

Alternative Water Supplies
Draft Discussion Paper
for the
Drinking Water Advisory Group

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Introduction

This paper describes the Department of Health, Office of Drinking Water's (ODW) current approaches and pending changes to existing practice for the use of various non-traditional or "alternative" water sources, including:

- Trucked and Hauled Water
- Rainfall Catchment
- Seawater Desalination Using Reverse Osmosis
- Temporary Water Rights
- Interruptible Water Rights
- Leased Water Rights
- Purchased Water Agreements
- Bottled Water
- Point of Use / Point of Entry

Federal laws and rules, Washington State law, and State Board of Health rules establish basic standards for the development and use of public drinking water supplies. We may advise, but do not regulate alternate drinking water supplies for individual water supplies. Local governments, which regulate individual water supplies, are not obligated to adapt their regulations and policies to the positions taken in this paper for their decisions.

Key principles applied in reaching these positions on alternative water supplies are:

- Our mission is to protect public health.
- Every purveyor must obtain drinking water from the highest quality source feasible.
- Maintaining multiple barriers of protection between the source and consumers protects public health.
- Use of alternative water supplies must support the long-term sustainability of a water system.
- Alternative water supply schemes must be effective for the size, ownership, capacity, and complexity of the water system, and must be accompanied by an effective regulatory scheme.
- We are good stewards of our program resources, and we will apply our resources to achieve the most benefit for the greatest population.
- The source of supply must reliably meet or exceed the maximum daily demand by the system's consumers.

Trucked or Hauled Water

Several purveyors have requested ODW approval for their plans to transport drinking water by trucks or other hauled containers and deliver the water into cisterns. Under current regulations, we cannot approve trucked or hauled water as a permanent drinking water supply for any public water system.

Approving a trucked or hauled water source would conflict with federal (Center for Disease Control and Prevention) policy, which states:

Bulk water hauling may be acceptable as a temporary solution to a water shortage; however, it is not an acceptable long-term solution for system infrastructure deficiencies such as inadequate sources of supply. Source: [CDC web page](#)

The 1996 Safe Drinking Water Act (SWDA) amendments revised the definition of “public water system” by inserting the term “constructed conveyance”:

A public water system (PWS) is a system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen service connections or regularly serves at least twenty-five individuals.

Congress clarified their intent by specifying that a “constructed conveyance does not include water that is trucked or delivered by a similar vehicle” (HR 3604 Report 104-632 Part I Title IV).

According to EPA’s water system guidance (WSG 6/6A and WSG H10), a water hauler is a public water system if the hauler delivers to 15 or more connections or 25 or more people at least 60 days per year. This definition applies even if these connections do not share any common water distribution facilities.

To effectively implement a regulatory program authorizing the permanent use of trucked or hauled water, we would need to amend our regulations and coordinate with Ecology on water resource and municipal water law issues. Changes to the program would also require allocating scarce resources for the benefit of a very few consumers.

Temporary use of trucked or hauled water

Trucked water is an acceptable short-term water supply alternative, as specified in ODW Policy F.11. A purveyor of a Group A water system must provide a short-term alternative water supply (such as trucked water) when the system’s water supply:

- Has acute chemical contamination present over the maximum contaminant level (MCL).
- Has chronic chemical contamination at a concentration the Department of Health considers acute.
- Is not capable of providing water to consumers.

We expect a purveyor to notify ODW or the local health jurisdiction (LHJ) before trucked water is made available to the public. When a protracted need for trucked water is anticipated, a Group A purveyor would be expected to enter into a compliance agreement with ODW to use trucked water until a permanent, safe, and reliable supply is restored. The compliance agreement would describe conditions on the source of water that may be used, transport equipment, record keeping and reporting, and in-transit disinfection. In addition, LHJs may impose additional operating conditions on water haulers and purveyors receiving hauled water.

Key concerns

- Increased vulnerability to contamination: A “truck-and-store” strategy requires frequent handling of potable water under unpressurized conditions that increases risks that cannot always be avoided despite best practices and intentions.
- Reliability and sustainability issues: Circumstances would likely arise in which the failure of contracts between a supplier, the hauler, and the receiving purveyor would threaten the continuous availability of potable water for consumers. The possibility exists that an entire community would be vulnerable to an interruption in supply if a licensed hauler stops providing water delivery service.
- Financial considerations: Trucking or hauling water is expensive. ODW staff question whether the business model can be sustainable, especially to future customers of most proposed (new) water systems.
- Water resource and environmental sustainability issues.

What do other states do?

We surveyed other states and territories through the Association of State Drinking Water Administrators (ASDWA), and received 36 responses. Of the responses:

- Twenty-two states do not approve hauled water as a permanent water supply for public water systems.
- Five states approve the practice on a very limited basis (e.g., for existing systems, when no other option existed).
- Nine states will approve hauled water for a permanent water supply for at least one type of public system.

The State of Alaska has the most substantial program and allows trucked water as a permanent water supply for any type of public water system. In Alaska, the marketplace dictates the reliability and level of service needed to meet the needs of individuals and “non-public tank systems” (Group A systems supplied through a cistern filled by a truck). There are circumstances unique to Alaska that drive their citizens’ need for hauled water, including the difficulty in constructing and operating a water distribution system in permafrost.

The State of Alaska regulates over 100 hauling companies as public water systems. Each company may have multiple trucks. The design and operation of each truck is reviewed and approved by the state prior to being put into service. These haulers are assigned monitoring requirements, operator certification requirements, and undergo routine sanitary surveys.

Options we evaluated

A purveyor or developer might request approval to use trucked or hauled water as a permanent drinking water supply when the purveyor:

- Cannot achieve compliance with a primary or secondary water quality standard and desires to avoid water quality treatment.
- Has insufficient financial resources to maintain a groundwater or surface water supply.
- Has insufficient water rights to meet growth needs.
- Permanently loses an existing water supply and has no other physically available supply.
- Needs a back-up water supply to support a rooftop rainfall catchment supply.
- Perceives there would be cost savings over development of traditional water supply.

We evaluated if there were limited circumstances for the permanent approval of trucked water, including:

- An existing, non-expanding system.
- A system without residential use, with no possibility of any change in use to residential use.
- When a single entity owns the facility (building) which is supplied by trucked water, the trucks used to haul the water, and the source of water used to fill the trucks.
- When the source of water is very close to the end use.

Based on our evaluation, we would need about \$180,000 (1.5 FTE) and two years of time to develop a regulatory oversight program that effectively addresses the greater vulnerability to contamination. We estimate that ongoing costs would be about \$60,000 to maintain the program. We've determined that the costs of developing and implementing an effective program outweigh the benefits because the program would benefit so few consumers.

Rainfall Catchment

In some locations, rainfall may be considered the only legally or physically available water supply. In addition, public interest toward more environmentally sustainable development has spurred interest for approval of public drinking water systems using harvested rainfall.

Because of the susceptibility to contamination, we require any drinking water system that uses rainfall catchment as a potable water supply to provide treatment that meets the Surface Water Treatment Rule (SWTR), in chapter WAC 246-290, Part 6, which includes filtration and disinfection. The water system must also be operated by a certified operator.

All harvested rainfall proposals are reviewed based on their own merits, just like any other proposed public drinking water supply, with a focus on ensuring the applicant has:

- A reliable supply (i.e., adequate rainfall or an adequate back-up supply) without depending on trucked water.
- The managerial, financial, and technical capacity needed to sustain the rainfall catchment treatment infrastructure and to competently operate those treatment facilities.
- Satisfied applicable Coordination Act and Satellite Management requirements.

On October 12, 2009, the Department of Ecology issued Interpretive Policy Statement 1017, clarifying that a water right is not required for rooftop rainwater harvesting. Once collected, the harvested rainwater may be put to any beneficial use on the same parcel as the roof from which the water was captured. To qualify as rooftop-collected rainwater, the roof collecting the rainwater must be part of a fixed, aboveground structure with a primary purpose other than for the collection of rainwater.

Currently, rainfall catchment may be approved as a sole source of supply for a new or existing Group A or Group B public water system. ODW does not require an auxiliary supply to back-up rainfall catchment systems. However, if a catchment system is proposed as the sole source of supply, the project proponent must demonstrate sufficient reliability for the intended use. There are currently no Group A public water systems operating a rainfall catchment water supply, although the six-story Bullitt Center Building (downtown Seattle) will soon begin operating its rainfall rooftop catchment system.

Rainfall catchment will not be approved as a source for a new Group B water system by ODW after new rules for Group B water systems go into effect (in January 2014).

Any public water system may promote the use of untreated or partially treated rainfall to aid in meeting its customers' non-potable water supply needs. We expect public water systems to implement the appropriate cross connection control measures where a service connection employs a non-potable rainfall catchment source for an auxiliary supply.

Individual homeowners may develop a water supply using rainfall catchment, subject to local government standards. A number of local governments permit its use for individual water supplies.

Key concerns

Researchers have identified potential pathogens present in water captured off rooftops around the world. Pathogen sources include wind-blown soil, bird droppings, rodents and other climbing mammals, and insects. EPA's Microbial and Chemical Exposure Assessment Division currently characterize collected rainfall as surface water, and consider it subject to the requirements of the SDWA if used as a potable water supply.

What do other states do?

ASDWA completed a survey of other states' approaches to approving public water systems using rainfall collection.

Of the 15 states that provided feedback on the survey, Hawaii, Louisiana and Alaska reportedly allow the use of rainfall catchment and do not categorically classify it as surface water on EPA's source inventory. This practice is intended to maintain their flexibility in determining the appropriate level of treatment on a case-by-case basis.

The remaining states that responded either consider a rainfall catchment source as a surface water source subject to the Surface Water Treatment Rule (SWTR), or do not address the issue in policy or rule.

Options we evaluated

- Approve only non-residential uses.
- Do not approve rainfall catchment for a system with access to an adequate back-up supply.
- Do not approve sources using rainfall catchment as a potable water supply.

Reducing or eliminating new Group A public water systems that use rainfall catchment would avoid the creation of small Group A public water systems employing operator-intensive surface water treatment systems. This would allow ODW to focus our resources to provide technical assistance and regulatory oversight for public water systems that serve a larger population.

Reducing or eliminating new Group A public water systems that use a rainfall catchment source would also preclude some innovative and environmentally sensitive projects. In some areas of the state, rainfall catchment may be the only possibility for a developer to build their proposal.

Seawater Desalination Using Reverse Osmosis

Our state has over 3,000 miles of tidal shoreline. As in many parts of Washington, water resources are limited and fresh water supplies are increasingly stressed to meet the demands of a growing population. Seawater desalination using reverse osmosis (RO) is currently used as a potable water supply for public water system around the northern Puget Sound region. Most systems that use seawater RO depend on the seawater RO supply during the summer months when demand is highest and groundwater supplies are limited by seawater intrusion or declining groundwater levels.

Near-shore sources of seawater are open to the atmosphere, subject to near shore surface run-off, and vulnerable to vessel holding tank discharges. Despite this, seawater RO is not subject to requirements of the SWTR (treatment, monitoring and reporting, and so forth). Instead, treatment and monitoring requirements are consistent with the requirements for ground water sources. Purveyors operating seawater RO are subject to the applicable operator certification requirements of chapter 246-292 WAC.

Seawater RO is currently approved as a permanent source of supply for new or existing public water systems. Under our current practice:

- Seawater RO treatment is required to provide 4 log virus disinfection using chlorine (CT 6).
- RO membranes must be certified under NSF 61.
- Utilities are required to conduct continuous monitoring for total dissolved solids (TDS) as a measure of membrane integrity.
- Utilities must submit monthly treatment plant reports (TDS, chlorine, filtrate volume, pH, etc.).

Currently, 14 Group A public water systems operate seawater RO treatment plants (11 are in the San Juan islands). In addition, two Group B systems use seawater RO (both are in the San Juan islands).

Seawater RO will not be approved as a source for a new Group B water system by ODW after new rules for Group B water systems go into effect (in January 2014).

Seawater desalination using RO membranes is a proven technology that is used all over the world. RO membranes have a pore size of approximately 0.0001 Micron. This pore size is small enough to prevent a significant majority of salt ions (chloride and sodium for example) from passing through the membrane. By comparison, *Cryptosporidium* oocytes are approximately 2 to 5 microns in diameter.

There is no standard in the SWTR, or the subsequent amendment, Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) specifying the circumstances under which its provisions must be applied to seawater. According to EPA, it is up to the states how and when, if at all, to apply SWTR or LT2ESWTR requirements to seawater. Our decision in the early 1990's not to apply the SWTR to seawater was strongly influenced by EPA guidance (WSG 66, July 1991; WSG H35, December 1999).

ODW added disinfection requirement for 4-log virus inactivation stemming from concerns with viruses' ability to cross the RO membrane barrier and in order to provide an additional distribution system barrier.

Key concerns

Since publication of these EPA guidance documents, research has confirmed the viability and occurrence of drinking water pathogens, including virus and protozoa, in near-shore seawater/marine water sources. In response to our recent inquiries to EPA on the application of LT2ESWTR requirements to near-shore (not open seas) sources, we received a reply indicating EPA considers near-shore seawater to be subject to the requirements of LT2ESWTR. However, that was a staff opinion, and was not considered the minimum regulatory standard that states must follow.

What do other states do?

Oregon: Oregon reports no desalination treatment plants used as public drinking water supplies. Oregon would not apply the requirements of the SWTR to proposals from public water systems intending to use seawater RO.

Alaska: Alaska requires 4-log virus disinfection treatment for seawater.

California: California reports that seawater desalination projects are considered surface water treatment projects, and public water systems are required to comply with the California Surface Water Treatment Rule.

Florida: Florida reports one seawater desalination plant, located in Tampa Bay. The 25 MGD Tampa Bay plant is reportedly the largest operational seawater RO plant in the US. Florida regulates the plant under the LT2ESWTR.

Options we evaluated

ODW staff evaluated whether to apply the LT2ESWTR to systems using seawater RO. We determined that imposing LT2ESWTR requirements would provide no or minimal additional public health protection, and would impose higher costs to small water systems.

Temporary Water Rights

Temporary water rights are generally issued under one of these two scenarios:

1. For short-term use with an associated expiration date.
2. For the use of water while a water right permit application is being reviewed by Ecology (prior to the permit being issued).

Short-term temporary permits are not presumed to be a recurring use of water. For example, under a declared drought emergency, Ecology may issue a temporary water right to an existing purveyor. Short-term temporary permits might also be issued for dust control or other construction purposes.

Temporary water right permits can also be approved if Ecology is confident a traditional water right permit will subsequently be approved. However, Ecology is unlikely to approve a temporary water right permit for a new or expanding public water system if there is any permanent nature of the proposed use of the water. More likely, Ecology would require the applicant to proceed with processing a traditional water right under their cost reimbursement expedited review process, or under the provisions of the Hillis rule (WAC 173-152) if the application can meet public health and safety criteria.

Ecology's 1992 Policy #1035 sheds light on the proper role of a temporary water right, while providing direction to Ecology staff on the appropriate circumstances for issuing such a right.

New systems

ODW staff may approve a new public water system that is supplied solely by a source with a temporary water right only if all three of these conditions are met:

1. The water system operating under the temporary water right does not and will not provide water service to any permanent structure or permanent use.
2. The design submittal/project report reflects the expiration and non-renewal of the temporary water right in the financial section of their plan, and the local government land use decision reflects and supports the temporary use.
3. The title of the property served by the temporary water right reflects the limitations and attributes of the temporary water right, with an appropriate disclaimer (to be determined in consultation with Ecology).

Existing systems

ODW will not increase an existing purveyor's service capacity solely because a purveyor secures a temporary water right.

ODW will not approve an increase in service capacity when a purveyor seeks to apply a permanent water right made available while the purveyor uses a temporary right to justify adding more permanent connections to the water system. However, a purveyor can apply a temporary water right to a temporary municipal use, such as added irrigation to a newly planted park or ball field, or in support of construction within its service area (such as for dust control or street cleaning).

A purveyor's temporary water right can only be applied to temporary uses. ODW's planning and engineering document review and approval process ensures consistency with that approach. We will use our standard processes to evaluate applications for new or expanding systems. We will not allow temporary water rights to be used as a basis for approval, except as noted above.

Key concerns / Options we evaluated

Approving a new system or approving an increase to an existing system's service capacity based solely on the use of a temporary water right beyond the constraints outlined above increases the following risks:

- Jeopardizes water system sustainability.
- Liability for loss of property value.
- Reliance on trucked water.
- The development of multiple exempt wells, or
- Burdening system consumers with the cost to secure legal access to a water supply.

Interruptible Water Rights

Applicants for a new or expanding public water system may ask for our approval by using a source of water that requires a change from a seasonal non-interruptible water right (irrigation right) to a year-round right. In doing so, the changed right may, at certain times of the year, become "junior" to any associated in-stream flow requirement established by Ecology. Any right junior to an in-stream flow requirement is subject to interruption. At times, the water right holder would be ordered to cease use until the affected stream is above its protected (minimum) flow.

A Memorandum of Understanding (MOU) with the Department of Ecology (April 2009) specifies how we coordinate our agencies' efforts to evaluate a proposal involving an interruptible water right. The MOU is available at <http://www.doh.wa.gov/Portals/1/Documents/4200/mou.pdf>

ODW and Ecology agree that a portfolio of water rights composed of at least one uninterruptible water right is a more appropriate basis for approving new or expanding water systems instead of sole reliance on an interruptible water right. When reviewing proposals, staff assess whether the purveyor adequately compensates for the expected frequency, time of year, and duration of an Ecology-ordered interruption to one or more of its supplies. ODW and Ecology staffs look for:

- The quantity of water available in the purveyor's uninterruptible rights.
- Any additional water available through an Ecology-approved mitigation plan.
- The purveyor's capacity to balance demand with available supply.

The MOU standard for evaluation includes ensuring the purveyor has access to an uninterruptible supply (Qi) equal to 200 gallons per day (gpd) per residence (or for each equivalent residential unit) for the entire period of interruption. See *Baseline Residential Water Demand* in Appendix D of our *Water System Design Manual*. This 200 gpd minimum requirement assumes the period of interruption is brief.

If an applicant holds only interruptible water rights, Ecology will require the applicant to pursue development of mitigation measures necessary to secure an uninterruptible supply of at least 200 gpd per residence for each day during the expected interruption. Common options include:

- Aquifer storage and recovery.
- “Pump and Dump”.
- Storing treated water.

ODW evaluates the purveyor’s plan for temporary demand curtailment during periods of interruption, and advises Ecology before they finalize their water right decision about whether the proposed temporary demand curtailment measures are considered adequate to match demand with available supply without threat to the safety and reliability of the public water system. For more information, see the *Work Flow for Water Systems with Interruptible Water Rights*, found in the MOU.

If the applicant does not put forward a credible plan to limit demand to 200 gpd per ERU, ODW will increase the daily ERU volume considered necessary to meet consumers’ basic, non-discretionary water supply needs.

Key concerns

Approving a new system or approving an increase to an existing system’s service capacity based solely on the use of an interruptible water right beyond the MOU’s narrow constraints, increases the risk of:

- Unsustainable public water systems.
- Liability for loss of property value.
- Reliance on trucked water.
- The development of multiple exempt wells.
- Burdening unsuspecting consumers having to secure legal access to a permanent water supply.

Other options evaluated

Placing further constraints on the use of interruptible water rights – or denying the use of sources with interruptible water rights would also require amending our MOU with Ecology. The controls and deliberative processes in place at Ecology and Health, together with planned creation of design guidance, are intended to provide an appropriate balance between ensuring reliable and safe drinking water supplies and maintaining opportunities for economic growth that would otherwise not exist.

Leased Water Rights

A leased water right contract between an applicant and a right holder must be approved by Ecology if the proposed water use differs in any of the original right's conditions (place of use, purpose of use, and so forth). The use of leased water right contracts for new or expanding water systems risks a water supply interruption if the lease is revoked, not renewed, or a permanent right cannot be obtained prior to expiration of the lease contract.

A Memorandum of Understanding (MOU) with the Department of Ecology (April 2009) specifies how we coordinate our agencies' efforts to evaluate a proposal involving a leased water right. The MOU is available at <http://www.doh.wa.gov/Portals/1/Documents/4200/mou.pdf>

Federal-leased water, such as Bureau of Reclamation leases, is assumed to be non-revocable and renewable in perpetuity. Consequently, federal leases are considered reliable and appropriate for approval of a new or expanding water system. For the purpose of this discussion, *leased water* is confined to non-federal leased water.

ODW and Ecology require a portfolio of water rights and leased water composed of at least one permanent non-leased water right for approving a new or expanding water system. Our agencies are concerned about the potential loss of the leased component of a purveyor's water right portfolio. In reviewing a proposal, our staff assesses the purveyor's capacity to balance demand with its permanent non-leased supply.

A non-federal leased water right (e.g., a right leased from an irrigation district) is not considered sufficiently reliable to serve as the sole right when evaluating approval of a new water system. Ecology will deny the water right application (or change application) if a new water system proposal relies completely upon a lease water right.

ODW requires non-leased water right(s) to provide at least 350 gallons per day (gpd) per ERU as the maximum day demand (MDD). We may approve a lower volume based on historic water use data as supplied by the applicant.

ODW evaluates the purveyor's plan for permanent demand curtailment in the event the leased water contract is terminated and not renewed. We advise Ecology before they finalize their water right decision whether the proposed permanent demand curtailment measures are considered adequate to match demand with available supply without threat to the safety and reliability of the public water system.

If in the reviewer's judgment the applicant does not put forward a credible plan to limit the MDD per ERU value to 350 gpd, under the MOU we have the opportunity to increase the ERU water supply standard above 350 gpd.

Key concerns

Providing an approval beyond the current narrow constraints that it is currently allowed increases the risk of:

- unsustainable public water systems,
- liability for loss of property value,
- reliance on trucked water,
- the development of multiple exempt wells, or
- unsuspecting consumers burdened with the cost to secure legal access to a permanent public water supply

Other options evaluated

We evaluated allowing a new or expanding system to be approved based solely on the use of a leased water right.

Placing further constraints on the use of leased water rights or denying the use of sources with leased water rights would also require amending our MOU with Ecology. The controls and deliberative processes in place at Ecology and Health, together with planned creation of design guidance, are intended to provide an appropriate balance between assuring reliable and safe drinking water supplies and maintaining opportunities for economic growth that would otherwise not exist.

Purchased Water Agreements

Over 200 Group A public water systems ranging in size from one to 66,000 connections depend on at least one intertie as a permanent source of supply. About $\frac{3}{4}$ of the systems (156) rely on a single wholesale supplier for all their water.

WAC 246-290-132 addresses requirements for approval and use of interties between public water systems. Under our rules, a purchased water supply is considered a “non-emergency” intertie. Purveyors using purchased water as a drinking water supply must address how the intertie improves the overall system reliability and enhances the manageability of the water system (see WAC 246-290-132 (3)(a)(v)).

It is not unusual for new or existing public water systems to be supplied in whole or in part by water secured through a purchased water agreement. We commonly approve planning and engineering documents based on one of the following forms of agreement:

Regional water supply agreement: is when a consortium of purveyors receive their water supply from source and transmission infrastructure held in common and proportional ownership. This shared infrastructure is operated and maintained by the member systems. There is little to no increased risk of interruption in supply to any individual member, since each member is an owner to a proportional share of the source and transmission capacity.

Bought-in wholesale capacity agreement: is when a single utility wholesaler permits one or more other utilities to buy-in to the wholesaler's supply and transmission infrastructure, similar to a retail water customer paying a system development charge to a utility for the privilege of receiving water service from that utility. The participating utilities must pay for water purchased from the utility, based upon an agreed rate structure (not unlike a retail water customer). There is little to no increased risk of interruption in supply to any of the participating utilities.

Purchased wholesale water supply agreement: is when a single utility wholesaler agrees to sell water to one or more consecutive utilities. There is no ownership stake held by any of the consecutive systems. Under agreements that may not be renewable or may be terminated at the option of the wholesaler (such contracts are common); there is a greater risk of interruption in supply compared with the consecutive system operating its own supply.

ODW assesses reliability under the following guidance:

Regional water supply agreement: The water supply capacity available through the agreement should be considered equally reliable to a purveyor's own source and storage infrastructure when reviewing a planning or engineering document, including a service capacity evaluation.

Bought-in wholesale capacity agreement: The water supply capacity available through the agreement should be considered equally reliable to a purveyor's own source and storage infrastructure.

Purchased wholesale water supply agreement: Requirements for intertie approval, including the minimum content of the intertie agreement, are described in WAC 246-290-132(3). Here our rules require a consecutive system to evaluate the reliability of their non-emergency intertie, and to discuss the impact of a loss of the supply in the event the agreement is terminated.

Standards for reliability are in WAC 246-290-420. Public water systems have the responsibility to provide an adequate quantity and quality of water in a reliable manner at all times during normal operating conditions, such as the provision of 30 psi during peak hourly demand conditions. Purveyors are responsible for establishing the level of reliability during abnormal operating conditions to ensure the prevention of loss of pressure or to ensure prompt restoration of pressure *in accordance with consumer expectations*.

Termination of the water supply, done in accordance with provisions written into a mutually agreed upon purchased wholesale water agreement, should not be considered an abnormal operating condition. Ideally, purchased wholesale water agreements should be structured similarly to retail water agreements. To improve reliability, wholesale water agreements should not be subject to termination except for customary reasons (e.g. failure to pay).

When ODW staff review new purchased wholesale water supply agreements, they look for provisions detailing:

- How the water rate(s) is adjusted over time.
- Absolute limits on instantaneous flow and annual volume.
- Seasonal limits on flow and volume.
- Limits on type of use and place of use.
- Impact of a declared emergency or *Acts of God*, and examples of such unforeseen circumstances.

For new agreements, ODW staff also looks for “red flags,” such as:

- Date-based termination clause (e.g., “this agreement is valid for ten years”).
- Needs-based termination clause (e.g., “this agreement may be terminated at any time due to unforeseen circumstances that results in a limited water supply that must be allocated to in-city customers”).
- Short-term unilateral termination clause (e.g., “this agreement may be terminated after 30 days’ notice by either party”).

Before approving a planning or engineering document that includes a new wholesale water agreement with any “red flag” condition, ODW staff will request a viable plan identifying an alternative water supply which will satisfy the requirement to *provide an adequate quantity and quality of water in a reliable manner* (WAC 246-290-420 (1)) if the agreement is terminated. Without this viable alternative water supply plan, the intertie agreement is not considered one that *improves overall system reliability* (WAC 246-290-132 (3)(a)(v)).

Staff will also ensure that the wholesaler’s full allocation of water to the consecutive system (and any allocation of storage, if applicable) is reflected in the wholesale purveyor’s service capacity assessment.

There are a number of water utilities that are party to an existing wholesale water supply agreement, either as a wholesaler or as a consecutive system.

Existing wholesale agreements are reviewed as part of our planning and engineering document review. When ODW staff conduct these reviews, they are directed to inquire and receive assurance that both parties to an existing purchased water supply agreement set to expire within 6 years are committed to a good-faith effort to renew their agreement. Before we approve a planning or engineering document that would increase the service capacity of the consecutive system or maintain its “unspecified” capacity, we need to know there is a high likelihood both parties are committed to renewing the existing agreement. If no assurance can be given by both parties to make a good-faith effort to renew their agreement, then ODW staff should direct the consecutive system to assess and ensure the long-term reliability of its water supply.

Key concerns

Every purveyor faces some risk of their system's water supply losing some or all of its capacity. A purchased water supply is no different. The underlying purchased water agreement may have a termination clause, an agreement end-date, or other conditions that render the agreement at risk of non-renewal. We have no authority to enforce existing water contracts, or to impose conditions on one or both parties while they negotiate their purchased water agreements. In the face of these risks and limitations, we want to be careful not to approve designs or planning documents that add permanent customers based on an impermanent source.

Other options evaluated

We evaluated whether ODW should impose conditions on purveyors negotiating a new or renewed intertie agreement in order to reduce the risk of interruption of future termination of the agreement. We abandoned this option as infeasible and unwarranted in light of past experience with the reliability and continuity of intertie agreements.

Bottled Water

Bottled water as a drinking water source plays an important role in maintaining public health. Immediately following the start of a drinking water emergency, bottled water may be the only available source of safe drinking water. Following a water quality or treatment technique violation, a purveyor may have no other means to provide safe drinking water to its customers except through the regular delivery of bottled water until water quality is restored.

EPA regulations are clear on the allowable use of bottled water (40 CFR 141.101):

Public water systems shall not use bottled water to achieve compliance with a MCL. Bottled water may be used on a temporary basis to avoid unreasonable risk to health.

Our current practices are consistent with these regulations. ODW does not allow a purveyor of a Group A water system to be permanently relieved of their responsibility to comply with a MCL, treatment technique, action level requirement, or any other water quality standard by distributing bottled water to its consumers.

Temporary use of bottled water

Bottled water is an acceptable short-term water supply alternative, as specified in ODW Policy F.11. A purveyor of a Group A water system must provide a short-term alternative water supply (such as bottled water) when the system's water supply:

- Has acute chemical contamination present over the maximum contaminant level (MCL).
- Has chronic chemical contamination at a concentration the Department of Health considers acute.
- Is not capable of providing water to consumers.

The provision of bottled water is not required for coliform MCL or a surface water treatment technique violation where a Boil Water Advisory is in place or where boiling water is feasible.

When a protracted need for bottled water is anticipated, a Group A purveyor would be expected to enter into a compliance agreement with ODW to use bottled water until a permanent, safe, and reliable supply is restored. The compliance agreement would describe conditions on the delivery of bottled water.

Bottled water used as a short-term alternative water supply must be produced by a Washington State Department of Agriculture-approved bottling operation or out-of-state or international bottler whose product meets Food and Drug Administration regulations.

If an existing purveyor demonstrates to our satisfaction that it no longer provides piped water for human consumption, then our rules no longer apply. In such (rare) instances, the affected facility will be inactivated from our public water system inventory. The owner may use bottled water as the source of water for any human consumptive needs within the facility.

Federal rules allow states to require a public water system to use bottled water as a condition of granting a variance or an exemption from the requirements governing organic, inorganic, and lead and copper water quality standards in drinking water (see 40 CFR 142.62 (f) and (g)).

An *exemption* allows deferral of the statutory compliance deadline. Our compliance process often implicitly offers a purveyor an exemption by extending the compliance deadline beyond a federally mandated deadline.

A *variance* allows a purveyor to be in compliance with federal regulations while exceeding a MCL. There are a number of conditions that must be met and a prescribed process that must be followed for a purveyor to receive a variance. We have never issued a variance to a MCL.

We did not evaluate other options except compliance with federal requirements.

Point of Use / Point of Entry

Compliance with drinking water quality standards creates financial challenges for some small public water systems. Some systems have considered point of use (POU) or point of entry (POE) treatment instead of centralized treatment.

POE is a treatment device applied to the drinking water entering a house or building for the purpose of reducing contaminants in the drinking water distributed throughout the house or building.

POU is a treatment device applied to a single tap used for the purpose of reducing contaminants in drinking water at that one tap.

Through the 1996 amendments to the SDWA, Congress directed EPA to allow installation of POU and POE treatment devices to achieve compliance with some water quality standards for small public water systems (with population less than 10,000). EPA's rules allow states to approve public water systems relying on POU or POE, and many states have adopted the federal approach. EPA regulations (40 CFR 142.62(h)) provide the framework for states:

It is the responsibility of the public water system to operate and maintain the point-of-use and/or point-of entry treatment system. The State must be assured that buildings connected to the system have sufficient point-of-use or point-of-entry devices that are properly installed, maintained, and monitored such that all consumers will be protected.

We do not approve POU or POE as a permanent solution to achieve compliance with drinking water quality standards. We analyzed the costs and benefits of creating a program to approve POU or POE treatment. We believe that the costs of developing and implementing an effective program outweigh the benefits, because the program would benefit so few consumers. For example, currently fewer than ten small Group A public water systems have failed to make meaningful progress toward achieving compliance with the arsenic drinking water standard.

Based on our evaluation, we would need about \$420,000 (3.5 FTE) and two years to develop an appropriate regulatory oversight program and enhance our data system. The initiation of a program would be especially challenging because there is no federal regulatory standard governing how a POU compliance strategy should be implemented by the states. There virtually no federal regulatory standards governing how a purveyor's POU treatment strategy must be administratively set up, designed, operated, monitored, and reported to the state.

We estimate that ongoing costs would be about \$140,000 to maintain a program that would include approving and regulating POU or POE for any existing public water system.

Key Concerns

To meet the federal rule requirements and protect public health, a POU/POE program would have to require:

- Participation by every system consumer.
- The purveyor to provide adequate assurance that every consumer has granted the purveyor with access to treatment units in perpetuity.

What do other states do?

We surveyed states through the Association of State Drinking Water Administrators (ASDWA) in February 2011. Twenty-one of the 44 states that responded reported allowing POU for community water systems. Among those states that have regulations that permit POU to achieve compliance with a drinking water standard, a total of 85 community water systems nationwide are currently operating with POU.

The four state programs with more than three community systems operating under POU are Arizona (26 systems), New Hampshire (15), Idaho (13), and Alaska (10). Among the 21 state programs that allow POU for community systems, only 13 programs have zero or one system operating using POU in their state.

Options we evaluated

We evaluated if POU/POE could be approved for:

- Existing, non-expanding, non-community water systems.
- Water systems that do not and will not serve dwellings.
- Water systems that are under common ownership with the facility served by POU or POE.
- Treatment for a non-acute contaminant.

A more broad approval strategy would allow ODW to approve POU/POE for:

- Any existing water system.
- Systems for which the cost of achieving compliance using centralized treatment exceeds 2.5 percent of the community's median household income. This would factor in potential subsidies available through the Drinking Water State Revolving Fund loan program.
- Treatment for a non-acute contaminant.

The broadest POU/POE program would authorize ODW to approve POU/POE as a permanent strategy to achieve compliance with a primary drinking water standard meeting for any existing water system that treats for a non-acute contaminant.

Next Steps

In general, the next steps for ODW staff fall in these categories of action:

- Update Policies as appropriate (See Draft Policy F.11).
- Revise our Water System Design Manual and planning guidebook to reflect the recommendations.
- Revise publications to reflect the recommendations, and create new educational information (such as fact sheets) as needed.
- Update WFI forms to accommodate new information and update our data system.
- Update sanitary survey schedules to reflect the public health risks of systems using alternative water supplies.
- Modify treatment report forms and develop review and follow-up procedures to promote consistency across regional offices.
- Develop language to be used for notification on property titles.
- Educate Ecology staff, purveyors, engineers, LHJs and local building and planning officials.