A Report on the State Reclaimed Water Facility Operators Workshop

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Table of Contents

Introduction

In response to input from reclaimed water facility operators and a continuing awareness of operational and compliance issues during the implementation of projects under the state Water Reclamation and Reuse Standards, the Department of Ecology sponsored and facilitated an operators' workshop. This workshop provided a needed, organized forum for the reclaimed water operators to meet with each other and with state regulatory agencies to focus on their priority issues. The workshop was held on April 30, 2003 at facilities provided by the City of Snoqualmie. It was well received and strongly attended. Twenty-four operators representing thirteen of the state's water reclamation facilities were present. Representatives from Ecology, the Department of Health and the Evergreen Rural Water Association also participated in the workshop. Following the workshop, operators visited and toured the City of Snoqualmie's Water Reclamation Plant.

Ecology conducted this workshop in an open discussion format with the goal of identifying and addressing the operators' top questions. Each operator in attendance expressed their desired outcomes of the workshop during initial introductions. The priorities were then discussed in further detail. Agency staff recorded the operators' issues and suggestions and organized them into the following six categories:

1. Provide Opportunities to Learn From Each Other and from State Agency Personnel
2. Include Operational Considerations During Facility Planning and Design
3. Provide Appropriate Operator Certification and Continuing Technical Education
4. Understand Operational Protocols, Standards and Permits
5. Understand Operator's Role and Responsibility for Use Areas
6. Educate City Management, Elected Officials and the Public

A short water reuse video developed by the National Water Research Institute and the Department of the Interior, Bureau of Reclamation was shown during lunch. Operators agreed that the workshop was quite valuable and they want to continue to meet with each other and the regulatory staff in this type of forum once or twice a year. Operational priorities will set the specific agenda for future workshops or section meetings. Troy Zerb, operator of the Ephrata Water Reclamation Plant, offered to provide meeting facilities at the City of Ephrata. A follow-up is tentatively planned for September or October.

Attendance List

Ecology Operator's Workshop
April 30, 2003

OPERATORS
Dan Chitwood, Sharon Page Chehalis, City of; (360) 748-0238; E-mail: pwiltzius@ci.chehalis.wa.us
Robert Jamison College Place, City of; (509) 529-2859; (509) 525-0510 (ext. 33), E-mail: cocpww@hscis.net
Troy Zerb Ephrata, City of; (509) 754-2992; E-mail wprwater@nwi.net
Rick Butler, Curtis Steinke King Co DNR South Plant – Renton; 206-684-2456; E-mail: Rick.Butler@METROKC.GOV
Eugene Sugita, Showell Osborn King Co. DNR West Point Plant; (206) 263-3831; E-mail: Eugene.Sugita@METROKC.GOV
Wayne Robinson, Terri Prather, Laurie Pierce Olympia, City of (LOTT); (360) 753-8167; E-mail: mikerhubright@lottonline.org
Johnny Parkins Pullman, City of – WSU; (509) 334-4555 (Ext. 233); E-mail: Johnny.Parkins@ci.pullman.wa.us
Richard (Rick) Wolf, Jr. (Earth Tech) Quincy, City of (DBFO); (509) 787-2423, ext 501; E-mail: Richard.Wolf@earthtech.com
Allen Watson (John Lasen, Harry Yamamoto) Royal City, City of; (509-346-1811), 509-346-2263; E-mail: RCPW@centurytel.net
Al Chrisman Sequim, City of; 360-683-3883; E-mail:reuse@olypen.com
Vern Allemand, Dane Cossett, Thomas Holmes Snoqualmie, City of; (425) 888-4153; E-mail: snoqualmie@mindspring.com
William (Willy) Breshears, Paul Olson (OMI) Walla Walla, City of; 509-527-4509; E-mail: omiwal@omiinc.com
Jon Yanasak, James Doty Yelm, City of; 360-458-8411; E-mail: yanasak@yelmtel.com
DEPARTMENT OF ECOLOGY
Kathy Cupps, P.E. State Water Reclamation and Reuse Lead Olympia (360-407-6452) E-mail: Kcup461@ecy.wa.gov
Jerry Anderson, P.E. Eastern Regional Office, Reclaimed Water Engineer Spokane (509-329-3427) E-mail: jand461@ecy.wa.gov
Otis Hampton, Operator Assistance Out-reach, Eastern Washington Yakima (509-884-6807), E-mail: Oham461@ecy.wa.gov
Carl Jones, Operator Assistance Out-Reach, Western Washington Olympia (360-407-6431), E-mail: Cjon461@ecy.wa.gov
Bob Sylvester, P.E. Northwest Regional Office, Water Quality Program Bellevue (425-649-7080), E-mail: Bsyl461@ecy.wa.gov
Paul Fabiniak, Northwest Regional Office, Water Resources Program Bellevue (425-649-4342), E-mail: Pfab461@ecy.wa.gov
DEPARTMENT OF HEALTH
Craig Riley, P.E. Reclaimed Water Engineer, Division of Drinking Water Spokane (509-456-2466) E-mail: craig.riley@doh.wa.gov
Dan Sander, P.E., Regional Manager, Division of Drinking Water Spokane (509-456-2457), dan.sander@doh.wa.gov
EVERGREEN RURAL WATER
Jill Parker, Operator Trainer Shelton (360-462-9287), jparker@erwow.org

Issue # 1. Provide Opportunities to Learn from Each Other and from State Agencies

Implementation of water reclamation and reuse projects is relatively new in Washington State. The operators indicated a need to be able to share experiences in the operation of similar facilities and continue to learn from each other. Dialog with the state regulatory agencies, Ecology and DOH, is also helpful to understand the requirements so that operators can stay within compliance.

Discussion and Suggestions:

- Operators requested a contacts list with operators' names, telephone numbers, e-mail addresses and some general information about the reclamation facilities (class of reclaimed water, design capacity, types of treatment units). This information has been compiled by Ecology and is included as an Appendix to this report.
- Operators recommended annual or twice yearly face-to-face meetings or workshops. The meetings or workshops should be held at reclaimed water facilities and rotate between the east and west sides of the state to assure the best participation. The length should not require overnight travel as that would prevent smaller utilities from participating. The City of Ephrata offered to host the next meeting.
- Explore the feasibility of establishing a statewide Reclaimed Water Operator Section under the umbrella of an operator's organization, such as the Pacific NW Clean Water Association (PNCWA).
- A web bulletin board for operators use would be beneficial. The PNCWA has a new website that may be able to provide this. Evergreen Rural Water may also be able to provide web page support. Ecology's website could also provide additional operator information. Information at various sites should be linked for ease of access.
- On-line information regarding the 'lessons learned' in the operation of various unit processes and laboratory methods would be helpful, especially to new facilities and new operators.
- Maintaining an online database of current contact information and details on treatment processes and uses at the various water reclamation plants would be of value.
- Operators should visit and tour other reclaimed water facilities whenever possible.

Issue # 2. Include Operational Considerations During Facility Planning and Design

Facilities that have not yet been constructed could benefit from learning the advantages and disadvantages that operators have experienced in constructed facilities. Operator information and input into the design process can reduce costs and improve compliance by considering features that make operation easier and less time intensive.

Discussion and Suggestions:

- Operators from cities that are now in the planning and design stage of Water Reuse need information on what they should be considering now. Communication with operators and site visits to existing facilities will help.
- Many operators noted that continuous compliance with the total coliform standard has been difficult even when turbidity standards are met. Clean sampling techniques are essential.
- Some facilities using chlorine for disinfection have increased doses up to 6-7 mg/L to maintain compliance with the total coliform standard and still get occasional spikes.
- Details in construction can be important to assure compliance in operation. For example, at one facility coliform problems occurred because the baffles in the UV chambers were not sealed ('leak around'). This could be resolved by assuring proper caulking during construction.
- Cost cutting measures in design and construction can be false economies if they make it more difficult to operate the facilities and meet permit requirements. The anticipated savings can disappear quickly as operator hours and troubleshooting costs rise. Non-compliance may also result in expensive third party lawsuits. Data on operational and maintenance costs can be used to demonstrate the need for capital expenditures.
- Easy-to-operate and reliable design is especially important for small communities where staffing levels are limited. Without these features, it can be difficult to get the required maintenance accomplished. Operators may become frustrated and leave for facilities that are less troublesome.
- Consider the design of static mixers vs. mechanical mixers when designing coagulation features (Size of mixers, especially with low flows).
- Consider design flow vs. initial and daily low flows and the impact that it will have on operations. This applies to the design of all treatment units.
- Algae will be a problem in facilities with large units such as equalization basins that are open to sunlight.
- Operators would like to better understand how a facility deals with changes in land uses and therefore beneficial uses of reclaimed water? For example, changing from irrigation of agricultural lands to urban developments may require different treatment, levels of disinfection and operational procedures**.**

Issue # 3. Provide Appropriate Operator Certification and Continuing Technical Education

Appropriate training and certification is important to the success of a water reclamation facility. Group III certification is the minimum requirement for Class A water reclamation facilities. There is a need to provide more operator education in the advanced treatment processes.

Discussion and Suggestions:

- There are very good training sources for beginning operators and for the basic operation of facilities requiring certification at the Group I and II levels. There is not much available to help operators at more advanced levels.
- There was discussion of whether to add a new certification level for reclaimed water facilities. Operators were split in opinion as to whether or not this was desirable. Most operators thought that an endorsement in addition to existing wastewater operators' certification would be more workable than a new certification requirement. Endorsement could be obtained through the completion of a specific training class or workshop.
- More stringent experience requirements could result in difficulty in attracting and retaining qualified operators in small communities. Any additional requirements should maintain flexibility and consider the needs of small communities. Operators noted that city officials need to realize their need for training, and budget for and allow them to attend the needed workshops and classes. There was also discussion on the merits of pooling operators to meet the needs of several small communities in close proximity. Most thought that this could be cost effective but might be politically difficult to achieve.
- Operators agreed that certification should be at a professional level and not be too easy to obtain. They want to be recognized for the level of work they perform. The operators also wanted to assure that the quality of the work and actual job performance counted.
- Several operators mentioned that the State of Idaho has a good program for advanced training of operators and could serve as a model for Washington.
- Operators also noted that there is some very good software available for operator training.
- WETRC, PNCWA, Evergreen Rural Water, Ecology and DOH should be approached to provide more comprehensive advanced operator training. They may be able to work together to meet operator's training needs.
- Reclaimed water operators use many of the treatment techniques common to drinking water systems and the distribution systems. However, operating a Class A reclamation facility is considerably more challenging than either traditional wastewater or drinking water facilities. Operators wanted DOH to recognize the level of skill required for Class A reclaimed water facilities and allow continuing education units (CEUs) to count toward maintaining their drinking water certification requirements.
- Operators noted a need for more education on the use of on-line monitoring equipment, proper dosing of coagulants, the various types of filtration systems (sand, cloth disk media filters, and membranes), and high-level disinfection systems (particularly UV)

- Additional training on laboratory requirements and clean sampling procedures would be beneficial. Operators discussed approved laboratory methods for total coliform. Use of the IDEXX Colilert/Quanti-tray methodology vs. standard MPN techniques.

Issue #4. Understand Operational Protocols, Standards and Permits

Operators expressed a need to better understand appropriate operational protocols. They wanted to know what to do when permit limits were exceeded or other violations occurred. Operators found the existing state standards difficult to read.

Discussion and Suggestions:

- Operators and agencies agreed that the development of an operator oriented, "plain English" implementation manual for the standards would help.
- Operators wanted to know whether to increase disinfection or shut down flows to use areas in the event of a coliform violation, especially for single or sporadic occurrence. There is no provision for exceeding total coliform standard although results are not back from laboratory for 24 hours. This is more stringent than drinking water or California standard. (i.e., California allows one per month and Washington State drinking water standards require meeting standards 95% of the time).
- State agencies suggested that operators should develop facility specific operating protocols that would help prevent the possibility of a violation. These could include tracking turbidity and disinfection dose levels to determine what levels of the on-line monitoring parameters will consistently assure compliance with the permit limits. State agencies noted that it is usually better to retain water that did meet the reclaimed water standards for additional treatment or alternative disposal than it is to discharge inadequately treated water to the use area.
- State agencies have discretionary policies on enforcement; however, it would still be helpful for "Standard Operating Procedures" to define what a coliform violation really means. A single exceedance may not really be an operational problem due to the redundancies built into the facility.
- Operators are concerned with the possibility for third party lawsuits.
- Operators wanted more understanding of the need for and proper frequency of priority pollutant scans. There was some discussion of pre-treatment requirements and provisions of the Clean Water Act for discharges to surface waters.
- Operators wanted to know how their permit requirements were affected when reclaiming the water and not discharging to surface or ground waters? Did they still need to monitor for all parameters?
- Small communities with limited budget and staff have difficulty when extensive monitoring is required. Operators asked if monitoring frequencies could be reduced. State agencies indicated that this may be possible but that facilities would have to show how they would provide equivalent health and environmental protection.
- Operators requested additional discussion and guidance on quality assurance and control procedures (QA/QC) for sample testing and process control.

Issue # 5. Understand The Operator's Role and Responsibility for Use Areas

Operators need to better understand their role and responsibility and potential liabilities for use areas.

Discussion and Suggestions:

- Operators asked if the operator-in-charge was responsible for use area. When the user is not the municipality and they do not use the reclaimed water in an approved manner, what is the operator's role?
- Operators also wanted to know what recourse a municipality had to enforce violations in the use areas. They noted that some end users are not being responsible in the use and following the safeguards in the state standards.
- State agencies indicated that the generator of the reclaimed water is the Permittee and is ultimately responsible for the distribution and use of the water. State agencies explained that this provision requires a strong legal and binding User Agreement and City Ordinance to protect all parties.
- Examples of User Agreements would be very helpful to operators and communities. Copies of different types of User Agreements or links could be posted on the Ecology webpage for review and use by the Permittees.
- Operators noted a need for more training to users regarding the appropriate use of reclaimed water.
- King County mentioned that they had a training program for users who took water via truck for construction purposes. The users then had to sign off that they had received the training. This may be usable as a model for other facilities.

Issue #6. Educate City Management, Elected Officials, and the Public

There is a need to educate utility managers, elected officials and the public of the responsibilities, requirements and benefits surrounding the use of reclaimed water. The owners of Water Reclamation facilities have a significant responsibility to assure that their facilities are operated and maintained at the highest level. Operators can provide a great deal of public education and information.

Discussion and Suggestions:

- Utility managers and elected officials do not always understand what it takes to operate a water reclamation facility (i.e., operator's time, skill and experience, equipment maintenance, monitoring requirements and laboratory analyses, storage, distribution and use and recordkeeping requirements).
- More education would help utilities make sound planning, staffing and budget decisions.
- Operators need to have their skills recognized and receive a livable wage. To attract, motivate and retain the high level of skilled operators needed, salaries must be commensurate with responsibilities. This is particularly challenging for small communities.
- Operators can provide helpful information to management by recording and organizing operational and maintenance data. This data and on-going dialog with managers helps the managers understand and support needed budgets including necessary fee increases.
- Tours of the treatment facilities and use areas help city managers, elected officials and citizens understand the complexities and benefits of reclaimed water. Actual hands-on experience can be more valuable than numerous discussions. Potential users should be invited to tour the treatment facilities and see other use areas.
- Active participation in school programs, including facility tours, is valuable to teach children (and parents and teachers) the importance of water reclamation and reuse.
- The NWRI Water Recycling Video could be used as an educational tool at meetings and schools. Any public education needs should always include and identify concerns of the public and be tailored to those needs.

An Operators List of Water Reclamation Facilities

April 30, 2003

Chehalis, City of (Lewis County) **Operator in-charge:** Patrick Wiltzius **Operators:** Dan Chitwood, Sharon Page **Phone:** (360) 748-0238 **E-mail:** pwiltzius@ci.chehalis.wa.us **Address:** P.O. Box 871, 2007 N.E. Kresky Ave Chehalis, WA 98532 **Class:** (Future) A **Uses:** (future) Poplar tree irrigation	**Capacity:** WWTP Max. Month Capacity = 6.0 MGD; WWTP Peak Flow = 13.0 MGD Reclaimed Water Max. Month = 3.5 MGD **Treatment System:** Activated Sludge **Coagulation:** (Future) **Filtration System:** (Future) Dynasand Sand Filter **Disinfection System:** UV with Cl2 for Reclaimed Water System
Cheney, City of (Spokane County) **Operator in-charge:** Dan Ferguson **Contact:** William S. Brenner (Water/WW Manager) **Phone:** (509) 235-7302 **E-mail:** dcf@ci.cheney.wa.us **Address:** 110 Anderson Road, Cheney, WA 99004-1866 **Class:** (Future Class A) **Uses:** (future irrigation of EWU campus and local parks)	**Capacity:** 2.70 MGD (maximum month), 6.0 MGD (Peak) **Treatment System:** Activated Sludge, anoxic basins, 'Carousel' Oxidation Ditch **Coagulation:** (Future), polymer/coagulant **Filtration System:** (Future) **Disinfection System**: Chlorination/Dechlorination
College Place, City of (Walla Walla County) **Operator-in-charge:** Robert Jamison, **Operators**: Robert Fowler, Kevin Anderson, Craig Delph, Calli Olsen **Phone:** (509) 529-2859; 509-525-0510 (ext. 33) **E-mail:** cocpww@hscis.net **Address: (mail)** 625 S. College Avenue, College Place, WA 99324, (location) 430 Owens Rd. Walla Walla, WA. 99362 **Class:** A, Nitrogen removal **Uses:** Stream flow augmentation, tree irrigation	**Capacity:** 1.65 MGD (maximum month), 2.00 MGD (Peak) **Treatment System:** Activated Sludge, Sequencing Batch Reactors **Coagulation:** In-line mixer w/polymer **Filtration System:** Aqua Disk (Aqua-Aerobics) **Disinfection System:** Medium pressure, high intensity UV (Aquionics In-Line)
Ephrata, City of (Grant County) **Operator-in-charge:** Troy Zerb **Wastewater Manager:** Paul Wasko **Phone:** 509-754-2992 **E-mail:** wprwater@nwi.net **Address:** 121 Alder S.W., Ephrata, WA 98823 **Class:** A plus nitrogen removal **Uses:** Ground water recharge, in-plant, Landscape irrigation, construction water	**Capacity:** 1.12 MGD (maximum month) - 1.96 MGD (peak) **Treatment System:** Activated Sludge - 'Carousel' Oxidation Ditch **Coagulation:** In-line static mixer, Polymer **Filtration System:** Continuous Backwash Upflow Sand Media (Waterlink) **Disinfection System:** Low-pressure, low-intensity UV (Trojan)
Holmes Harbor Sewer District (Island County) **Operator-in-charge:** Mark Dumke **Phone:** 360-331-4636 **E-mail:** sbr@whidbey.com **Address:** P.O. Box 1330, Freeland, WA 98249 **Class:** A **Uses:** golf course irrigation	**Capacity:** 0.2 MGD (maximum daily) **Treatment System:** Collection System, Septic Tank Effluent Pressure, Activated Sludge, Dual Sequencing Batch Reactors **Coagulation:** Flocculation; polymer **Filtration System:** Traveling Bridge Sand Filter **Disinfection System:** sodium hypochlorite
King Co DNR South Plant – Renton (King	**Capacity:** 1.0 MGD (maximum day)

County) **Operator in-charge:** Rick Butler **Operator:** Curtis Steinke 206-684-2456 **Contact:** Mike Fisher – South Plant Manager **Phone:** 206-684-2400 – (Fax: 206-684-2448) **E-mail:** Rick.Butler@METROKC.GOV **Address:** 1200 Monster Road S.W., Renton, WA 98055 **Class:** A **Uses:** Irrigation	**Treatment System:** Air Activated Sludge w/o nutrient removal **Coagulation:** In-line mixing, Alum with potential for polymer **Filtration System:** Upflow Sand Media (Parkson Dynasand) **Disinfection System:** Hypochlorite
King Co. DNR West Point Plant (King County) **Operator in-charge:** Eugene Sugita **Operator:** Showell Osborn (206**)** 263-3831 **Contact:** Richard [Dick] Finger, West Point Manager **Phone:** (206) 263-3817 **E-mail:** Eugene.Sugita@METROKC.GOV **Address:** 1400 Utah Avenue W., Seattle, WA 98199 **Class: A** **Uses:** On-site irrigation	**Capacity:** 0.70 MGD (maximum day) **Treatment System:** Biological Treatment System **Coagulation:** In-line mixing, alum w/polymer **Filtration System:** Upflow Sand Media (Dynasand) **Disinfection System:** Chlorine
Medical Lake, City of (Spokane County) **Operator-in-charge:** Steve Cooper **Operators:** Chuck Clawson, Bill Ahlf, Dan Dorshorst, (Lab - Casie Blake) **Public Works Director:** Doug Ross **Phone:** (509) 299-6860; 509-299-7715 **E-mail:** wwtp@icehouse.net **Address:** P.O. Box 369, Medical Lake, WA 99022 **Class:** A, Nitrogen and phosphorus removal **Uses:** Lake level augmentation	**Capacity:** 1.85 MGD (maximum month**)**, 4.10 MGD (Peak) **Treatment System**: Activated Sludge, 'Carousel' Oxidation Ditch w/anoxic and anaerobic selector basins) **Coagulation:** In-line mixer w/polymer **Filtration System:** Traveling Bridge granular media **Disinfection System:** Low-pressure, low-intensity UV (Trojan)
North Bay Case Inlet (Mason County) **Operator in-charge:** Steve Cole **Operator:** Dave Dougherty, Pat Reidt **Utilities Project Manager:** Tom Moore **Phone:** (360) 280-0584 (pager = 360-971-9829) **FAX:** (360) 280- **Address:** P.O. Box 578, Shelton, WA 98584 **Class:** A **Uses:** Irrigation (Existing 20-acre forest owned by DNR), groundwater recharge (surface percolation), WWTF non-potable water	**Capacity:** 0.365 MGD (maximum month), 0.608 MGD (peak) **Collection System:** Grinder Pump System **Treatment System:** Activated Sludge, Sequencing Batch Reactor **Coagulation:** mixing, polymer/coagulant **Filtration System:** Disk Fabric Filter (Aqua Aerobics) **Disinfection System:** Low-pressure Low-intensity UV
Olympia, City of – LOTT (Thurston County) **Operation Supervisor:** Laurie Pierce **Operators:** Wayne Robinson, Terri Prather **Water Quality:** Mike Rhubright **Phone:** (360) 753-8167 **FAX:** (360) 664-2336 **E-mail:** mikerhubright@lottonline.org **Address:** 2101-4th Ave. East, Olympia, WA 98506-4729	**PLANNING / DESIGN** **Capacity:** 1.0 MGD (maximum month) **Treatment System:** Activated Sludge **Coagulation:** In-line mixing, polymer **Filtration System:** Up flow sand filter (Dynasand) **Disinfection System:** Secondary UV and Chlorine on Class A

Class: A **Uses:** Irrigation and commercial/industrial water, groundwater recharge, WWTP process, (planned Submerged MBR w/discharge to created wetlands)	
Pullman, City of - Washington State University (Whitman County) **Operator in-charge:** Johnny Parkins **City Contact:** Mark Workman (PW Dir.); Art Garo (Utility Engineer.) **Phone:** (509) 334-4555 (Ext. 233) **E-mail:** Johnny.Parkins@ci.pullman.wa.us **Address:** (mail – 325 SE Paradise St.), NW 1025 Guy, Pullman, WA 99163-0249 **Class:** A **Uses:** Irrigation (school, parks, golf)	**Capacity:** 2.70 MGD (maximum month), 13.0 MGD (Peak) **Treatment System:** Activated Sludge, Aeration Basins **Coagulation**: (Future Installation) **Filtration System:** Proposed Aqua Disk (Aqua-Aerobics, Pile Cloth **Disinfection System**: Chlorination/Dechlorination
Quincy, City of (Grant County) **Operator-in-charge (DBFO):** Richard (Rick) Wolf, Jr. (Earth Tech), Travis Kirk (Asst. Mgr.) **Operators:** Paul Worley, Rich Simpson, Ed Moore, Gary Sundberg, Ron Roduner **City Contact:** Daniel Frazer, Public Wks Dir. **Phone:** (509) 787- 3523 **E-mail:** Daniel Frazier [dfrazier@nwi.net] **EarthTech Contact:** Rick Wolf, Operations Mgr. **Phone:** (509) 787-2423, ext 501 **E-mail:** Richard.Wolf@earthtech.com **Address:** Earth Tech, P.O. Box 756, Quincy, WA 98848 **Class:** A plus nitrogen removal **Uses:** Ground water recharge, in-plant	**Capacity:** 1.54 MGD (maximum month), 2.11MGD (Peak) **Treatment System:** Activated Sludge, Sequencing Batch Reactors **Coagulation:** In-line mixer w/polymer **Coagulation:** **Filtration System:** Upflow Sand Media (Dynasand) **Disinfection System:** High intensity, low pressure UV (IDI)
Royal City, City of (Grant County) **Operator-in-charge:** John Lasen (City contract) **Operators:** Allen Watson (509-346-1811) **PW Director:** Harry Yamamoto **Phone:** 509-346-2263 **E-mail:** RCPW@centurytel.net **Address:** P.O. Box 1239, Royal City, WA 99357 **Class:** A plus nitrogen removal **Uses:** Ground water recharge, in-plant, crop irrigation	**Capacity:** 0.25 MGD (maximum month), 0.50 MGD (peak) **Treatment System:** Activated Sludge, Package Plant (AeroMod) **Coagulation:** In-line mixer w/polymer (magnasol) **Filtration System:** Disk Fabric Media (Aqua Aerobics – felt*) **Disinfection System:** Low-pressure, low-intensity UV (Trojan) ***** Installing Aqua Aerobics Pile Cloth filter this year
Sequim, City of (Clallam County) **Operator in-charge:** Al Chrisman **Operators:** David Howe, James McBride, Marty Hogoboom, Arnold Tjemsland **Phone:** 360-683-3883 **E-mail:** reuse@olypen.com **Address:** 152 W. Cedar, Sequim, WA 98382 **Class:** A **Uses:** Streamflow augmentation, constructed wetlands, irrigation (city park, highway rest stop), toilet flushing (City Park, City PW shop), WWTF non-potable water (process)	**Capacity**: 0.79 MGD (maximum month), 1.8 MGD (peak) **Treatment System:** Activated Sludge, 'Carousel' Oxidation Ditch with Class A biosolids **Coagulation:** In-line mixer w/polymer **Filtration System:** Down flow Anthracite Media (US Filter) **Disinfection System:** Low-pressure, low-intensity UV (Trojan)

Snoqualmie, City of (King County) **Operator in-charge:** Vern Allemand **Operators:** Dane Cossett, Thomas Holmes, Dean Collins **Phone:** (425) 888-4153 (FAX: 425-888-4379) **E-mail:** snoqualmie@mindspring.com **Address:** P.O. Box 987 Snoqualmie, WA 98065 **Class: A** **Uses:** Golf Course Irrigation, Businesses Landscaping, City right-away landscaping	**Capacity:** 1.24 MGD (maximum month), 2.15 (Peak) **Treatment System:** Activated Sludge, Oxidation Ditch **Coagulation** (added prior to clarifier): CCI Chemical (RO-5000) **Filtration System:** Traveling Bridge **Disinfection System:** UV w/hypo chlor
Sunland Water District (Clallam County) **Operator in-charge:** Willy Burbank **Supervisor/Operator:** William Thomsen, II **Phone:** (360) 683-3880 **FAX:** (360) 683-3324 **Address:** 137 Fairway Drive, Shelton, WA 98382 **Class:** A **Uses:** Planning golf course, park, stream flow, infiltration	**Capacity:** 0.130 MGD (maximum month), 0.285 MGD (peak) **Treatment System:** Sequencing Batch Reactor **Coagulation:** Flocculation basin, polymer (design) **Filtration System:** Cloth Disk Filter (Aqua Aerobics) **Disinfection System:** Chlorine (proposed UV)
Walla Walla, City of (Walla Walla County) **Operations Manager (OMI):** William (Willy) Breshears **Operators:** Paul Olson **City Contact:** Frank Nicholson, Utility Engineer **Phone:** 509-527-4509 **E-mail:** omiwal@omiinc.com **Address:** OMI, 572 Hatch Street, Walla Walla, WA 99362-5501 **Class:** A **Uses:** (future Installation)	**Capacity:** 9.60 MGD (maximum month), 12.30 MGD (Peak) **Treatment System:** Activated sludge, Trickling Filters & 'Carousel' Oxidation Ditch (w/ anoxic and anaerobic selector Basins **Coagulation: (**Future Installation) polymer / coagulant **Filtration System:** Existing Traveling Bridge (mixed media) **Disinfection System:** Sodium hypochlorite (on-site generation) (Future = UV disinfection)
Yelm, City of (Thurston County) **Operator in-charge:** Jon Yanasak Operators: James Doty, Randy Hatch **Phone:** 360-458-8411 **E-mail:** yanasak@yelmtel.com **Address:** P.O. Box 479, Yelm, WA 98597-4079 **Class:** A **Uses:** Irrigation at schools, park ponds	**Capacity:** 1.0 MGD (maximum month), 2.50 MGD (Peak) **Treatment System:** Collection System = Septic Tank Effluent Pressure, Activated Sludge: Sequencing Batch Reactor **Coagulation:** In-Line Mixer w/Poly Aluminum Chloride **Filtration System:** Upflow Sand Media (Dynasand) **Disinfection System:** Chlorine