quality complaints typically includes checking for air in the water, unusual color or odor, the presence of sediment, and possibly collecting a bacteriological sample. A field-measured water quality indicator that can reliably distinguish reclaimed water from potable water has not been identified from SKWRF reclaimed water or District potable water quality data.

Section 8

END USER AGREEMENTS

A standard Class "A" Reclaimed Water Service Agreement (**Appendix C**), also known as an End User Agreement, was developed and approved by Ecology and DOH to establish definitions and requirements for using reclaimed water. This Agreement is established between the City and or District and the City and or Districts reclaimed water customers, or End Users. Each customer using reclaimed water must have an effective agreement with the purveyor prior to receiving reclaimed water service. Each customer-specific agreement stipulates the use, quantity, and price of reclaimed water, as well as restrictions on use, and conditions of interruption and change of supply.

CURRENT USES AND USERS

The current uses of reclaimed water by WSUD customers include:

- Irrigation, available seasonally (typically from mid-May to mid-October). **Appendix F** and **Appendix G** contain the start-up/shut-down and flushing procedures, respectively, associated with seasonal use.

The SKWRF/ District currently provide reclaimed water from the SKWRF to the following users.

Customer	Use	Location
Retsil Veterans Home	Irrigation Uses – landscaping areas	1141 Beach Drive, Port Orchard, WA Latitude: 47.543658^{o} Longitude: -122.616008^{o}
Kitsap Transit Base	Irrigation Uses – landscaping areas	1430 Retsil Road SE, Port Orchard, WA Latitude: 47.536581^{o} Longitude: -122.618214^{o}
Kitsap Transit at the Armory (Park and Ride)	Irrigation Uses – landscaping areas	1930 SE Mile Hill Drive, Port Orchard, WA Latitude: 47.533647^{o} Longitude: -122.61785^{o}

As the producer of RW, SKWRF uses reclaimed water inside the facility for various operational needs. The water purveyor does not have an End User Agreement with SKWRF. SKWRF manages its own use of reclaimed water.

Section 9

WSUD keeps detailed records of reclaimed water meters, customers, and usage (consumption). The District uses the records to track meter inventory and report annual consumption information to SKWRF for its state reporting purposes.

Record Keeping

The District archives customer and reclaimed water meter information in the Districts computer based Springbrook system. The system maintains an inventory of active reclaimed water meters. The inventory data includes the customer contact information, account number, address, the meter's physical location, installation date, type, manufacturer, model, size and serial number. The District also has the ability to make comments on the account such as meter history, inspections, repairs, testing, and the test results.

Reclaimed water consumption information is used to report to SKWRF for its annual report to the state per the reclaimed water permit.

SKWRF Water Reuse Summary Plan

Beginning March 31, 2015 and each year thereafter RW is distributed, SKWRF is required under the Reclaimed Water Permit for the facility to submit a report to Ecology – the "Water Reuse Summary Plan" – on the reclaimed water distribution system and application sites. The report is SKWRF's opportunity to update the state agency on changes to the reclaimed water distribution system, and any changes to or new uses, users, or locations of reuse sites. The report includes estimated volumes of reclaimed water used, the methods and rates of application, and any potential water quality impacts, plus a description of any additional treatment provided.

WSUD assists SKWRF with completing the report by providing the gallons of reclaimed water used by each of the District's customers in the past calendar year, as well as indicating whether any new uses have been developed or are planned to be developed, or existing uses ceased.

Section 10

SKWRF will produce, distribute, and use Class A reclaimed water at various reclaimed water use sites listed in Section 8 of this manual.

The production, distribution, and use of reclaimed water will comply with all specific conditions and requirements of the Washington State Water Reclamation and Reuse Standards, 1997, and is subject to the monitoring requirements listed in **Error! Reference source not found.**.

Analytical Testing

Standard Methods for Examination of Water & Wastewater 20th ed. (American Public Health Association Publications, 1998) or a more recent version if applicable will be utilized for all analytical testing performed by the SKWRF and analyses conducted by an external lab.

Table 1- Monitoring Schedule

Parameter	Units	Sample Location Point	Sampling Frequency	Sample Type
Distributed Flow	Gallons per day (GPD)	Reclaimed Water Pump Station (RW PS)	1/day	Metered/recorded
BOD_5	mg/L	MBR Effluent or RW PS	1/week	Composite
TSS	mg/L	MBR Effluent or RW PS	1/week	Composite
Turbidity	NTU	MBR Effluent	Continuous	On-line analyzer with recorder
Total Coliform	# / 100 mL	MBR Effluent or RW PS	1/day	Grab
pH	Standard Units	MBR Effluent or RW PS	1/day	Grab
Dissolved Oxygen	mg/L	MBR Effluent or RW PS	1/day	Grab
Total Nitrogen	mg/L as N	RW PS	1/month	Composite
Total Phosphorus	mg/L as P	RW PS	1/month	Composite
Total Chlorine Residual (for disinfection purposes)	mg/L	Chlorine Contact Channel Effluent	Continuous	On-line analyzer with recorder
Total Chlorine Residual (for distribution purposes)	mg/L	RW Distribution Pipe to Use Areas	Continuous	On-line analyzer with recorder
Total Chlorine Residual (for distribution purposes)	mg/L	At the RW Use Locations during times of RW Distribution	1/day	Grab

Section 11

SYSTEM OPERATION

The Reclaimed Water Operation in the following section is part of an overall procedure. This includes any referenced information which should be read. The SKWRF Reclaimed Water System enables safe, reliable, stable and accurate control and monitoring of each of the hydraulic, mechanical and associated sensors and controls of the system.

Once systems are running under the auto control mode, the main plant functions are under the control of the PLC and monitored by the SCADA system for process tracking and alarm indication. Associated reclaimed water equipment is controlled by its respective integral controls.

The procedures described within require that reference must be made to the individual equipment O &M Manuals which describes the detailed control of the equipment.

The reclaimed water system operates in either a batch mode or as a flow through process based on operator selection for production and distribution. Reclaimed water production is facilitated by the MBR system. All equipment is controlled by a PLC which receives operator input through an HMI. Once produced, MBR permeate is channeled to a distribution box. Reclaimed water in the distribution box can either be injected with 12.5% NaOCL for disinfection and channeled by an automated gate to a chlorine contact chamber for contact time and storage of RW or channeled through an air gap and blended with secondary effluent from the conventional activated sludge system to be disinfected and discharged. Reclaimed water which enters the chlorine contact chamber is continuously sampled at the end of the chamber prior to being pumped by a sensor to ensure adequate chlorine residual.

In batch mode, RW is channeled from the distribution box after being injected with 12.5% NaOCL and the CCC is filled and held for a specified time to ensure sufficient disinfection contact. Once completed, the stored RW can be pumped to the transmission line for beneficial reuse. When the CCC storage volume is depleted, the batch process repeats.

In a flow through mode, within the CCC chamber a float switch monitors the operating level and activates the automated gate at the distribution box to maintain a defined hydraulic level during pass through operations. Sufficient disinfection contact time is maintained by ensuring that RW pumped to the transmission lines does not exceed 450 gpm.

CONTROL STRATEGIES/ OPERATIONAL MODES

AUTO MODE: Batch or flow through. All system equipment and monitoring devices are fully controlled by the PLC. The normal mode of control is to be AUTO unless a fault condition arises, during testing, during non-provisional use of the CCC or during routine maintenance when required.

STANDBY MODE: This mode initiates when an alarm condition for insufficient chlorine residual is detected prior to discharge into the transmission line from the SKWRF or other alarm conditions. The system goes into standby and suspends all pumps. Automated valves to the RW transmission line and from the distribution box to the CCC are in a closed position.

FLUSH MODE: Utilized during start-up and provisional use transition (Appendix I). Flush mode

initiates the NaOCL pumps at a predefined rate for disinfection and duration to the distribution box and opens the gate from the distribution box to fill the CCC. The automated valve is in a closed position to the transmission line. The automated bypass valve is open recirculating chlorinated RW through the internal production system prior to RW distribution point. The automated valve to the distribution box is open during the fill cycle. The distribution pump is operating during this time to recirculate the chlorinated RW within the plant piping system water to ensure disinfection of all infrastructure and piping previously exposed to the activated sludge process final effluent.

DISTRIBUTION

Reclaimed water is pumped for distribution through a 6" pipe. As the water travels through the pipe, it passes an additional Chlorine sensor which continuously monitors residual chlorine. This ensures that the required amount of chlorine is present in the discharge water prior to entering into the transmission line. If there is a discrepancy of the required chlorine value, a third NaOCL pump begins pumping directly into the distribution line prior to an automated bypass valve. The control mode automatically changes to a flush mode. The automated valve to the distribution line closes and an automated bypass valve to the distribution box opens. The third NaOCL pump shuts down. The water will continue to flow back to the distribution box until the required chlorine value is achieved and maintained for a predetermined time period. Once satisfied, An Operator will need to manually reset the system back to the automated mode for distribution to the transmission line.

Maintenance

Maintenance tasks are performed at defined intervals required by and in accordance with each equipment manufacturer. SKWRF maintains a preventative maintenance program which facilitates scheduling of required maintenance. Equipment Maintenance requirements per the manufacturer can be found in the facilities O&M Manuals for that specific equipment within a process. Equipment O&M manuals that are

CCC Provisional Use

The CCC serves a dual use. The configuration allows for storage and disinfection of reclaimed water and for activated sludge final clarification effluent disinfection and routeing to marine discharge. Transition between activated sludge final clarification effluent disinfection and storage/disinfection of reclaimed water uses requires flushing and disinfection of the CCC to ensure that regulatory requirements are met for bacteriological indicator organisms. The procedure is listed is in the order in which should be carried out. **(Appendix I)**

APPENDICES

APPENDIX A – Agency Contact List

West Sound Utility District

WSUD Operations	**Operations Manager** **Brent Winters (360) 895-6926** **Cross Connection Control** **Karen Vargo (360) 895-6929** **Water Quality Monitoring** **Kyle Galpin (360) 895-6928** **Operations Supervisor** **John Tapia (360) 874-5012**
Administrative Services	**(360) 876-2545**
On Call Operations 24 Hours/ Day	**(360) 340-6153**

SKWRF

Plant Manager	**Randy Screws (360) 895-2440**
On Call Operator 24 Hours/ Day	**(360) 731-6197**

Washington State Department of Ecology

Northwest Regional Office **24 Hour Reporting Line**	**Water Quality – (425) 649-7000** **(425) 649-7000**

Washington State Department of Health

Division of Environmental Health **DOH Shellfish Program Business Hours** **DOH Shellfish Program After Hours**	**Craig Riley (509) 329-2146** **(360) 236-3330 (Reporting)** **(360) 786-8962 (Reporting)**

Kitsap County Public Health

Senior Environmental Health Specialist **After Hours (Reporting)**	**Stuart Whitford, R.S. (360) 337-5674** **(360) 415-2005**

APPENDIX B- SKWRF NPDES Permit

Issuance Date: October 22, 2013
Effective Date: January 1, 2014
Expiration Date: December 31, 2018

National Pollutant Discharge Elimination System
Waste Discharge Permit No. WA0020346

State of Washington
DEPARTMENT OF ECOLOGY
Northwest Regional Office
3190 – 160th Avenue SE
Bellevue, WA 98008-5452

In compliance with the provisions of
The State of Washington Water Pollution Control Law
Chapter 90.48 Revised Code of Washington
and
The State of Washington Reclaimed Water Act
Chapter 90.46 Revised Code of Washington
and
The Federal Water Pollution Control Act
(The Clean Water Act)
Title 33 United States Code, Section 1342 et seq.
and
State of Washington
DEPARTMENT OF HEALTH
In compliance with the provisions of
Chapter 90.46 and 43.70 Revised Code of Washington

CITY OF PORT ORCHARD
216 Prospect Street
Port Orchard, WA 98366
and
WEST SOUND UTILITY DISTRICT
2924 Lund Avenue
Port Orchard, WA 98366

is authorized to discharge in accordance with the Special and General Conditions that follow.

Plant Location: South Kitsap Water Reclamation Facility 1165 Beach Drive, Port Orchard, WA 98366	**Receiving Water:** Outfall #001 Sinclair Inlet, Puget Sound
Treatment Type: Membrane Bioreactor (MBR) and Activated Sludge	**Reclaimed Water Use**: Outfall #002 Use Locations: Various sites in Kitsap County, WA, for Landscape Irrigation

Kevin C. Fitzpatrick
Water Quality Section Manager
Northwest Regional Office
Washington State Department of Ecology

APPENDIX C End User Agreement

WEST SOUND UTILITY DISTRICT
CLASS "A" RECLAIMED WATER SERVICE AGREEMENT

END USER:
CONTACT PERSON: **PHONE NO.:** (_____) _____
ADDRESS: _____

TERMS & CONDITIONS OF SERVICE

The End User identified in this agreement, in receiving Class "A" Reclaimed Water from West Sound Utility District (District) under this Agreement, does hereby agree to the following terms and conditions for the use of Class "A" Reclaimed Water:

1. **Use of Reclaimed Water**
   a. **Location of Use(s)**:
   b. **Intended Use(s)**: Landscape Irrigation
   c. **Period of Use**: End User may begin using Class "A" Reclaimed Water upon signing this agreement and Class "A" Reclaimed Water is made available by the District.

2. **Quantity of Reclaimed Water** Class "A" Reclaimed Water will be provided by the District as follows: Maximum Quantity: _____ gallons per minute.

3. **Charges/Fees of Reclaimed Water** Monthly Reclaimed Water Charges: The District shall provide to the End User Class "A" Reclaimed Water as a demonstration project for twelve (12) months. The District shall provide reclaimed water to End User during the summer months (May 1 – September 30) at ____ percent (___%) of the irrigation rate set forth in the District's utility rate schedule for irrigation customers (WSUD Resolution 480-14, and as amended). Connections Fees: It shall be the responsibility of the District to fund, connect and install the End-User's irrigation meter for measuring the use of reclaimed water and all necessary back flow protection devices.

4. **Restrictions on Use** Class "A" Reclaimed Water provided under this Service Agreement shall not be used in any place or manner except as specified in the "Location of Use(s)" and "Intended Use(s)" designations above, without written approval of the District, which shall not be unreasonably denied.
   a. Class "A" Reclaimed Water shall not be used for human consumption or in the preparation of foodstuffs or other products intended for human consumption.
   b. Class "A" Reclaimed Water shall not be discharged or released to any surface water body or stormwater collection or conveyance facility, unless said water body or facility is a non-restricted recreational impoundment or a wetland created for and identified as a beneficial use.
   c. Class "A" Reclaimed Water shall not be sold, conveyed, gifted, or otherwise transferred to any other party.
   d. Use area protections and User Notifications: All locations served with both potable water and Class "A" Reclaimed Water shall be provided with a reduced pressure backflow prevention assembly on the potable water service. All Class "A" reclaimed water piping and

appurtenances shall be color coded and employees and public users of the use area shall be provided with adequate notification of the use of reclaimed water the use site.

5. **Interruption or Change of Supply** In case of emergency repairs or other necessary work, or whenever the public health or safety so demands, the District may change, reduce or limit the time for, or temporarily discontinue the use of, Class "A" Reclaimed Water. The District shall not be responsible for any damage resulting from interruption or change of the Class "A" Reclaimed Water supply or for any damage incurred by the End User arising out of the use or transportation of the Class "A" Reclaimed Water.

6. **Disclaimer, Indemnity, and Hold Harmless** To the extent permitted by law, the End User shall hold harmless, indemnify, and defend the District from any claims, suits, actions, losses, penalties, judgments, awards for damages of any kind arising out of, or in connection with, the use of Class "A" Reclaimed Water provided under this Service Agreement, except to the extent arising out of the negligence or other fault of the District.

7. **Termination** This agreement shall have a term of one year, and shall automatically be renewed from year to year unless terminated pursuant to this Section. Class "A" Reclaimed Water service may be terminated, without cause, upon thirty (30) days written notice by the District. Class "A" Reclaimed Water service may be terminated upon twenty four (24) hours written notice by the District if the District believes a violation of the Use Requirements has occurred.

8. **Compliance with Laws Governing Reclaimed Water**
   a. The District agrees that it will comply with all applicable federal, state, and local laws, regulations and standards governing the generation and delivery of Class "A" Reclaimed Water.
   b. The End User's use of Class "A" Reclaimed Water will meet all applicable requirements contained in the *Water Reclamation and Reuse Standards*, issued by the Washington State Departments of Health and Ecology, *WSUD Reclaimed Water Rules*, and *WSUD Development Standards*, including those listed on the back of this Agreement, as amended from time to time, or contained in any successor standards or ordinances.
   c. Violations of these Terms and Conditions or of State standards and regulations may result in termination of Class "A" Reclaimed Water Service under this Service Agreement.
   d. Representatives of the District and Washington State Departments of Ecology and Health shall be granted access to any facilities or service locations for purposes of inspection and compliance with local and state regulations governing the use of Class "A" Reclaimed Water and compliance with this Agreement. End User shall permit access at reasonable times and upon reasonably advance notice, except in cases of emergency.

9. **Noncompliance Notification** In the event the End User is unable to comply with any of the terms and conditions of this Agreement due to any cause, the End User shall: a) immediately take action to stop the noncompliance and correct the problem; and b) immediately notify the District, Kitsap County Department of Health, Washington State Department of Ecology of the failure to comply.

10. **User Supervisor** The End-User shall appoint a "supervisor" who would be in charge of ensuring the End-User complies with the terms of its agreement with the District. The supervisor was also charged with the duty of having a basic knowledge of reclaimed water regulations and all aspects of the End-User's reclaimed water system. The supervisor shall also

be the designated contact person to the District with all his pertinent contact information set forth in this Agreement.

11. **Third Party Beneficiary** The South Kitsap Water Reclamation Facility (SKWRF) shall be considered a third party beneficiary under this agreement.

12. **Amendment** This Agreement may be unilaterally amended at any time by the District if required for compliance with any applicable state or federal laws or regulations. Other amendments shall only be effective upon written approval.

13. **District's Obligation** The District is not by this Agreement warranting or guaranteeing the availability to Customers of any specific quantity of Class "A" Reclaimed Water, and the District's obligation hereunder is only to provide such quantity of Class "A" Reclaimed Water as may be available from the normal operation of the wastewater treatment plant, The District may impose conservation measures on a uniform basis among all customers when the supply of Class "A" water is not sufficient to meet all irrigation demands of customers of the Municipal Irrigation System as a whole. The District shall have no liability whatsoever to the End User for its inability to provide Class "A" Reclaimed Water for any reason.

I, the undersigned, do hereby affirm that I have the legal authority to enter into this Agreement for the Class "A" Reclaimed Water service on behalf of the End User identified above, that I have read the terms and conditions specified in this Agreement and references herein, and that the End User identified above agrees to and shall be bound by said terms and conditions for the use of such water as specified in this Agreement and the references herein:

By:_____ _____ _____
Printed Name Signature Date

Approved:

By: _____

WEST SOUND UTILITY DISTRICT

CLASS A RECLAIMED WATER
DEFINITION AND USE REQUIREMENTS

DEFINITION

"Class "A" Reclaimed Water" means reclaimed water that meets State Class A Reclaimed Water criteria established in the Washington State Water Reclamation and Reuse Standards (Standards), as may be amended from time to time. "Reclaimed Water" has the same meaning as provided in *RCW 90.46.010(4)* of the *Reclaimed Water Act*, as may be amended from time to time.

CHANGES IN ALLOWABLE USES

Class "A" Reclaimed Water may be used only for the purposes specified and at the location of use(s) identified in this Service Agreement. Any extension or change in use and/or in location of use must be specifically approved by an Amendment to this Service Agreement.

GENERAL USE AND USE AREA REQUIREMENTS

1. Standard notification signs provided by the District must be posted in all Class "A" Reclaimed Water use areas, consistent with the Standards.
2. Backflow prevention devices must be installed, maintained and tested in accordance with the District's current cross connection control plan.
3. All Reclaimed Water piping, valves, outlets and other appurtenances shall be color-coded purple, taped purple, or otherwise marked to identify the source of the water as being "reclaimed water, consistent with South Kitsap Water Reclamation Facilities' Permit and State Standards.
4. Reclaimed Water use, including runoff and spray, shall be confined to the areas designated in this approved Service Agreement.
5. The "Supervisor" designated on the front of this agreement shall ensure that all personnel using reclaimed water complete training in requirements for appropriate use of the Class "A" Reclaimed Water. This training requirement may be met by: 1) familiarizing them with the terms of this service agreement, and 2) providing written materials provided by District and discussing them with the employee(s).
6. Irrigation users must ensure that their irrigation systems are in good working order, maintained regularly and kept free of leaks, and are set so that reclaimed water is applied appropriately to the landscape, to avoid excessive standing water or runoff of water. Sprinkler heads should be adjusted regularly to avoid application of water to impervious services.
7. At all times, the distribution system(s) and use area(s) shall be maintained to ensure that all equipment is kept in a reliable operating condition.

REFERENCES

"Standards" – *Water Reclamation and Reuse Standards*, Washington State Department of Health and Washington State Department of Ecology, September 1997, and future amendments.

"Permit" – *Reclaimed Water Permit Number WA-0020346*, State of Washington Department of Ecology and State of Washington Department of Health, issued to West Sound Utility District, October 22, 2013, and future amendments and renewals as issued.

APPENDIX D – Cross Connection Control Program

WEST SOUND UTILITY DISTRICT
CROSS CONNECTION CONTROL PROGRAM

TABLE OF CONTENTS:

APPENDIX D – Cross Connection Control Program

1-01 DEFINITIONS

Except where specifically designated herein, all words used in this document shall carry their customary meanings. Words used in the present tense include the future and plural words include the singular. The word "shall" is always mandatory, and the word "may" denotes a use of discretion in making a decision. Any definition not found in this section will take its meaning from the WAC (246-290), or as amended.

(1) "Air gap" means a physical separation between the free-flowing end of a potable water supply pipeline and the overflow rim of an open or nonpressure-receiving vessel. To be an "approved air gap," the separation must be at least twice the diameter of the inlet piping (supply pipe) measured vertically, and never be less than 1 inch.

(2) "Approved backflow prevention assembly" or "backflow assembly" or "assembly" means an assembly to counteract backpressures or prevent back-siphonage. This assembly must appear on the list of approved assemblies issued by the Washington State Department of Health.

(3) "Auxiliary supply" means any water source or system other than West Sound Utility District's water. This includes, but is not limited to, irrigation systems, ponds, streams, rivers or wells.

(4) "Backflow" means the flow of water or other liquids, gases, or solids from any source back into the distribution system. The flow of water in the opposite direction of its intended flow.

(5) "Backflow Assembly Tester" (BAT) or "Tester" means a person holding a valid BAT certificate issued in accordance with the Washington Administrative Code 246-290-490 and the RCW 18.106, 18.27, and 70.119.

(6) "Backpressure" means water pressure which exceeds the operating pressure of the public potable water supply.

(7) "Backsiphonage" shall mean backflow due to a negative or reduced pressure within the public potable water supply.

(8) "Closed System" means any water system or portion of a water system in which water is transferred to a higher pressure zone closed to atmosphere.

(9) "Contamination" means the entry into or presence in a public water supply system of any substance which may be deleterious to health and/or quality of the water.

(10) "Cross connection" means any physical arrangement where a public water system is connected, directly or indirectly (actual or potential), with any other non-drinkable water system or auxiliary system, sewer, drain conduit, swimming pool, storage reservoir, plumbing fixture, swamp coolers, or any other device which contains, or may contain, contaminated water, sewage, or other liquid of unknown or unsafe quality which may be capable of imparting contamination to the public water system as a result of backflow.

Bypass arrangements, jumper connections, removable sections, swivel or changeover devices, or other temporary or permanent devices through which, or because of which, backflow may occur are considered to be cross connections.

(11) "Cross Connection Specialist" or "CCS" shall mean a person holding a valid CCS certificate issued in accordance with the Washington Administrative Code.

(12) "Degree of hazard" means the low or high hazard classification that shall be attached to all actual or potential cross connections.

(13) "District" shall mean West Sound Utility District.

(14) "DOH' means Washington Department of Health.

(15) “Double check detector assembly" or "DCDA" means an approved assembly consisting of two approved double check valve assemblies set in parallel and equipped with a meter on the bypass line to detect small amounts of water leakage or use. This unit must be purchased as a complete assembly.

(16) "Double check valve backflow prevention assembly" or "double check assembly" or "double check" or "DCVA" or "DC" means an assembly which consists of two independently operating check valves which are spring-loaded or weighted. The assembly comes complete with a shut-off valve on each side of the checks, as well as test cocks to test the checks for tightness.

(17) "General Manager" shall mean the person in charge of West Sound Utility District or his/her designee.

(18) "Health hazard" means an actual or potential threat of contamination of a physical, toxic, or biological nature that would be a danger to health.

(19) "High hazard" means the classification assigned to an actual or potential cross connection that potentially could allow a substance that may cause illness or death to backflow into the potable water supply.

(20) "In-premises protection" means a method of protecting the health of consumers served by the customer's plumbing system (i.e. located within the property lines of the customer's premises) by the installation of an approved air gap or backflow prevention assembly at the point of hazard.

(21) "Inspector" or "Surveyor" shall mean a person holding a valid CCS certificate issued in accordance with the Washington Administrative Code, who meets the stipulations in this Cross Connection Control Program.

(22) "Local administrative authority" means the local official, board, department, or agency authorized to administer and enforce the provisions of the applicable Plumbing Code as adopted by Kitsap County.

(23) "Low hazard" means the classification assigned to an actual or potential cross connection that potentially could allow a substance that may be objectionable, but not hazardous to one's health, to backflow into the potable water supply.

(24) "Mobile Unit" shall mean units connecting to the water system through a hydrant, hose, bib, or other appurtenance of a permanent nature that is part of the District water system or a permanent water service to a premise. Examples can include but are not limited to the following: water trucks, pesticide applicator vehicles, chemical mixing units or tanks, waste hauling trucks or units, sewer cleaning equipment, carpet or steam cleaning equipment other than homeowner use, rock quarry or asphalt/concrete batch plants, or any other mobile equipment or vessel. Uses that are excluded from this definition are recreational vehicles at assigned sites or parked in accordance with District regulations, and homeowner devices that are used by the property owner in accordance with other provisions of this, or other, District Cross Connection Control Programs pertaining to provision of water service to a premise.

(25) "Person" means a natural person (individual), corporation, company, association, partnership, firm, limited liability company, joint venture company or association, and other similar entity.

(26) "Plumbing hazard" means an internal or plumbing-type cross connection in a consumer's potable water system that may be either a pollutional or a contamination-type hazard. This includes, but is not limited to cross connections to toilets, sinks, lavatories, wash trays, washing machines, and lawn sprinkling systems. Plumbing-type cross connections can be located in all types of structures including but not limited to homes, apartment houses, hotels, and commercial or industrial establishments.

(27) "Point-of-use isolation" shall mean the same as "In-premises protection".

(28) "Pollutional hazard" means an actual or potential threat to the physical properties of the water system or the potability of the public or the consumer's potable water system but which would not constitute a health or system hazard, as defined. The maximum degree of intensity of pollution to which the potable water system could be degraded under this definition would cause a nuisance or be aesthetically objectionable or could cause minor damage to the system or its appurtenances.

(29) "Potable water supply" means any system of water supply intended or used for human consumption or other domestic use.

(30) "Premises" means any piece of property to which water is provided including, but not limited to, all improvements, mobile structures and structures located on it.

(31) "Premises isolation" means a method of protecting a public water system by installation of an approved air gap or approved backflow prevention assembly at the point of service (end of purveyor's service pipe) to separate the customer's plumbing system from the purveyor's distribution system.

(32) “Reduced pressure detector assembly" or "RPDA" shall mean an approved assembly consisting of two approved reduced pressure backflow assemblies, set in parallel, equipped

with a meter on the bypass line to detect small amounts of water leakage or use. This unit must be purchased as a complete assembly.

(33) "Reduced pressure principle backflow prevention assembly" or "reduced pressure principle assembly" or "RP assembly" shall mean an assembly containing two independently acting approved check valves together with a hydraulically-operated, mechanically independent pressure differential relief valve located between the check valves and at the same time below the first check valve. The assembly shall include properly located test cocks and tightly closing shut-off valves at each end of the assembly.

(34) "System hazard" means an actual or potential threat of severe danger to the physical properties of the public or consumer's potable water system or of a pollution or contamination which would have a detrimental effect on the quality of the potable water in the system.

(35) "Thermal expansion" means the pressure created in piping, when water is heated.

(36) "Used water" means any water supplied by the District to a customer's property after it has passed through the service connection and is no longer under the control of the District water system.

(37) "WAC" means the most recent edition of the Washington Administrative Code.

(38) "Water System" shall mean West Sound Utility District's public water system.

1-02 PURPOSE

The purpose of this Cross Connection Control Program is to protect the public water system from contamination or pollution due to any existing or potential cross connections as defined in WAC 246-290-010, or as amended and this Cross Connection Control Program. The purveyor shall ensure that cross connections between the distribution system and a customer's premises are eliminated or protected against by the installation of an approved air gap or approved backflow prevention assembly.

1-03 CROSS CONNECTIONS REGULATED

(1) No cross connections shall be created, installed, used or maintained within the territory served by the District, except in accordance with this Cross Connection Control Program.

(2) The CCS for the District shall determine if any actual or potential cross connection exists. If found necessary, an assembly commensurate with the degree of hazard will be required to be installed at the service connection.

(3) The owner, occupant or person in control of the property is responsible for all cross connection control within the premises.

(4) The use of any type of attachment connected to the plumbing, including but not limited to garden hose attachments are prohibited except in accordance with the plumbing code.

(5) Any service connection within the District which receives water from any other service including but not limited to other water systems or auxiliary supplies must abide by the contents of this Cross Connection Control Program.

1-04 APPLICATION AND RESPONSIBILITIES

This Cross Connection Control Program applies throughout West Sound Utility District and to every premise and property served by the District. It applies to any premise, public or private, regardless of date of connection to the water. Every owner, occupant and/or person in control of any concerned premise is responsible for compliance with the terms and provisions contained herein.

1-05 BACKFLOW PREVENTION ASSEMBLY REQUIREMENTS

A CCS employed by or under contract with the District shall determine the type of backflow assembly to be installed within the area served by the District. All assemblies shall be installed at the service connection unless it is determined by the CCS that the assembly can be installed at some other point.

Backflow assemblies that are subject to freezing shall be installed with adequate freeze protection.

An assembly will be required, but not limited to each of the following circumstances:

(1) The nature and extent of any activity on the premises, or the materials used in connection with any activity on the premises, or materials stored on the premises, could contaminate or pollute the potable water supply.

(2) Premises having anyone or more cross connections or potential cross connections as that term is defined in this Cross Connection Control Program and the WAC.

(3) When an appropriate cross connection survey report form has not been filed with the District.

(4) Internal cross connections are present that are not correctable.

(5) Intricate plumbing arrangements or plumbing which is potentially subject to frequent changes are present that make it impractical to ascertain whether or not cross connections exist.

(6) There is a repeated history of cross connections being established or re-established.

(7) There is unduly restricted entry so that inspections for cross connections cannot be made with sufficient frequency to assure that cross connections do not exist.

(8) Materials are being used such that, if backflow should occur, a health hazard could result.

(9) Installation of an approved backflow prevention assembly is deemed to be necessary to accomplish the purpose of these regulations in the judgment of the CCS.

(10) Any premise where an auxiliary water supply exists.

(11) Any premise where reclaimed or reused water systems are installed.

(12) New construction, except for single-family and duplex homes.

(13) In the event a point-of-use assembly has not been tested or repaired as required by the WAC 246-290-490, or as amended, and this Cross Connection Control Program, a premises isolation assembly will be required .

(14) On determination that additions or rearrangements have been made to the plumbing system without obtaining proper permits as required by the plumbing code; premises isolation may be required.

(15) All high health hazard premises which are defined in Table 9 of the WAC section 246-290-490, or as amended, are required to have premises isolation by installing an approved air gap or reduced pressure principle assembly in accordance with this Cross Connection Control Program.

1-06 IRRIGATION SYSTEMS

The type of assembly to be installed on a irrigation system will be commensurate with the degree of hazard. This may include a DCVA, pressure vacuum breaker, air vacuum breaker, or protection provided by the system manufacturer.

1-07 FIRE SYSTEMS

An approved double check detector backflow prevention assembly ("DCDA") with bypass shall be the minimum protection on all new fire sprinkler systems using piping material that is not approved for potable water use, and/or that does not provide for periodic flow through during each twenty--four (24) hour period. A reduced pressure principle detector backflow prevention assembly ("RPDA") must be installed if any solution other than the potable water can be introduced into the sprinkler system.

Retrofitting to add or improve cross connection protection on existing older fire sprinkler systems will be required in each of the following circumstances:

(1) Where improper maintenance of the sprinkler system has occurred;

(2) Whenever there is a high hazard situation on the promise;

(3) Wherever an CCS deems necessary due to poor maintenance or lack of testing of the system or existing backflow prevention device; and/or

(4) Whenever the existing system no longer meets WAC requirements.

All fire line systems which are on a designated lateral shall install the assembly on the lateral. The assembly must be installed in accordance with this Cross Connection Control Program. Residential fire sprinklers that have a flow-through connection to the homes potable water system are not required to have a backflow assembly.

1-08 TEMPORARY CONNECTIONS

All temporary connections will be required to have cross connection protection. The type of protection required will be determined on a case-by-case basis by the District's CCS.

1-09 MOBILE UNITS

Any mobile unit or apparatus, as defined in Section 1 of this Cross Connection Control Program, which uses the water from any premise within the District's water system shall first obtain authorization from the District and be inspected annually by the CCS to assure appropriate backflow protection is installed. Backflow assemblies installed on mobile units must also be tested annually by a certified backflow assembly tester.

1-10 RIGHT-OF-WAY ENCROACHMENT

(1) No person shall install or maintain a backflow prevention assembly upon or within any public right-of-way except as provided in this Section.

(2) The District reserves the right to have an assembly installed in the right-of-way.

(3) A backflow prevention assembly required by the District may be installed upon or within any public right-of-way only if the owner proves to the District that there is no other feasible location for installing the assembly, and installing it in the right-of-way will not interfere with traffic or utilities. The District retains the right to approve the location, height, depth, enclosure, and other requisites of the assembly prior to its installation.

(4) Unless the District is doing the installation, the developer or property owner is responsible for obtaining the required permits required by Kitsap County or City of Port Orchard to perform work in the right-of-way.

(5) The assembly shall be installed below or flush with the surrounding grade except when it is not practicable to install it in this manner. Any assembly or portion of an assembly which extends above ground shall be located no closer than eighteen (18) inches to the face of the curb.

(6) A property owner shall, at the request of the District and at the owner's expense, relocate a backflow prevention assembly which encroaches upon any Public right-of-way, when such relocation is necessary for street or utility construction or repairs for purposes of public safety.

1-11 PLUMBING CODE

As a condition of water service, customers shall install, maintain, and operate their piping and

plumbing systems in accordance with the applicable Plumbing Code, as adopted by the Plumbing Official of Kitsap County.

1-12 ACCESS TO PREMISES

Authorized employees of the District, with proper identification, shall have access during the normal business hours of the District to all parts of a premise and within the building to which water is supplied. If any water user refuses access to a premise or to the interior of a structure during these hours for inspection by a cross connection specialist appointed by the District, a reduced pressure principle assembly shall be installed at the service connection to that premise.

1-13 TESTING AND REPAIRS

Backflow prevention assemblies shall be tested in accordance with the requirements set out in the most recent edition of the WAC 246-290-490 and this Cross Connection Control Program. Assembly testing must be performed by a state certified backflow assembly tester. Assemblies must be tested annually, upon installation, after being repaired, moved, and/or after a backflow incident.

1-14 RESPONSIBILITIES OF BACKFLOW PREVENTION ASSEMBLY TESTERS.

Persons certified as backflow prevention assembly testers shall meet the following requirements:

(1) All backflow assembly testers operating within the District shall be certified in accordance with all applicable state and federal regulations.

(2) Hold a WAC approved backflow prevention assembly certification.

(3) Submit a District-approved written report on each backflow assembly inspection within the District water system within ten (10) calendar days of the inspection.

1-15 MAINTENANCE OF ASSEMBLIES

Backflow prevention assemblies shall be maintained in accordance with the requirements set out in the WAC, plumbing code, and this Cross Connection Control Program.

All maintenance of assemblies will be reported to the District within ten (10) calendar days on a District-approved report form, submitted by the BAT.

1-16 INSTALLATION REQUIREMENTS AND SPECIFICATIONS

Backflow prevention assemblies shall be installed in accordance with the requirements set out in the WAC and plumbing code.

At any service connection where a premise isolation assembly is required to be installed and the District authorizes the installation at any point other than at the service connection. It is illegal to intertie any piping between the service connection and the assembly.

1-17 THERMAL EXPANSION

If a closed system has been created by the installation of a backflow prevention assembly, it is the responsibility of the property owner to eliminate the possibility of thermal expansion.

1-18 PRESSURE LOSS

Any reduction in water pressure caused by the installation of a backflow assembly is not the responsibility of the District. The District will give reasonable assistance to the owner regarding information on adequate sizing of assemblies and proper plumbing practices to provide for required pressure and flows for fire protection.

1-19 PARALLEL INSTALLATION

Premises where non-interruption of water supply is critical shall have installed two (2) assemblies of the same type in parallel. They shall be sized in such a manner that either assembly will provide the minimum water requirements while the two (2) together will provide the maximum water requirements.

1-20 NEW CONSTRUCTION

(1) The District may require cross connection protection on any new non-residential construction, such as multi-family, commercial, industrial, and governmental buildings. The type of the assembly will be commensurate with the degree of hazard, as determined by an Inspector.

(2) When a building is constructed and the end use of the building is not determined or could change, a reduced pressure principle backflow prevention assembly shall be installed at the service connection to provide protection of the public water supply in the event of the most hazardous use of the building.

(3) The minimum protection on all new non-residential construction will be a double check valve assembly. The type of assembly will be determined by the District's CCS.

1-21 RESIDENTIAL AND RENTAL PROPERTIES

All residential and rental properties shall comply with this Cross Connection Control Program. The property owner is responsible for the installation, testing, and repair of all backflow assemblies on their property.

1-22 RETROFITTING

Retrofitting shall be required on all service connections where an actual or potential cross connection exists, and wherever else the District deems retrofitting is necessary. Examples of required retrofitting would include, but not be limited to, replacing outdated equipment; replacing damaged equipment; and replacing equipment that does not have a rcord of consistent satisfactory annual inspections.

1-23 COSTS OF COMPLIANCE

All costs associated with compliance of this Cross Connection Control Program are the financial responsibility of the property owner. This includes, but is not limited to, the purchase, installation, inspections, testing, replacement, maintenance, parts, and repairs of the backflow assembly.

1-24 TERMINATION OF SERVICE

Failure on the part of any property owner, their renter, agent or personal representative to discontinue the use of all cross connections or to physically separate cross connections in accordance with this Cross Connection Control Program is sufficient cause for the discontinuance of public water service to the premises.

The District standard notification process is (1) Sending a reminder letter; (2) sending a warning letter if the reminder letter is not responded to; and then (3) notifying the property owner the water will be discontinued. The District reserves the right to implement immediate discontinuation of water service or to otherwise modify its standard notification process, if the District deems it is necessary.

1-25 EMERGENCY SUSPENSION OF SERVICE

The General Manager may, without prior notice, suspend water service to any premises when such suspension is necessary to stop the eminent threat of any actual or potential cross connection as defined in this Cross Connection Control Program.

1-26 NON-EMERGENCY SUSPENSION OF SERVICE

The General Manager may suspend, with 24 hours notice, the water supply to any premises where the conditions of this Cross Connection Control Program have been violated.

1-27 PROVISIONS AS TO AVAILABILITY OF MATERIALS

The District shall maintain one copy of WAC 246-290, and one copy of the most recent edition of the Pacific Northwest Section American Water Works Association *Cross Connection Control Manual, Accepted Procedure and Practice,* for public use and inspection during regular District business hours.

APPENDIX E – Procedure for Monitoring Chlorine Residual at Reclaimed Water Sampling Stations

Application
This procedure is to be followed when measuring chlorine residual at reclaimed water sampling stations. The chlorine residual concentration in the distribution system needs to be at a value of ≥0.5 mg/L.

Equipment list:
- Pocket colorimeter
- 2 empty 10 ml sample cell
- DPD reagent dispenser

Procedure
1. Open the reclaimed water sampling station cover.
2. Turn on the reclaimed water valve and flush the water for 5 minutes. Make sure the reclaimed water runs either onto soil (and infiltrates) or into a sanitary sewer drain. Reclaimed water must not drain into the storm water system.
3. Collect a sample and test for chlorine residual following the next set of procedures for the Pocket Colorimeter.
4. After the sample has been measured for chlorine residual, close the valve and secure the sampling station.

Pocket Colorimeter Chlorine Residual Operation

1. Remove the instrument's lid and locate the (2) 10ml sample bottles. Fill both bottles to the 10ml mark. Tightly replace the lid on one of the bottles and insert it into the instrument with the flat side of the lid facing the back of the instrument.

2. Press middle black button to turn on the instrument. Press **ZERO** and the instrument will show 0.00.

3. Remove the bottle from the instrument.

4. Hold~~ing~~ the DPD dispenser over the second 10 ml sample cell and depress the trigger once to release the correct amount of reagent into the sample.

5. Cap the sample cell and shake gently for about 10 seconds. Note: Not all of the DPD powder needs to be dissolved before reading the sample.

6. Wipe the sample cell with a soft cloth removing any moisture.

7. Within 1 minute of adding the DPD, place the sample cell into the colorimeter with the diamond mark facing you.

8. Tightly cover the colorimeter with the cap.

9. Press **READ**. The instrument will show the results in mg/L of residual chlorine.
10. Remove the sample cell from the instrument and dispose of the water.
11. Rinse the sample cell with water and replace the lid.
12. The instrument must be zeroed before each reading.
13. See the Pocket Colorimeter Instruction Manual for additional information.

APPENDIX F – Reclaimed Water System Start-Up / Shut-Down Procedures

Application

This section describes the **start-up procedure** for provision of reclaimed water after the reclaimed water distribution system or service line has not been used. It also describes the **shut-down procedure** for ceasing provision of reclaimed water, for example, at the end of the irrigation season or whenever reclaimed water will not be available for an extended period of time. Only SKWRF and WSUD staff are authorized, in coordination, to determine start-up and shut-down dates and periods of use or non-use.

The SKWRF provides to WSUD reclaimed water that in turn purveys to certain customers for irrigation purposes only. The irrigation season runs from approximately June through September, shifting days or weeks later or earlier depending on the weather. In the spring, customers may request the reclaimed water be made available at any time to meet their landscape needs. In fall, SKWRF and WSUD may reserve the right to determine when the reclaimed water will be shut off for the season.

The reclaimed water line should be flushed prior to the reclaimed water actually being used. If so, refer to **Appendix G** for the Standard Operating Procedure for Flushing a Reclaimed Water Line.

START-UP PROCEDURE

1. The SKWRF contacts each of the WSUD reclaimed water customers to inform them when reclaimed water will be available.
2. The SKWRF contacts WSUD's Operation Supervisor to schedule turning on the reclaimed water system.
3. SKWRF determines the date the reclaimed water treatment plant will be ready to provide reclaimed water, and then informs the WSUD's Operation Supervisor of that date.
4. WSUD Operations Supervisor schedules the transmission line flushing. See **Appendix G**.
5. WSUD informs Reclaimed Water customers of the start-up date.
6. WSUD's Operations Supervisor assigns the task of reading and unlocking the reclaimed water meter(s) to a Utility Specialist.
7. The Utility Specialist/ meter reader informs WSUD's Operation Supervisor the meters have been unlocked and read.
8. WSUD's Operation Supervisor informs the SKWRF that the system is ready to be used.
9. WSUD's Operation Supervisor informs each customer reclaimed water can be used for irrigation.

SHUT-DOWN PROCEDURE

1. WSUD contacts each of the district's reclaimed water customers to inform them of the date when reclaimed water will no longer be distributed.

   Note: The shut-down procedure may also be initiated by WSUD's Operations Supervisor by

communicating to the SKWRF reclaimed water is no longer needed, or when the SKWRF determines to turn off the system.

2. WSUD's Operations Supervisor contacts the SKWRF and informs them that reclaimed water is no longer needed.
3. WSUD Operations Supervisor provides the date and time to SKWRF as to when reclaimed water will no longer be needed.
4. WSUD Operations Supervisor assigns the task of reading and locking the reclaimed water meter(s) to a Utility Specialist. The Utility Specialist will record the final consumption values.
5. The Utility Specialist/meter reader informs WSUD's Operation Supervisor the meters have been read and locked.
6. WSUD Operation Supervisor makes notification to SKWRF that the meters have been read and locked.
7. SKWRF shuts down the reclaimed water distribution supply system.

APPENDIX G –Procedure for Flushing a Reclaimed Water Line

Application

This procedure is to be followed in the event a reclaimed water service line needs to be flushed. This procedure is similar when utilizing a sanitary sewer system for discharge. The procedure below defines all necessary steps to be taken when use of a sanitary sewer is not available for discharge. It is typically applied in conjunction with the start-up procedure (**Appendix F**) associated with preparing the reclaimed water system for the beginning of irrigation season.

Equipment Needed

1. Free Chlorine Test Kit (dedicated to reclaimed water)
2. Water Pitcher (dedicated to reclaimed water use)

Procedure

1. The SKWRF contacts WSUD's Operation Supervisor about needing to flush the reclaimed water main.
2. The SKWRF in conjunction with WSUD's Operation Supervisor calculates the volume of reclaimed water likely to be flushed, and estimates the amount of time it will take to flush the line.
3. A date is set for when a tank truck and truck operator will be at the reclaimed water location (typically a sample station) needing to be flushed.
4. On the day scheduled for flushing, at the location to be flushed, SKWRF provides WSUD's Operation Supervisor with a reclaimed water-derived chlorine residual reading.
5. WSUD's Operation Supervisor or designee confirms the reclaimed water line is charged and drives the pipeline to confirm all valves are closed.
6. As necessary and as a courtesy, WSUD's Operation Supervisor informs the businesses of the flushing activity.
7. The tank truck operator hooks up the truck to the location to be flushed using a dedicated reclaimed water hose.
8. The operator hooks up the tank truck and opens the valve, capturing the reclaimed water in the tank as it is flushed from the reclaimed water system.

   <u>NOTE</u>: It is not necessary to rinse the tank prior to using it to flush reclaimed water as the water will be discharged to the sanitary sewer. It is not necessary to rinse the tank after using it to flush reclaimed water unless it will be used to carry higher quality water; in that case, refer to state procedures for preparing a truck for potable water transport provided by Washington State Department of Health.

9. At the beginning of the flush, WSUD's Operation Supervisor or designee will collect about a quart volume sample of reclaimed water from the initial volume of reclaimed water flushed into the tank truck. Additional samples will also be collected periodically throughout the flushing process, to document the chlorine residual.
10. The sample volumes are to be captured in a pitcher dedicated to reclaimed water use.

11. The chlorine sample kit and test procedures shall be used to determine the free chlorine residual. The flushing procedure shall continue until the chlorine residual meets the minimum standard set for a specific delivery point.
12. When flushing is completed, the tank truck is driven to a sanitary sewer drain to be emptied of reclaimed water. Reclaimed water is not allowed to be discharged onto the ground or into the storm water system. All reclaimed water must be captured and disposed of through the sanitary sewer system.
13. The tank truck is filled as many times as needed to obtain the required chlorine residual.
14. When the flushing process is done, WSUD's Operation Supervisor or designee ensures the reclaimed water valve box is closed and secured as needed.

15. **Documentation-** To document the flushing process, the following information is documented and given to the SKWRF for record retention.
    a. Name and title of WSUD staff involved in the flushing process.
    b. Date and time the flushing action started and stopped.
    c. Approximate volume of reclaimed water flushed (based tank volumes).
    d. The times chlorine residuals were measured, and the chlorine residual readings.
    e. Comments.

APPENDIX H – Locations of Reclaimed Water Use

December 2013

Irrigation Use

Meter User	Customer ID	Meter Location ID	Meter Serial Number	Meter Address	Contact	Phone
Retsil Veterans Home	Forthcoming	Forthcoming	Forthcoming	1141 Beach Drive E. Port Orchard, 98366	Randy Grahm	(360) 725-2173
Kitsap Transit Base	Forthcoming	Forthcoming	Forthcoming	1430 Retsil Road SE Port Orchard, 98366	Gordon Borgeson	(360)824-4901
Kitsap Transit at the Armory (Park and Ride)	Forthcoming	Forthcoming	Forthcoming	Corner of Karcher Creek Rd and Mile Hill Drive	Gordon Borgeson	(360)824-4901

Appendix H.1 – WSUD Reclaimed Water Release Information Form

West Sound UTILITY DISTRICT

Release Information received or witnessed by: _____

Date / Time: _____

Investigation dispatched to, or conducted by: _____
Date / Time: _____
Field person in charge: _____

Location of overflow: _____
Material discharged: Class A Reclaimed Water
Area affected by discharge (i.e. storm sewer, surface water, etc.): _____
_____
_____

Time overflow started: _____
Time overflow stopped: _____
Estimate volume discharged (gal.): _____
How was this volume determined? (i.e. meter, calculation, estimation, etc.) _____

SKWRF Notified at (Date/Time):
_____

SKWRF verbal notification details:(exactly what information was conveyed to the SKWRF, i.e. start/stop times, volume, location, area affected, etc.)
_____

Overflow details caused by:
(briefly describe what caused overflow to occur, and what was done to stop overflow)
_____

Action taken:
(what has been or will be done to prevent a reoccurrence of this event)
_____

For more information contact: _____

West Sound UTILITY DISTRICT

WSUD Cross Connection Incident Report Form

Report Date: _____ Reported By: _____

Date of Incident: _____ Time of Incident: _____

Location of Reclaimed Water Cross Connection Incident:

Name of Premise: _____ Contact Person: _____

Address (or nearest): _____

Comment on Location:

_____

Description of Cross Connection: (How did cross connection happen? How did backflow protection fail?)

_____

_____

_____

Distribution of Reclaimed Water:

Number of persons affected: _____ Pressure Zone: _____

Length of time of reclaimed water cross connection incident: _____

Volume of reclaimed water involved in cross connection incident: _____

Was cross connection contained within the customer's premise? Yes: _____ No: _____ Unsure: _____

Health Effect of Reclaimed Water Cross Connection:

Illness Reported: -

_____

Symptoms Reported: _____

Results of Physician Report: _____

Specific Location of Cross Connection (irrigation system, pump, meter connection, service line, other)**:**

_____

_____

Appendix H.2 – WSUD Reclaimed Water Cross-Connection Incident Report Form

Cause of Cross Connection (break in pipe, broken irrigation spigot, leaking meter, other):

_____

_____

Corrective Action Taken:

Potable Water Service Terminated? Yes: _____ No: _____

Water Meter Pulled (Yes/No, Date): _____ Water Service Disconnected (Yes/No, Date): _____

Main Flushed (Yes/No, Date): _____ Length of Flushing Time: _____

Disinfection: _____

Samples Collected:

_____

Comments: _____

Reclaimed Water Service Terminated? Yes: _____ No: _____

Reclaimed Meter Pulled (Yes/No, Date): _____Date Service Disconnected (Yes/No, Date): _____

Comments: _____

Corrective Action Ordered to Eliminate Cross Connection with Potable Supply (if applicable):

_____

_____

Previous Cross Connection Survey of Premises:

Date: _____ Inspected By: _____

Type of Backflow Preventer Isolating Premises:

RPBA: _____ RPDA: _____ DCVA: _____ DCDA: _____

Type of Internal Premises Backflow Preventer:

RPBA: _____ RPDA: _____ DCVA: _____ DCDA: _____ PVBA: _____ AVB: _____ Air Gap: _____
None: _____

Date of Last Test of Assembly:

Tested By: _____ Certificate No.: _____Date: _____

Notification to Washington State Department of Health:

Date: _____ Time: _____ Person Notified: _____Notified By: _____

Other Entities Notified:

_____

Appendix I— Chlorine Contact Chamber Transitional Procedure:

The CCC serves a dual use. The configuration allows for storage and disinfection of reclaimed water and for activated sludge final clarification effluent disinfection and routeing to marine discharge. Transition between activated sludge final clarification effluent disinfection and storage/disinfection of reclaimed water uses requires flushing and disinfection of the CCC to ensure that regulatory requirements are met for bacteriological indicator organisms. The procedure is listed is in the order in which should be carried out.

1. Isolate the gate of the CCC which discharges to marine waters.
2. Isolate the gate from the activated sludge process effluent to the CCC.
3. Open the CCC mud valve and completely drain the chamber.
4. Open the gate from the activated sludge process effluent to allow a flushing of the CCC.
5. During flushing, wash down the walls of the CCC.
6. Close the gate from the activated sludge process effluent.
7. Go to a HMI and enter into the Reclaimed Water Screen.
8. Initiate Reclaimed Water FLUSH MODE [a] on the HMI.
9. Once the CCC is filled, allow for a minimum of 30 minutes contact time.
10. Acquire a grab sample downstream of the disinfection system at the discharge piping sample port of the CCC for analysis of Total Coliform.
11. At the HMI place Reclaimed Water Process into STANDBY MODE [b].
12. Take sample to the lab for analysis of the Total Coliform count [c].
13. After Total Coliform analysis is completed and within parameter, at the HMI place the Reclaimed Water Process into AUTO MODE [d].

[a] Flush mode initiates the chlorine pumps at a predefined rate to the distribution box and opens the gate from the distribution box to fill the CCC. The automated valve is in a closed position to the distribution system. The automated valve to the distribution box is open during the fill cycle. The distribution pump is operating during this time to recirculate the water for complete disinfection of all piping previously exposed to the activated sludge effluent.
[b] System goes into standby and suspends all pumps, automated valves and gates. Automated valves to the distribution system and distribution box are in a closed position.
[c] The median number of total coliform organisms in the reclaimed water after disinfection must not exceed 2.2 per 100 milliliters, as determined from the bacteriological results over 7 consecutive days for which analyses have been completed.
[d] All system equipment and monitoring devices are fully controlled by the PLC. The normal mode of control is to be AUTO unless a fault condition arises, during testing, during provisional use of the CCC for reclaimed water from the activated sludge process or during routine maintenance when required.