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Water Rights, Water Quality & Water Solutions in the West

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KLAMATH BASIN RESTORATION AGREEMENT

AGREEMENT TERMINATES DUE TO LACK OF TIMELY AUTHORIZING LEGISLATION
WHAT'S WHAT & WHAT'S NEXT

by Paul S. Simmons, Somach Simmons & Dunn (Sacramento, CA)

INTRODUCTION

On December 31, 2015, the Klamath Basin Restoration Agreement (KBRA) terminated because Congress had not enacted legislation necessary for its implementation. Two companion agreements — the Klamath Hydroelectric Settlement Agreement (KHSA) and the Upper Klamath Basin Comprehensive Settlement Agreement (UKBA) — did not by their terms expire, but their planned implementation is interrelated with the now-terminated KBRA and they also cannot move forward without the same implementing legislation.

The trio of agreements, negotiated over a period of years, has been seen by many as a small miracle in a basin long characterized by conflict, and a model for other regions in need of solutions. For supporters, the disappointment associated with KBRA termination is powerful and the future is uncertain. Meanwhile, persons in the public have had difficulty keeping score, as conflicts have been interspersed with announcements of settlements, and reports on the recent demise of the KBRA have — understandably — sometimes generated additional confusion as to where things have been and where things stand with the agreements. *See* Spain, *TWR*s #34, #70 & #71; Simmons, *TWR* #49; Moon *TWR* #74; MacDougal, *TWR* #78; Liljelt & Schroeder, *TWR* #111; and MacDougal, Orford & Timmons, *TWR* #113.

This article describes, very generally, the context for the agreements and their major terms, the reasons legislation was necessary, and the state of affairs resulting from the inability to realize federal legislation by the end of 2015. It speculates gingerly on what to expect going forward. Myriad details are omitted from this overview of the situation.

CONTEXT

The Klamath Basin (Basin) occupies part of south-central Oregon and northern California. In a 2008 article in *The Water Report*, your author described the basin and interested parties, and the difficulties that have arisen over time. *See* Simmons, *TWR* #49, March 15, 2008. In brief, the Basin has witnessed conflict and confrontation over water and natural resources, with the interested parties including: the United States (in its many capacities); the two states; tribes with strong interests in fisheries and other natural resources; irrigation water users and their communities; local governments; hydropower developers; conservation groups; commercial and sport fishermen; and others. In recent decades, high profile issues and sources of litigation have included water allocation for threatened and endangered species, especially as related to effects on irrigation supply for water users served through the Klamath Reclamation Project (Klamath Project), wildlife refuges, tribal fisheries, and others. In more recent years, relicensing proceedings for hydropower facilities and the quantification of certain previously-undetermined water rights have also played a prominent role.

Klamath Agreements

Settlement Opportunity Factors

Relationships

Parties

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The above-referenced article from 2008 suggested that a "convergence of opportunity" had arisen, creating the possibility to resolve conflicts for parties so inclined. First, the recent history of conflict had mostly generated animosity and uncertainty: none of the major battling interests sensed that they were actually getting ahead, and fatigue was growing. Second, the 1950s-era Federal Energy Regulatory Commission (FERC) license for PacifiCorp's hydroelectric facilities, including four dams on the mainstem Klamath River, expired in 2006. The company was pursuing license renewal pursuant to Federal Power Act (16 U.S.C. §§ 791 et seq.) procedures. (Pending FERC action on renewal, the former license automatically renews for one-year terms. 16 U.S.C. § 808(a)(1)). A renewed license would be the product of an administrative adjudication and would result in appreciable, new environmental constraints. Some parties would advocate for decisions that would directly or indirectly require or lead to PacifiCorp ultimately removing the hydropower dams, if that could be accomplished. There was (and is) uncertainty for all parties interested in this once-in-a-generation FERC proceeding. Third, in Oregon, the Oregon Water Resources Department (OWRD) was nearing the time when it would issue its Findings of Fact and Order of Determination (FFOD) in the Klamath Basin Adjudication of water rights. Among other things, the FFOD would address the nature and extent of water rights of the Klamath Tribes (and/or the United States as trustee) for instream flows and water levels under very early (time immemorial) claims of priority. Approval of those claims as asserted could require curtailment of certain irrigation diversions to a significant degree, and there was uncertainty for both the claimants and contestants of those and other claims as to what the FFOD would conclude.

These factors did prove important in the realization of the three settlements. Equally important, these factors, and other circumstances that are harder to inventory, led to the development of personal relationships that were critical to resolving some very difficult issues. Leaders from many of the interests got to know one another, respect and even support one another's interests, and spent countless hours working to develop solutions for Basin resources and communities.

SEQUENCE OF AGREEMENTS / PARTIES TO THE AGREEMENTS

The first agreement to emerge was the KBRA, released as a draft in 2008, but ultimately not finalized or signed until the KHSA had also been negotiated. An agreement in principle for a KHSA emerged in the fall of 2008, and the KBRA and KHSA were further negotiated, then signed in February of 2010 (the KBRA was amended in some respects in 2012). The parties to the agreements, approximately 40 in all, included federal agencies (although the federal parties could actually sign the KBRA only if authorizing legislation were enacted), the two states, the Klamath Tribes of Oregon and the Karuk and Yurok Tribes of California, the vast majority of irrigation interests using Klamath water through the Klamath Project, two counties, and several conservation and fishing groups. PacifiCorp is/was a party to the KHSA only, but otherwise the parties are the same in both agreements. Entities who were involved in one manner or another in part or all of the negotiation process but determined not to be parties, and to oppose the agreements, included the Hoopa Valley Tribe, Siskiyou County (in California), and some irrigation-related interests.

As discussed below, the KBRA included specific commitments related to diversions of water for Klamath Project irrigation and resolution of contested issues concerning tribal water rights as related to the Klamath Project. With respect to other irrigation in the Upper Klamath Basin (i.e., irrigated land in areas tributary to Upper Klamath Lake, sometimes called the "off-project" area), the KBRA stated only that the parties supported the ultimate development of a settlement among irrigation interests in the off-project area and the Klamath Tribes and United States as trustee for the Klamath Tribes, and that this settlement include retirement of 30,000 acre-feet of consumptive water use in areas upstream of Upper Klamath Lake. The prospective nature and generality of these terms, or their substance, along with other factors, were reasons that some parties in the off-project area opposed the 2010 settlements. Meanwhile, other off-project parties supported the KBRA.

In 2013, a significant change in circumstances arose, when OWRD issued the FFOD in March as part of the adjudication process. Among other things, the FFOD recognized substantial tribal water rights for instream flows in the tributaries of Upper Klamath Lake to support fisheries. These rights are the most senior in the basin with a priority of "time immemorial." The rights are so substantial that their enforcement would require curtailment of all irrigation in the off-project area in some years, and significant reductions in a great many years, with the exact effect being dependent on the specific location. Although the FFOD is subject to review and modification by the Klamath County Circuit Court, it is, unless stayed, the binding basis for priority-based regulation of water use until the court process is concluded. Oregon Revised Statutes (ORS) 539.130(4), 539.170, 539.180. Several off-project parties sought a stay of the FFOD as related to tribal rights and certain other rights, but were not successful. In the summer of 2013

Klamath Agreements

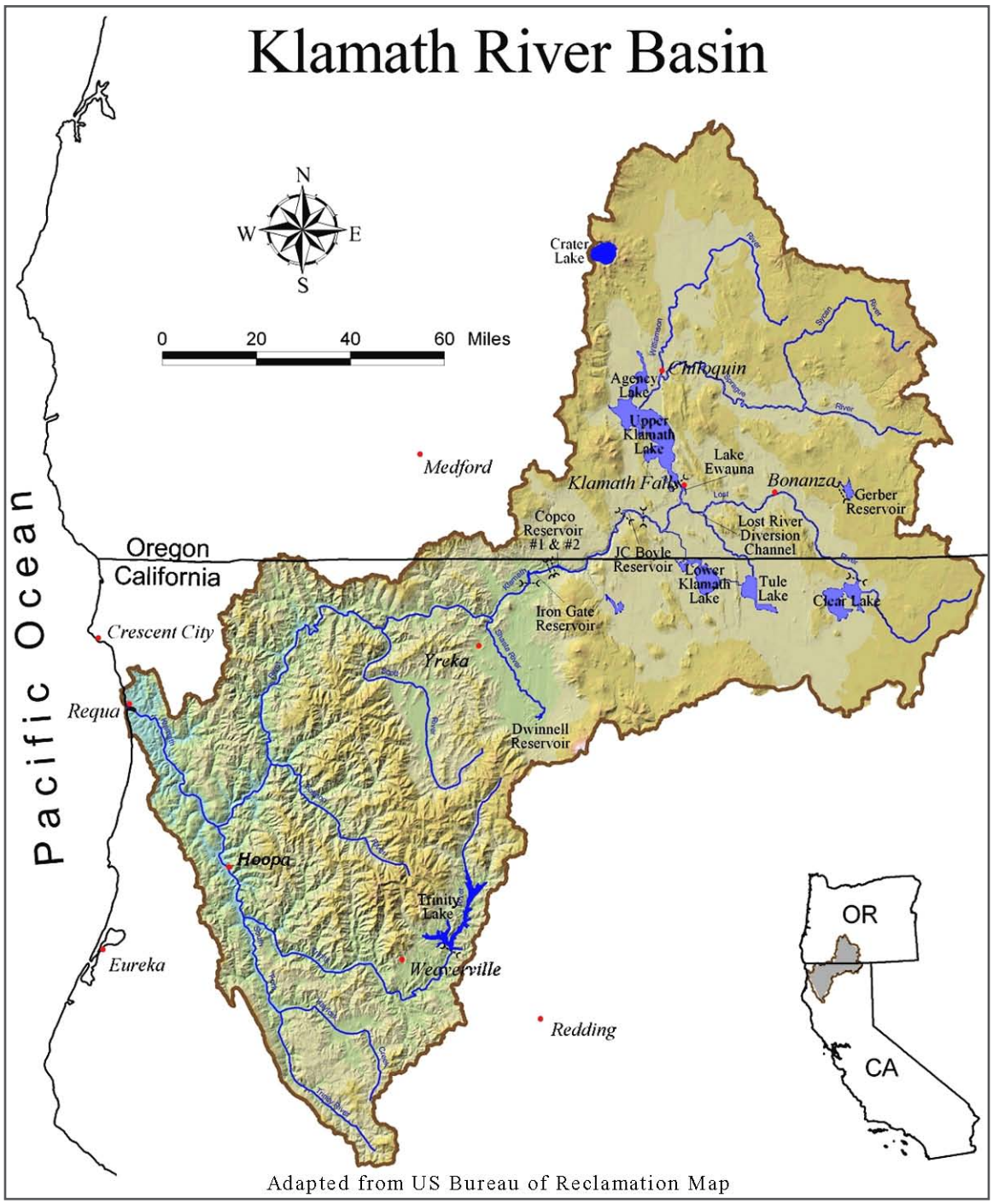
Tribal "Calls"

Legislation Need

(a very dry year), water rights "calls" were made by the Klamath Tribes for enforcement of the FFOD-recognized tribal rights (and others), and all surface water diverters in the areas upstream of Upper Klamath Lake received curtailment notices. The fundamental change brought about by the FFOD, and the lack of any stay of the FFOD, catalyzed intense focused settlement negotiations that led to the UKBA, which was signed in April of 2014.

MAJOR TERMS / NEED FOR LEGISLATION / IMPLEMENTATION STATUS

The discussion immediately following summarizes major terms of each of the three settlements, describes the need for legislation associated with each, and the degree to which each had been implemented by the end of 2015 — albeit subject in each case to the need for federal legislation to accomplish any of the significant substantive outcomes contemplated by the settlements. The three agreements are available at www.klamathcouncil.org.



Klamath Agreements

50-Year Term

Irrigation Limitations

Fisheries, Forests, & Power

Dam Removal

Reauthorization

Costs

Limited Implementation

Hydroelectric Agreement

KBRA: Klamath Basin Restoration Agreement

There were approximately 40 parties to the KBRA, including the two states, the Klamath, Yurok and Karuk Tribes, county governments, multiple irrigation districts and interests associated with the Klamath Project, and several conservation and fishing groups. Federal agencies were identified as parties but, due to the nature of certain commitments, would actually become parties only upon Congressional authorization of the KBRA. The specified term of the KBRA was for fifty years after the date federal agencies became parties, although certain commitments — particularly those related to water allocation and delivery — were to be permanent if the agreement was fully implemented.

Significant commitments in the KBRA included that there would be permanent limitations established on Klamath Project diversions, on a sliding-scale basis dependent on water year-type. This agreement also provided new, firm commitments for delivery through by the Klamath Project to National Wildlife Refuges (particularly Lower Klamath NWR) for refuge purposes. The amount that would be available for irrigation is less than demand and historical use in past dry years. However, there would be increased certainty and reliability for Klamath Project irrigation due to other KBRA terms, and the limit on diversion and refuge delivery commitments would take effect only when events that would bring about that reliability had occurred. The agreement also established contingent settlements of water rights claims of the party tribes and United States as trustee for Basin tribes, under which these parties would not assert such rights or claims in a manner that would limit irrigation diversion to less than the agreed-upon amounts — these commitments would not become final and permanent unless and until another set of events had occurred. There were also certain interim commitments, a few of which survived the termination of the KBRA and will be in effect until the court process in the Klamath Basin Adjudication has concluded.

The KBRA also included plans for large-scale habitat restoration and fisheries re-introduction in the Klamath Basin, and bolstering of tribal fisheries programs. Parties also supported re-acquisition of forest property for the benefit of the Klamath Tribes that was formerly part of the Klamath Reservation. Other central terms include programs to ensure affordable power for water management for irrigators in the Klamath Project and off-project areas who had received power from PacifiCorp on favorable cost terms over many decades. Several other commitments and programs are not described here.

The KBRA was linked to the KHSA. For example, commitments by party tribes and the United States not to assert rights in a manner that would limit Klamath Project diversion below negotiated amounts could become final and permanent only if PacifiCorp's four hydroelectric dams on the Klamath River were removed, an outcome contemplated by the procedures of the KHSA. Also, fisheries and habitat programs were linked to KHSA implementation and resulting fish distributions.

Federal legislation was necessary for full KBRA implementation for various reasons. First, as noted above, due to the nature of some commitments, federal agencies would have become parties only if Congress authorized the KBRA. Also, for example, the parties agreed to support legislation modifying the authorized purposes of the Klamath Project, including in ways that would enable some of the KBRA's refuge-related commitments to be realized. Federal legislation was also necessary for the authorization of appropriations for some of the KBRA programs. The estimated cost for full KBRA implementation over 15 years, in 2012 dollars, was just under $800 million. It was estimated that, of that sum, over $260 million represented funds that would be spent in the Basin with or without the KBRA; thus "new spending" over 15 years was about $536 million, much but not all of which already has underlying authority for appropriation. Of course, funding in any given year would remain subject to the annual Congressional appropriation process.

Between 2010 and 2015, parties implemented the KBRA to the extent that it could be implemented. Although not legal parties, federal agencies had, of course, been intimately involved in the negotiation of the KBRA, and supported it. Actions were taken that could occur without Congressional authorization and with available authorities and resources. For example, initial habitat restoration plans contemplated by the agreement were prepared. Also, for the Klamath Project, one term of the KBRA was that a water-user based organization would be afforded time, opportunity, and resources to develop and implement a plan by which Klamath Project irrigation could operate under the ultimate limitation on diversion. Planning activities did occur: a proposed "On Project Plan" (OPP) was developed over the course of about three years, and as of late 2015 work was in progress to complete a draft Environmental Impact Statement to support Bureau of Reclamation approval of the OPP.

KHSA: Klamath Hydroelectric Settlement Agreement

The KHSA parties include PacifiCorp and all the KBRA parties. Major terms of the KHSA provide that, when certain events have occurred, the Secretary of the Interior will determine whether it is in the public interest that PacifiCorp's four hydroelectric dams on the mainstem Klamath River be removed;

Klamath Agreements

Dam Removal

Federal Authority

Interim Measures

Dam Removal Funding

FERC Relicensing

Parties

Tribal Water Rights

Instream Flow

Irrigation Retirement

and if so, the Secretary will appoint a **d**am **r**emoval **e**ntity (DRE), which is presumptively the United States. The two states must concur in both decisions and, if they do, the DRE proceeds to obtain necessary permits. Upon DRE notification that all necessary permits and approvals are obtained, and various other conditions being met, PacifiCorp would transfer the hydroelectric dams and related works to the DRE for removal pursuant to a definite plan. Under the KHSA, although the federal government (Department of the Interior) is the likely DRE, the costs of dam removal would be borne by parties other than the United States (discussed below). The specified target date for dam removal is 2020.

Federal legislation was necessary for KHSA implementation for various reasons. Most obviously, under the Federal Power Act, FERC has plenary jurisdiction over hydropower developments on navigable rivers. The settlement would shift certain authority concerning PacifiCorp's Klamath dams to the Secretary of the Interior; this approach was based on parties' determination that, for various reasons, traditional FERC licensing proceedings were unsuited to the type and scope of settlement contemplated. Also, a condition in the KHSA of PacifiCorp agreeing to settlement that would result in removal of its dams was that there be federal legislation insulating PacifiCorp from any liabilities associated with the removal. Other details of the settlement would also be supported by contemplated federal legislation.

Between 2010 and today, substantial activity has occurred under the KHSA. First, and in part because the KHSA contemplated the FERC relicensing being "on hold" for a period of time, PacifiCorp committed to implement certain interim measures for operation of its facilities. The interim measures are intended primarily for near-term fishery and water quality improvements. (The vehicle for suspension of the FERC relicensing has involved procedures that place "in abeyance" state water quality determinations under section 401of the federal Clean Water Act that are necessary for FERC license issuance. This is presently a subject of litigation.) Second, an Environmental Impact Statement (EIS) has been released to support an ultimate Secretarial determination, and a separate report has been prepared that would underlie the Secretary's public interest determination (*see* http://klamathrestoration.gov for final EIS).

Significant activity also occurred relative to availability of funding if PacifiCorp's dams were ultimately removed under the KHSA. The agreement contemplates a PacifiCorp Oregon and California "customer contribution" of $200 million toward dam removal. In general, the basis for this proposed contribution relates to the notion that settlement under the KHSA is a prudent expenditure for customers (ratepayers). For example, federal agencies have authorities under sections 4(e) and 18 of the Federal Power Act to develop conditions for fish passage and protection of federal land reservations/resources that FERC is obliged to include in a renewed PacifiCorp license. 16 U.S.C. §§ 797(e), 811. Here, compliance with conditions prescribed by federal agencies would be very costly and also result in reduced power generation. There are also significant relicensing-related uncertainties. On these and other bases, the public utilities commissions of Oregon and California (facilitated by legislation parties supported in Oregon in 2009) agreed that a capped rate surcharge under the "known" of the KHSA removal was a fair, just and reasonable charge. Oregon Public Utility Commission Order Approving Surcharges, UE 219 (Sept. 16, 2010); California Public Utilities Commission Decision 11-01-002 (May 5, 2011). The other contemplated source of potential dam removal funds is money from the issuance of bonds by California: in 2014 California voters approved Proposition 1, the Water Quality, Supply and Infrastructure Improvement Act, a "water bond" which authorizes issuance of general obligation bonds in the amount of approximately $7.5 billion, of which part (anticipated by the parties as $250 million) could be available for KHSA implementation.

If KHSA falls apart, action will return to the FERC relicensing proceeding.

UKBA: Upper Klamath Basin Comprehensive Settlement Agreement

The UKBA was signed four years after the other two settlements. The parties are Oregon, the Klamath Tribes, numerous off-project irrigation parties, and federal agencies (who, as under the KBRA, could become parties only after enactment of federal authorizing legislation).

A central component of the UKBA is the provisional settlement of tribal water rights claims in areas tributary to Upper Klamath Lake. As discussed above, the FFOD recognizes substantial tribal rights for instream flow which, although subject to review by the Klamath County Circuit Court, significantly limit the ability to divert water for consumptive use in those areas. The UKBA provides programs and activities under which water right "calls" for instream flow would be less than what they could otherwise be, based on specified voluntary water use reductions and improved habitat.

Specifically, the UKBA provides for retirement of 30,000 acre-feet of consumptive use in off-project areas, with the total reduction further allocated by sub-regions. It also contemplates a program under which private owners of riparian lands would restore and protect habitat under management agreements. If a sufficient length of stream (generally 80 percent) is covered by compliant riparian agreements, tribal

Klamath Agreements

Regulation Limits

Forest Acquisition

Transition Targets

Federal Legislation

2014 Senate Bill

2015 Senate Bill

House Inaction

Termination

water right calls would be limited in scope and generally would not be expected to curtail consumptive use except in very dry years. However, to the extent there are not compliant riparian agreements, tribal water right calls would require increasingly greater instream flows, up to as much as the full amounts determined in the FFOD. Equations driven by deviations from "sufficient participation length" determine the amount of increase in flow that could be required. Final settlement on these terms takes effect when a number of other conditions have been met. These programs have a phase-in period under which tribal calls are limited so long as defined progress is being made toward implementation, and are to be administered by various entities comprised of the UKBA parties.

In addition, the UKBA provides support for economic development for the Klamath Tribes, including a $40 million economic development fund and, like the KBRA, the acquisition of forest land formerly part of the Klamath Reservation for the benefit of the Klamath Tribes.

Federal legislation is also necessary for UKBA implementation. As with the KBRA, although they were central in the UKBA's negotiation, federal agencies determined, based on the nature of certain commitments, that they may not actually become parties unless Congress approved the UKBA, and legislation was necessary to ensure that certain commitments would be effective. In addition, legislation would be necessary for certain of the specified economic development activities for the Klamath Tribes (or others that have been considered for equivalent benefit). Furthermore, it is believed authorization is necessary for the funding of other UKBA measures as well, although this overlaps somewhat with KBRA funding because the KBRA anticipated a water use retirement program and habitat restoration activities in the off-project areas upstream of UKL.

From 2014 to present, the UKBA parties and federal agencies have worked very hard to implement the UKBA, and specifically the transition period targets for implementation. This has resulted in incremental progress toward full implementation. These efforts have been beneficial for off-project irrigation users because 2014 and 2015 were extremely dry years and, although there were certain tribal calls in each year, the calls would likely have been much earlier in the season and lasted longer, and impacted more senior irrigation rights (those with earlier priority dates) to a greater extent than actually occurred.

LACK OF LEGISLATION AND KBRA TERMINATION

Each of the settlements requires federal legislation for full implementation or realization of anticipated benefits. The KBRA and KHSA included identical appendices that identified the substance of federal legislation that the parties to those agreements would support for authorization and implementation of those two agreements. In 2011 (first session of the 112th Congress), legislation was introduced in both the US Senate (S. 1851) and House of Representatives (H.R. 3398) that would have authorized both agreements, but neither bill moved. There was subsequently strong encouragement to the parties from elected leadership in Oregon to broaden the universe of supporters and address certain issues. A task force undertook some of those efforts, and others were addressed through the negotiation of the UKBA.

In 2014, S. 2379 was introduced. This bill would have authorized all three agreements. In November, it was approved with amendments on a bipartisan, 17-5 vote in the Senate Energy and Natural Resources Committee. (The amendments strengthened the role of the states in the KHSA decisions on dam removal and made other changes that were not objected to by the sponsors or settlement parties).

In January of 2015, Senators Merkley and Wyden of Oregon, and Feinstein and Boxer of California, introduced S. 133, which was identical to the bill that had been approved a few months earlier by the Senate Energy and Natural Resources Committee. There was very significant effort to find a path for an authorizing bill in the House of Representatives but ultimately no bill was introduced. A great deal has been written or said about this recently, some of which lacks all the relevant context and/or could be fodder for debate, and none of which is relevant to this article, which attempts only to describe the agreements and current circumstances.

With no legislation being enacted by December 31, the KBRA terminated. A provision of that agreement stated that, if no authorizing legislation was enacted by December 31, 2014, any party could give notice that it believed the realization of bargained-for-benefits was not possible and that the agreement should therefore terminate. Notices of this sort were given, in early 2015. If legislation did not occur in the ensuing 12 months and the notice was not otherwise resolved or withdrawn, the KBRA would terminate, and that termination occurred on December 31, 2015.

Klamath Agreements

Changed Circumstances

Complex Package

Good Relationships Sustain Hope

WHAT NEXT

It has been observed that, notwithstanding the termination of the KBRA, there could be a path or paths involving a combination of legislative and other efforts by the settlement parties that could realize their objectives. One step towards that end would be for the KBRA parties to simply "re-up" and enter into the KBRA again, and "put more time on the clock." Such a development seems unlikely as of this writing. For example, the specific circumstances under which the KBRA was negotiated are not present now; in fact, some important terms were developed eight years ago based on then-existing circumstances, incentives, and other ingredients. Also, various important terms are the product of a long dialogue, often involving many participants, that occurred both within organizations and between parties. In this sense, it could be difficult for some to immediately embrace that product without having experienced the process that led to it, at least not in the absence of repeating discussion of those same issues with decisionmakers who must consider them now. There are also institutional factors, potentially even including some that do not directly relate to the merits of a given agreement, that may affect a party's perspective. There is certainly no guarantee of future legislative activity. Given the inability to realize authorizing legislation over the last few years, it may be difficult for any party to muster energy for renewed or new solutions that require such authorization, at least not without a good understanding of what is possible.

If a given party who made important commitments in the KBRA is not prepared to make those commitments anew, then the beneficiary of those promises will not be likely to make its separate commitments, which may in turn affect the interests of still-other parties. In other words, the KBRA was a complex package, and one cannot extract a part without affecting another part, and ultimately the whole, of that package. All that said, any attempt to describe what will happen now is at best speculative.

The KHSA and the UKBA are in effect, but each include provisions under which they can terminate, and in each case the absence of timely federal authorizing legislation is expected to be a cause of, or lead to, termination. It may only be a matter of time before they terminate or falter and become irrelevant. For example, the UKBA cannot be implemented unless legislation is enacted and not unless certain events contemplated by the KBRA occur. Under the KHSA, there can be no determination related to dam removal unless legislation is enacted, including legislation that would authorize the now-defunct KBRA.

Regardless, it is likely that there will be efforts, at least among some parties, to address and resolve issues of mutual interest in light of the present conditions. In this regard, there remains a strong sense of partnership, mutual respect, and trust among parties who have come to know and understand one another in the past several years, and that foundation is the best hope for collaborative efforts going forward.

The statements and any opinions in this article are the author's alone and not attributable to any other party.

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Reclaimed Water

Recycled Water Uses

Balancing Needs

Wastewater as Resource

Drivers

Innovative Uses

RECLAIMED WATER ENHANCED WATER SUPPLY

BRIGHTWATER RECYCLED WATER: NEW WATER, NEW SOLUTIONS FOR THE SAMMAMISH RIVER

by Jacque Klug, King County Wastewater Treatment Division (Seattle, WA)

INTRODUCTION

Communities around the Western States are increasingly turning to recycled water as a drought-proof, sustainable water supply. Recycled water, also known as reclaimed water or reuse water, is an important part of the water supply portfolio for arid regions of the West. Recycled water can be used for a variety of non-potable water uses including: landscape and food crop irrigation; industrial process water; and enhancement of ground and surface water supplies. Communities in Texas, New Mexico, and California are exploring the feasibility of incorporating recycled water into drinking water systems under direct potable reuse initiatives (WateReuse Association 2015).

Climate forecasts indicate warming temperatures will alter the water cycle in the West with less summer precipitation and less snowpack (Gillis 2015, Mauger et al 2015). The Pacific Northwest, known mostly for an abundance of precipitation, experienced a record-breaking drought in 2015. In fact, the future Pacific Northwest climate and water cycle will look a lot like it did in 2015 (DuBois 2015). This article describes the potential for recycled water to balance instream and out-of-stream water needs by presenting the case of the Sammamish River Basin and King County's Brightwater Recycled Water System as a potential models for supporting people, farms, and fish. *See also*, "*Wastewater Treatment-Benefits of Moving Beyond Minimum Requirements: King County's Brightwater Project*" Hummel, *TWR* #46.

RECLAIMED WATER IN WASHINGTON STATE

Recycled water, known in Washington State as reclaimed water, was authorized by the Washington State Legislature in 1992, recognizing that treated wastewater effluent was not a "waste" but a water resource that helps stretch Washington's water supplies (RCW 90.46). Presently there are twenty-eight permitted reclaimed water facilities in Washington (Department of Ecology 2014; *see* Figure 1).

Common drivers for reclaimed water in Washington include water supply shortages and more stringent water treatment requirements due to impaired water quality in some receiving water bodies. It can be more cost effective to produce reclaimed water than constructing and operating expensive new treatment processes in order to continue to discharge to receiving water bodies. For communities that do invest in new treatment to meet stringent discharge standards, the water is of such a high quality it is wasteful not to reuse this clean water. Some of the innovative uses of reclaimed water in Washington include wetland enhancement, groundwater recharge that serves as mitigation for new water rights, stream flow augmentation, and even a public wading pool (LOTT Clean Water Alliance).

Reclaimed Water

Sand Filter Technology

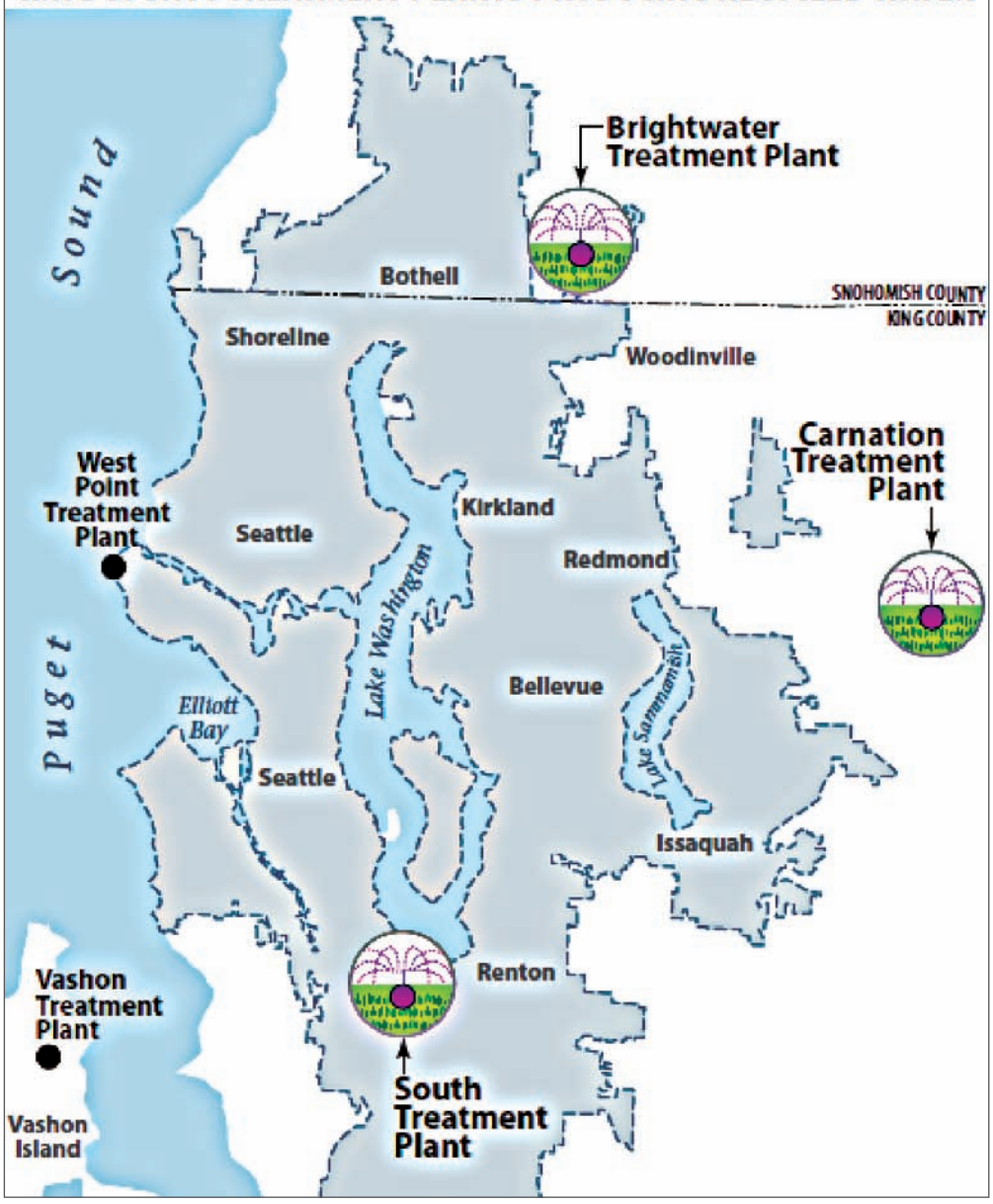
Recycling at Three Plants

MBR-UV Combination

KING COUNTY RECYCLED WATER PROGRAM

King County Wastewater Treatment Division was one of the first utilities in Washington State to develop a recycled water program. King County produces Class A reclaimed water at three of its five treatment plants: the South Treatment Plant in Renton, the Carnation Treatment Plant in Carnation, and the Brightwater Treatment Plant (*see* Figure 2; *see also* King County 2015). The South Treatment Plant began producing recycled water in 1997, using sand filter technology to produce Class A reclaimed water, which was then used for irrigation at the Starfire Sports Complex (practice field of the Major League Soccer Team Seattle Sounders) and other irrigation uses, as well as for street-sweeping and sewer flushing by the City of Tukwila.

Figure 2
KING COUNTY TREATMENT PLANTS PRODUCING RECYCLED WATER



In 2007, the Carnation Reclaimed Water Project was implemented. The Carnation facility uses **m**embrane **bio**reactor (MBR) technology with UV Disinfection. Class A reclaimed water is used to enhance a wetland at the Chinook Bend natural area. The project was developed through a partnership with Ducks Unlimited, King County Parks, and King County Water and Land Resources Division. The wetland was transformed from a small farm pond to a rich and complex wetland habitat that provides passive recreation at the site.

Reclaimed Water

MBR-SH Combination

Brightwater System

The Brightwater recycled water system began distribution in June 2013. The facility uses MBR technology and **s**odium **h**ypochlorite (SH) disinfection to produce Class A reclaimed water. The Brightwater facility treats about 18 million gallons of wastewater each day for approximately 325,000 people. The Brightwater reclaimed water system distributes water for irrigation, toilet/urinal flushing, and process water at the Brightwater site and other nearby King County facilities. The Brightwater reclaimed water system also delivers water to external customers in the Sammamish River Valley (Figure 3). This system is permitted to distribute 21 **m**illion **g**allons per **d**ay (mgd) of recycled water and presently has the capacity of producing 11 mgd of recycled water.

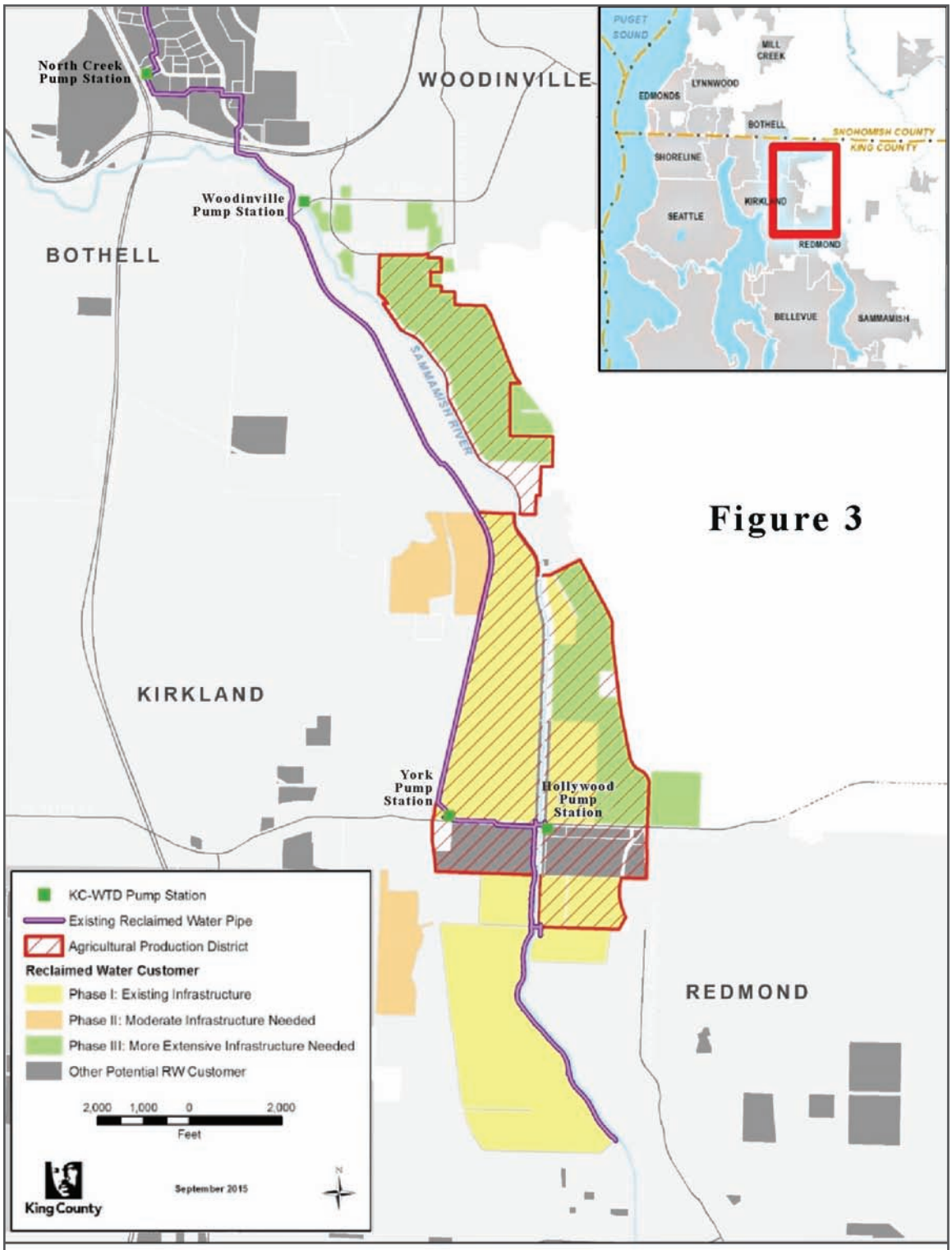


Figure 3

Sammamish Valley Recycled Water Distribution Map

Reclaimed Water

Urban Stream

Source Switching

SAMMAMISH RIVER VALLEY & RECYCLED WATER

The Sammamish River is an urban stream with a watershed wholly contained within cities east of Seattle, Washington. Like many urban streams, it has been heavily modified by channelization, dredging, and loss of riparian vegetation. Despite its degraded state, the Sammamish River is a critical corridor for salmon in the Cedar/Sammamish River watershed. Chinook, Steelhead Trout, Coho, Sockeye and Kokanee travel through the Sammamish River. Chinook and Steelhead Trout are federally listed as threatened species. The Sammamish River valley also supports regionally important resources for the community, including local agriculture and heavily-used recreational facilities. It contains a 1,085-acre protected agricultural production district preserved for local agriculture. The Sammamish River currently does not meet water quality standards for temperature, dissolved oxygen, and bacteria (Washington Department of Ecology 2014). Tribal and state water managers have long been focused on getting more water back into the river to improve habitat conditions for fish and wildlife.

When the new Brightwater Treatment Facility was sited nearby, King County saw an opportunity to develop a recycled water program in the Sammamish Valley to bring a new source of water for businesses, improve stream flow, and reduce reliance on Puget Sound for wastewater discharge. Many farms, parks, and golf courses use water directly from the river or hydraulically connected groundwater in the Sammamish Valley (Figure 4). By switching these water uses to recycled water, more water could stay in the river to improve water quality and habitat for fish and wildlife.

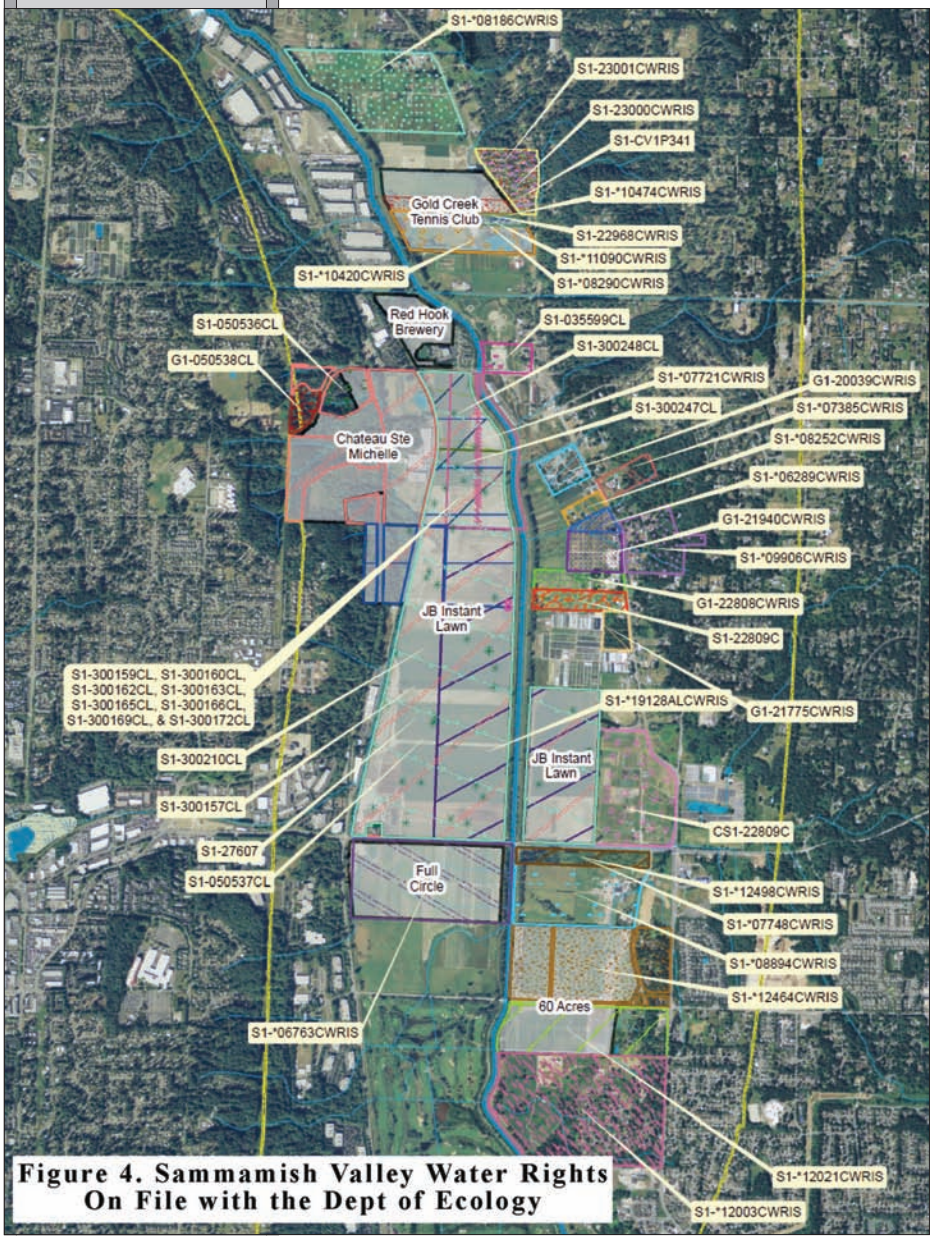


Figure 4. Sammamish Valley Water Rights On File with the Dept of Ecology

BRIGHTWATER RECYCLED WATER SYSTEM

REALIZING THE POTENTIAL

The Willows Run Golf Complex (Willows) was an early partner with King County to develop the Brightwater Recycled Water system. Willows is an approximately 300-acre golf complex that has two eighteen hole golf courses, a nine hole course, putting course, and driving range. Willows signed on as an irrigation customer before Brightwater was even built and committed to piloting use within the Sammamish River Valley. Prior to using recycled water, the golf complex was irrigated with groundwater hydraulically connected to the Sammamish River. Since switching to recycled water in 2013, Willows has kept as much as 50 million gallons of water in the river system during the critical summer months for fish.

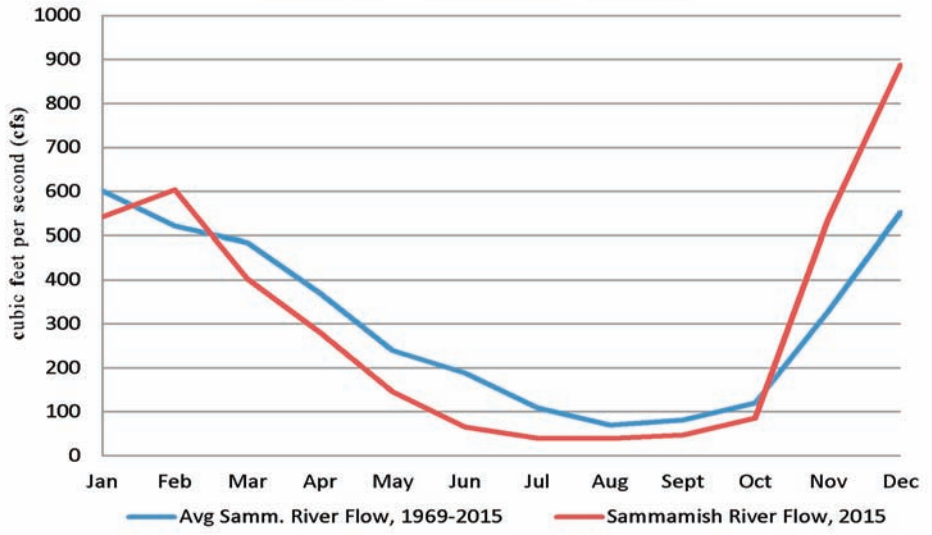
Because recycled water contains a lot of nutrients that are typically supplied by synthetic fertilizers, Willows was able to cut fertilizer use each year and is planning on eliminating fertilizer use in 2016, relying on the nutrients supplied by recycled water. Willows was certified in 2014 as "Salmon-Safe" based on meeting a number of conditions that include: stormwater management; integrated pest management planning; instream habitat protection and restoration; water conservation; and erosion control (Salmon Safe 2014). Using recycled water was an important factor in Willows achieving certification. They are the first example of any certified site in Puget Sound that has exhibited this level of leadership.

Reclaimed Water

Irrigation Substitution

In 2015, King County connected Sixty Acres Park to the Brightwater recycled water system. Sixty Acres Park is the largest soccer complex west of the Mississippi River, with 25 natural turf soccer fields. The soccer complex is operated by the Lake Washington Youth Soccer Association (LWYSA) and serves approximately 7,000 youth through its soccer programs. The soccer fields were irrigated with water pumped directly out of the Sammamish River. In 2015, King County mobilized a temporary connection to the Sammamish Recycled Water system to preserve flows for fish during the drought. A permanent connection is planned for irrigation service in 2016, keeping more water in the river for fish on a permanent basis. The 2015 recycled water use was particularly important since the Sammamish River flowed at its lowest recorded flow for most of the summer of 2015 (*see* Figure 5) and water temperature in the river was much higher than average for most of the summer.

Figure 5. Sammamish River Flow 2015 Compared to Average



By connecting all water users along the existing recycled water distribution system, approximately seven **c**ubic **f**eet per **s**econd (cfs) of water could be left in the Sammamish River system. With typical summer flows reaching 40 cfs, substituting recycled water for water withdrawn from the basin could increase stream flows by 15-20 percent in the Sammamish River. In addition, several farms and businesses in the Sammamish Valley lack adequate water rights, which limits agricultural yield and income. The Sammamish River has been closed to new water rights permitting since 1979 by the Washington Department of Ecology (WAC 173-508). Recycled water offers an opportunity to expand agricultural yield for Sammamish Valley farms and helps achieve the community goals of expanding local agriculture.

Trust Water Rights Program

With many businesses and farms holding water rights, preserving water rights is a major concern for potential recycled water users. King County partners with the Washington Water Trust, a non-profit organization focused on preserving stream flow through water right leases and acquisitions (*see* Cronin, *TWR* #139), and the Washington Department of Ecology to preserve water rights through the Trust Water Rights Program (RCW 90.42). The flexibility of the Trust Water Rights Program to preserve water rights on both short and long-term time frames — and to have the ability to pull the water rights out of the Trust Water Program — is a critical part of marketing recycled water in the Valley. It also provides a way to protect stream flow benefits. The Washington Water Trust is a valuable partner in working with potential customers due to its expertise in developing proposals to lease or purchase water rights with flexible terms that align with business needs for potential recycled water customers. Over time, recycled water could form the foundation for an integrated water management program using the Trust Water Rights Program to preserve stream flows and transfer water rights previously used by recycled water customers to properties that lack water but cannot directly connect to the recycled water distribution system (*see* Trust Water Rights Program, RCW 90.42).

RECYCLED WATER

RIGHT WATER, RIGHT USE FOR THE RIGHT PLACE

"Fit for Purpose" Model

We call King County Recycled Water "the right water for the right use." Recycled water is treated based on a "fit for purpose" model. King County's reclaimed water that is used for irrigation is treated to remove bacteria and viruses but contains the same nutrients that are supplied by synthetic fertilizers. Recycled water saves irrigation customers money on fertilizer use by taking advantage of the nutrients supplied in the recycled water. Additionally, because synthetic fertilizers are made from petroleum, using reclaimed water helps reduce carbon emissions.

Separate Distribution Costs

However, recycled water is the right water for the right use for the *right place*. Because recycled water is distributed in a separate distribution system, infrastructure costs for building recycled water systems are high. It can be especially challenging to integrate recycled water in a municipal water supply portfolio since recycled water is priced lower than drinking water and thus, could result in lost revenue for municipal systems. Additionally, it can be difficult to develop recycled water systems in the prior appropriation

Reclaimed Water

Avoiding Water Rights Impairment

Jacque Klug is a project manager for King County's Wastewater Treatment Division in Seattle, Washington, supporting customer development, permitting, capital projects, and communication and strategic planning efforts relating to King County's Recycled Water Program. Jacque has worked in the water field for many years and has experience in policy development, planning, and permitting on a variety of water resource issues including water rights, instream flows, watershed planning, and salmon recovery. She is a graduate of Duke University and the University of Washington.

water management system, especially in watersheds where downstream water right holders depend upon upstream effluent discharge to fulfill their water rights.

In Washington, the owner of a wastewater treatment facility producing reclaimed water has the exclusive right to any reclaimed water generated by the wastewater treatment facility. It is also exempted from needing a water right permit under 90.03 and 90.44 for the reclaimed water (RCW 90.46.120). However, the use of reclaimed water cannot impair any existing water right downstream from the treatment facility unless compensation or mitigation for such impairment is agreed to by the holder of the affected water right (RCW 90.46.130). Potentially affected water rights include: out-of-stream water rights; tribal water rights; and instream flows established by agency rules. Similar to the water rights permitting, impairment occurs if the reclaimed water project prevents downstream water right holders from beneficially using their water right, or causes the stream flow of a regulated stream to fall below the instream flow rate more frequently or for longer duration, or by a greater amount than was previously the case.

All of King County's treatment facilities except for the Carnation Facility discharge to Puget Sound. As a result, recycling treated water in King County does not impair water right holders and instead offers the opportunity to return freshwater to our watersheds. In the case of the Sammamish River Basin, recycled water is "new water" for the watershed, as the treated water originates outside of the watershed. Bringing this water back into the watershed augments the water supply.

However, water rights impairment issues are significant barriers to using recycled water in many Washington watersheds, especially in river basins with regulatory instream flows and significant out-of-stream water uses (Ecology 2009). This is an especially vexing problem as watersheds often suffer from low stream flows in addition to water quality impairments such as high nutrient loading. Reclaimed water can be a cost-effective solution for communities that are facing nutrient loading challenges. It is important to note that water resource and water quality laws are not structured in Washington State to consider trade-offs between water quality and stream flow protection. Despite many years of discussion, no solutions to this difficult set of issues have emerged. With recent Washington Supreme Court cases accentuating prior appropriation water rights and limiting consideration of benefits outside of water supply in water rights, resolution of these issues will be challenging (*see Swinomish Indian Tribal Community v. Dept. of Ecology*, 178 Wn.2d 571, 311 P.3d 6 (2013); *Sara Foster v. Dep't of Ecology, City of Yelm and PCHB*, 2015 Wash. LEXIS 1184 (Oct. 8, 2015)). With current and future water challenges involving interrelated water quantity and water quality issues, though, finding legal ways to manage water holistically will need to be developed as we face new challenges from climate change and population growth.

CONCLUSION

Recycled water is and will continue to be an important tool in the West to address the water supply challenges of today and in the future under significantly changing water cycles. While it's not the right tool for every watershed and water need, for watersheds like the Sammamish River it offers a sustainable water supply that also recycles valuable nutrients to irrigators. If the 2015 drought foretells the challenges for water managers under a changing climate, recycled water must be part of the water supply tool kit for building a resilient water supply.

For Additional Information:

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Agriculture & The CWA

AGRICULTURAL NITRATE POLLUTION

CLEAN WATER ACT LAWSUIT FILED BY MUNICIPAL WATER WORKS AGAINST AGRICULTURAL DRAINAGE DISTRICTS

by David Moon, Editor

INTRODUCTION

Water Utility Obligations

Des Moines Water Works (DMWW) is a regional water utility providing drinking water to approximately 500,000 Iowans, drawing most of its raw water supply from the Raccoon and Des Moines Rivers. Under the federal Safe Drinking Water Act, Des Moines Water Works is obligated to meet the US Environmental Protection Agency's (EPA's) standards for **m**aximum **c**ontaminate **l**evels (MCLs) in its finished drinking water.

"Citizen Suit"

On March 16, 2016, DMWW filed a federal complaint against the Boards of Supervisors of Sac, Buena Vista, and Calhoun Counties in Iowa. The three Boards are being sued in their capacities as trustees of ten drainage districts (Drainage Districts), for the discharge of nitrate pollution into the Raccoon River, and failure to obtain a National Pollutant Discharge Elimination System (NPDES) permit or other state permit in violation of the federal Clean Water Act (CWA) and Iowa Code § 455 B.186. The "citizen suit" case (citizen enforcement action under 33 U.S.C. § 1365) was filed in the United States District Court for the Northern District of Iowa, Western Division. Des Moines Water Works is seeking relief against upstream polluters and agricultural accountability for passing production costs downstream and endangering drinking water sources. *Board of Water Works Trustees of the City of Des Moines v. Sac County Board of Supervisors, et al*., Case No. 5:15-cv-04020 (March 16, 2015).

Denitrification Costs

On January 4th of this year, DMWW issued a press release noting that it ended 2015 operating its nitrate removal facility for a record 177 days, eclipsing the previous record of 106 days set in 1999, in order to meet federal drinking water standards. According to DMWW, its operational costs for denitrification in 2015 totaled $1,500,000. DMWW also stated that it meets or exceeds regulatory requirements for drinking water established by EPA, including delivering drinking water to its customers with nitrate concentrations below 10 mg/L (parts per million).

NITRATE POLLUTANTS & THE SAFE DRINKING WATER ACT

Nitrate Peaks

Under the Safe Drinking Water Act, DMWW is obligated to meet EPA's standards for certain MCLs in its finished drinking water. The MCL standard for nitrate is 10 mg/L. To meet that standard, DMWW operated its nitrate removal facility for 177 days in 2015 — more than any other year in Des Moines Water Works history. DMWW alleged in its *Complaint* (page 3) that "[D]espite the investments and efforts of Des Moines Water Works, record nitrate peaks in the Raccoon River watershed in the summer of 2013, the fall of 2014, and the winter of 2015 have threatened and continue to threaten the security of the water supply and the ability of Des Moines Water Works to deliver safe water in reliable quantities at reasonable cost."

Drainage System

DMWW maintains that the increase in river nitrate levels is attributable to upstream agricultural land uses, with the largest contribution made by application of fertilizer to row crops, intensified by unregulated discharge of nitrate into the rivers through artificial subsurface drainage systems. According to DMWW, a major source of nitrate pollution in the Raccoon River watershed are artificial subsurface drainage system infrastructures created and managed by the Drainage Districts. DMWW's *Complaint* (page 23) asserts that the "primary purpose of the Drainage District infrastructure is to remove water from agricultural lands, including groundwater containing a high concentration of nitrate… ." DMWW's treatment plants are located in central Iowa approximately 100 miles from the Drainage Districts. Additional details regarding DMWW's nitrate treatment system are contained in their *Complaint*.

TMDLs & Nitrate Levels

The Iowa Department of Natural Resources (IDNR) administers the NPDES program in Iowa. IDNR sets Total Maximum Daily Loads for water bodies not meeting CWA water quality standards based on a water body's ability to assimilate a certain amount of pollution and still be protective of its designated beneficial uses. According to the *Complaint*, "In 2009, the Iowa Department of Natural Resources… identified three segments of the Raccoon River as impaired by nitrate-nitrogen and established a Total Maximum Daily Load ("TMDL") target for nitrate in the Raccoon River at 9.5 mg/l to meet water quality standards." *Complaint* at 12. Upstream water monitoring by DMWW at 72 sample sites in Sac County has shown nitrate levels as high as 39.2 mg/L in groundwater discharged by drainages districts (DMWW's *Clean Water Act Frequently Asked Questions*, April 30, 2016). The *Complaint* stated at page 18 that in "2013 and 2014, persistent peaks in nitrate levels reached record highs with the Raccoon River reaching 24 mg/L… ." The *Complaint* contains factual allegations concerning sampling done by DMWW which showed that "groundwater containing nitrate in excess of 10 mg/L was discharged from a pipe or ditch" from different Drainage District locations. *Id*. at 25-27.

DMWW also asserts that politics has been instrumental in leading to the present situation. "Iowa's political leadership, with influence from industrial agriculture and commodity groups, continue to deny

Agriculture & The CWA

Health Risks

Iowa's water quality crisis," said Bill Stowe, CEO and General Manager, Des Moines Water Works. "Defending the status quo, avoiding regulation of any form, and offering the illusion of progress and collaboration, places the public health of our water consumers at the mercy of upstream agriculture and continues to cost our customers millions of dollars."

DMWW noted on its website that the "health risks associated with nitrate contamination above MCL include blue baby syndrome and endocrine disruption. In addition to public health risks to drinking water, nitrate pollution also contributes to the hypoxic conditions in public waters, including the Gulf of Mexico's 'Dead Zone.'" (*Clean Water Act Frequently Asked Questions*, April 30, 2016). The *Complaint* (page 13) notes that: "Despite Iowa occupying less than 5% of the Mississippi Drainage Basin, average annual export of nitrate from surface water in Iowa is estimated to range from 204,000 to 222,000 Mg. or 25% of the nitrate the Mississippi delivers to the Gulf of Mexico."

Infrastructure Costs

DMWW points out that its mission is to provide safe, abundant and affordable water to its customers. The problem faced by the water utility is that — while it has invested millions of dollars in infrastructure and has developed strategies to manage high nitrate levels — record nitrate peaks in source waters have threatened and continue to threaten the security of the water supply. DMWW's ability to deliver safe and reliable water, while operating with fiscal discipline, continues to be detrimentally impacted. DMWW' s website notes that its current denitrification technology is outdated and cannot continue to successfully operate with rising nitrate levels and increased customer demand. Continued high nitrate concentrations will require future capital investments of $76-$183 million before 2020, according to DMWW, to remove the pollutant and provide safe drinking water to a growing customer base.

COMPLAINT FILED IN FEDERAL DISTRICT COURT

CWA "Pollutant"

DMWW filed a complaint in Federal District Court (Northern District of Iowa, Western Division) on March 16, 2015. The lawsuit is currently in the discovery stages. Under the CWA, "pollutant" is defined to include "industrial, municipal, and agricultural waste discharged into water." 33 U.S.C. § 1362(6). As alleged by DMWW, the "case concerns the detrimental impact of the activities of the Drainage Districts on the sources of raw water from the Raccoon River relied upon by Des Moines Water Works." *Complaint* at 2.

CWA "Point Source"

Ongoing questions concerning the scope of the CWA pose a dilemma for DMWW. The CWA was passed to protect the waters of the US and created the NPDES program to regulate "point source" discharge of pollutants into navigable waters. The NPDES program is limited to "point sources" of pollution. Point sources typically involve effluent discharged through a discrete piping system, such as business, industries, or wastewater treatment facilities that discharge directly to a water body via an "end-of-pipe" outfall. These are considered potential sources of contamination because they can release contaminants into the watershed. "Point sources" discharging pollutants into rivers must obtain an NPDES permit under the federal CWA and Iowa law in order to discharge pollutants to the waters of the United States. Historically, most agricultural activities have not fallen under NPDES administration.

Critical to DMWW's success of maintaining a CWA claim is its position that "the facilities of the Drainage District (sic) are point sources, as 'discrete conveyances' of nitrate pollution under the CWA that are not exempt from regulation and are required to have an NPDES permit." *Complaint* at 31. The relevant definition of a "point source" in the CWA was noted in DMWW's *Complaint* at 31:

> A "point source" is generally defined to include "any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, [or] channel…from which pollutants are or may be discharged." However, the term "does not include agricultural stormwater discharges and return flows from irrigated agriculture." 33 U.S.C. § 1362(14).

Agricultural Exemptions

As noted on DMWW's website, "[A]nother type of contaminant is called a non-point source. These are sources not specific to one location. These types of sources may include land run-off and erosion. The Raccoon and Des Moines River watersheds are approximately 80-85% agricultural land, this is land that has been extensively tiled. Tiling systems are used to move water away from where it lands as quickly as possible. Even though these systems will discharge directly to a river or stream through a pipe they are considered non-point sources and are not regulated."

Tiling System Discharges

In additon to the exemption for "agricultural stormwater discharges" noted above, central to this case is the CWA's exemption for Agricultural Return Flows:

> The Administrator shall not require a permit under this section for discharges composed entirely of return flows from irrigated agriculture, nor shall the Administrator directly or indirectly, require any State to require such a permit.

33 U.S.C. § 1342(l)(1).

Key Assertions

In regard to these issues, DMWW asserts in its *Complaint* at pages 32-33, that:

> "[T]he Drainage Districts are point sources of nitrate pollution as defined by, and under, the CWA, 33 U.S.C. § 1342(14), because they are discernable, confined and discrete conveyances and the discharge of nitrate pollutants is neither agricultural stormwater discharge nor return flow from irrigated agricultural [activities]."

Agriculture & The CWA

Relief Requested

DMWW's complaint seeks to declare that the Drainage Districts' discharges are "point source" pollution and, thus: 1) are not exempt from regulation under the CWA; and are 2) required to have an NPDES permit under federal and Iowa law. The *Complaint* states that the drainage districts have violated and continue to be in violation of the CWA and Chapter 455B, Code of Iowa. The *Complaint* demands the Drainage Districts take all necessary actions to comply with the CWA, including ceasing all discharges of nitrate that are not authorized by an NPDES permit. DMWW's Complaint also is demanding: damages in an amount required to compensate for the harm caused by the Drainage Districts' unlawful discharge of nitrates; court assessed civil penalties; and an award of litigation costs and reasonable attorney fees to DMWW as authorized by under CWA litigation.

DMWW argues that because the Drainage Districts transport nitrate pollution through a system of channels and pipes, they should be recognized and held accountable like every other "point source" contributor. Specifically, DMWW alleged in its *Complaint* (page 3), "A major source of nitrate pollution in the Raccoon River watershed is the artificial subsurface drainage system infrastructure, such as those created, managed, maintained, owned and operated by the Drainage Districts, consisting of pipes, ditches, and other conduits that are point sources which transport high concentrations of nitrate contained in groundwater." As noted later in the *Complaint* (page 6), "[T]he Drainage Districts have created, operated and maintained drainage facilities which collect and discharge groundwater directly into ditches and streams, including discharges that reach the Raccoon River."

The Complaint also contains civil claims for damages and other legal relief under the US and Iowa Constitutions, federal statutes, and Iowa statutory and common law (Public Nuisance, Statutory Nuisance, Private Nuisance, Trespass, Negligence, Taking Without Just Compensation, Due Process and Equal Protection, and Injunctive Relief) which are not discussed in this article.

Key Issues

CONCLUSION

DMWW' lawsuit has been scheduled for trial in August of 2016 in Sioux City, Iowa. DMWW's website notes that "[W]hile DMWW has repeatedly expressed an interest in seeking a negotiated settlement beneficial to its rate payers, the defendants have flatly denied any contribution to source water degradation in their legal filings and failed to convene any meaningful discussions with Des Moines Water Works that accepts the utility's fundamental concern about agricultural contributions to surface water pollution in the Raccoon and Des Moines Rivers."

Regulating agricultural pollution and detrimental environmental effects has been an ongoing national debate for decades, and this Iowa lawsuit has garnered considerable national attention. Given the CWA's general exemption for agriculture, however, the outcome of this case is far from certain. Unless DMWW can obtain a legal decision that the discharge from the Drainage Districts' tile systems are "point sources" under the CWA, and not "agricultural stormwater" or "agricultural return flow," relief will be denied, at least so far as a Clean Water Act claim is concerned.

For Additional Information:
Laura Sarcone, Des Moines Water Works, 515/ 283-8705
DMWW's Clean Water Act lawsuit website available at:
www.dmww.com/about-us/announcements/clean-water-act-litigation-faq.aspx
Complaint and Defendant's Amended Answer available upon request from *The Water Report*

Iowa Water Quality Funding Proposal

At a January 5th press conference, Iowa's governor Terry Branstad proposed using funding from Iowa's 1-percent school building sales tax to improve water quality in the state. The Republican governor's proposal is backed by former Iowa governor and current US Secretary of Agriculture Tom Vilsack, a Democrat, who joined the governor at the press conference. The proposal would extend the sales tax — set to expire in 2029 — to 2049. The extension is expected to provide $20.7 billion for schools and $4.6 billion to improve water quality. The 1-percent sales tax, approved in 2008, currently brings in about $400 million each year. The funding proposal must be approved by the Iowa legislative. "The Des Moines Water Works lawsuit brought attention and focus to this issue, but I suspect that all of us believe that the ultimate resolution of our water quality issues ought not to be in a courtroom," Vilsack said.
For info: http://iowaenvironmentalfocus.org/2016/01/06/

WATER BRIEFS

TRUCKEE OPERATION CA/NV

OPERATING AGREEMENT BEGINS

On January 5th, the Bureau of Reclamation (Reclamation) announced that implementation of the Truckee River Operating Agreement (TROA) begins this month after 26 years of negotiations, environmental studies, regulatory actions, and court proceedings. TROA resolves decades-long water disputes over the operation of Truckee River reservoirs, and in the Truckee and Carson River basins. With TROA's implementation, interstate water allocations will take effect between California and Nevada in the Lake Tahoe, Truckee River, and Carson River basins. TROA was officially implemented by the federal Water Master on December 1, 2015, replacing an inflexible river management system that is more than a century old. Truckee River water flows from California's high Sierra into Lake Tahoe and other basin reservoirs before flowing into Nevada and on to Pyramid Lake, 40 miles northeast of Reno.

Conflicts over the waters of the Truckee River triggered decades of effort to reach agreement. The 1990 Truckee-Carson-Pyramid Lake Water Rights Settlement Act (Settlement Act) established the basis for TROA, which was formally signed in September 2008 by the five key signatories listed above, as well as, the Carson-Truckee Water Conservancy District, Washoe County Water Conservation District, city of Reno, city of Sparks, city of Fernley, Washoe County, Sierra Valley Mutual Water Company, Truckee-Donner Public Utility District, Placer County Water Agency, and North Tahoe Public Utility District. *See* Water Briefs, *TWR* #55.

The Settlement Act and TROA establish the total future Lake Tahoe and Truckee River water allocations between California and Nevada and modify the operation of the federal and non-federal reservoirs in the Truckee River Basin. TROA is expected to enhance conditions for the threatened Lahontan cutthroat trout and endangered cui-ui in the Truckee River basin, increase municipal and industrial drought supply for the Reno-Sparks metropolitan area, improve Truckee River water quality downstream from Sparks and enhance stream flows and recreational opportunities in the Truckee River Basin.

TROA is intended to increase the operational flexibility and efficiency of reservoirs in the Lake Tahoe and Truckee River basins, thus providing multiple environmental benefits while protecting the exercise of existing water rights. TROA is able to do this because of two key elements that differentiate it from current operations — the ability of a water right holder to store water that would otherwise have been released from storage or passed through the reservoir to serve a downstream water right, and the ability to exchange water between Truckee River reservoirs. The signatory parties are allowed to retain the consumptive use portion of the water they are entitled to divert in Truckee River reservoirs as credit water in lieu of diversion. Under TROA, a portion of credit waters not needed for the primary purpose for which they were stored can then be used for the benefit of water quality in the lower Truckee River, and for Pyramid Lake and its fishery. Credit water can also be exchanged with water stored in other Truckee River reservoirs without necessarily being physically moved between reservoirs. These key elements are at the core of TROA.
For info: Terri Edwards, Reclamation, 775/ 884-8344 or tedwards@usbr.gov; TROA website: www.troa.net/; Reclamation website for TROA: www.usbr.gov/mp/troa/

MICROBEADS BANNED US

FEDERAL LEGISLATION

On December 28th, President Obama signed legislation that bans plastic microbeads from being used in personal cosmetics products. President Obama signed into law a bill phasing out the manufacture of facewash, toothpaste, and shampoo containing plastic microbeads by July 1, 2017 and the sale of such beauty products by July 1, 2018. Following in the footsteps of California's historic microbead ban enacted earlier this year, the Microbead-Free Waters Act (H.R. 1321) bans all plastic microbeads from beauty products, including those made from so-called "biodegradable plastics," most of which do not biodegrade in marine environments. *See* Water Briefs, *TWR* #140 for additional information regarding microbeads.

The Microbead-Free Waters Act, introduced by Reps. Frank Pallone (D-N.J.) and Fred Upton (R-Mich.), is an important step toward addressing the global crisis of microplastic pollution. Plastic microbeads — designed to be washed down the drain and too small to be reliably captured by wastewater treatment facilities — pollute lakes, rivers and oceans. One tube of exfoliating facewash can contain more than 350,000 microbeads, and it's estimated that 2.9 trillion microbeads enter U.S. waterways annually.

Once in the environment, plastic microbeads concentrate toxins such as pesticides and flame retardants on their surface, which may then transfer to the tissue of fish that mistake microbeads for food. Both the U.S. Senate and House of Representatives unanimously approved H.R. 1321 earlier this month
For info: Blake Kopcho, Center for Biological Diversity, 805/ 708-3435 or bkopcho@biologicaldiversity.org

INSTREAM PILOT STUDY OK

INSTREAM FLOW FINDINGS

On January 21, officials and water planning specialists with the Oklahoma Water Resources Board (OWRB) are hosting a public forum to present updates on the Illinois River Instream Flow Pilot Study (*see* Calendar, this *TWR*). This is a follow-up to the meeting held in Tahlequah on January 22, 2015.

The meeting is the second of a series of public meetings to share information and obtain feedback on an Instream Flow (ISF) Pilot Study being conducted on the Upper Illinois River (including Barron Fork and Flint Creeks) above Lake Tenkiller in eastern Oklahoma. The purpose of the forum is to present preliminary findings of the study and to gather further input from stakeholders.

This pilot study on a state-designated Scenic River was initiated in 2014 in response to the recommendations of the 25-member Instream Flow Advisory Group and

WATER BRIEFS

the 2012 Update of the Oklahoma Comprehensive Water Plan (OCWP). According to the OCWP, the concept of "instream flow" has evolved over the years, but generally describes the amount of water in a stream or river necessary to ensure that environmental, social, and economic benefits are met.

The study, made possible through a partnership between OWRB and the US Army Corps of Engineers (Tulsa District), is being performed by the environmental engineering firm CH2M. Recent field work in the study area has been conducted to characterize the relationships between stream flows and aquatic habitats. The results of the field study along with a background summary of existing stream resource values and uses will help water planners gain a better understanding of how to balance the needs of multiple users in the watershed.

The technical team will also present information characterizing the current consumptive uses of water in the Illinois River watershed in Oklahoma, such as irrigation, industrial, municipal, and domestic supply. However, this study does not include the operations of Lake Tenkiller or its dam.

For info: Derek Smithee, OWRB, 405/530-8800 or derek.smithee@owrb.ok.gov; Instream Flow Advisory Group website: www.owrb.ok.gov/supply/ocwp/instreamflow.php

ENFORCEMENT REPORT US

EPA COMPLIANCE

On December 16, EPA released its annual enforcement and compliance results highlighted by large cases that the agency maintains reduce pollution, level the playing field for responsible companies, and protect public health in communities across the country. In fiscal year 2015, EPA secured record-setting hazardous waste, Clean Air Act, and Superfund settlements, and acted swiftly to win a large criminal plea agreement following a major coal ash spill, among other accomplishments. EPA also made significant progress on cases that will benefit communities well into the future, by pursuing a final settlement that puts billions of dollars to work restoring the Gulf and helping communities affected by the BP oil spill, and by launching an investigation against Volkswagen for illegally emitting air pollution from diesel vehicles.

In fiscal year 2015, EPA enforcement actions required companies to invest more than $7 billion in actions and equipment to control pollution and clean up contaminated sites. EPA's cases resulted in $404 million in combined federal administrative, civil judicial penalties, and criminal fines. EPA's criminal program also resulted in sentencing defendants to a combined 129 years of incarceration.

One of EPA's major cases involved three subsidiaries of Duke Energy Corporation, the largest energy utility in the US. They agreed to pay a $68 million criminal fine and spend $34 million on environmental projects and land conservation to benefit rivers and wetlands in North Carolina and Virginia. As part of the plea, two Duke subsidiaries will ensure they can meet legal obligations to remediate coal ash impoundments within North Carolina, which will cost an estimated $3.4 billion.

Through settlements with three Nevada gold mining operations, Newmont, Barrick and Veris, EPA ensured that over 180 million pounds of mercury containing RCRA hazardous waste were treated, minimized, or properly disposed. The largest bankruptcy-related cleanup settlement in American history, with Anadarko and Kerr McGee, will put more than $4.4 billion into toxic pollution cleanup, improving water quality and removing dangerous materials in tribal and overburdened communities.

For info: EPA's Fiscal Year 2015 Enforcement Report at: www.epa.gov/enforcement/enforcement-annual-results-fiscal-year-fy-2015

NEVADA DROUGHT NV

FORUM RECOMMENDATIONS REPORT

Nevada Governor Brian Sandoval established the Nevada Drought Forum on April 8, 2015 to bring together the best minds, managers and all interested stakeholders to assess the drought in Nevada, identify best conservation practices and policy needs, and make recommendations to the Governor regarding next steps. In his Order, Governor Sandoval also mandated full water audits of State facilities and implementation of water conservation strategies at State facilities. Additionally, Governor Sandoval urged local governments and private citizens to conduct similar audits and conserve water in consultation with local water authorities.

The Nevada Drought Forum was established to: Build on the activities of the existing Nevada Drought Response Committee; Evaluate key findings and next steps identified in the Western Governors' Drought Forum Final Report as they relate to Nevada; Meet with relevant stakeholders including, but not limited to, agricultural producers, municipal water suppliers, the industrial sector, recreation interests, Tribal Nations, and members of the general public; and Determine, with input from stakeholders and the public, the elements of a final report to the Governor.

The detailed Recommendations Report from the Nevada Drought Forum, dated December 2015, can be found at the website below.

For info: Nevada Drought Forum website: http://drought.nv.gov/

WATER REALLOCATION AZ

CENTRAL ARIZONA PROJECT PROPOSAL

The US Bureau of Reclamation's Phoenix Area Office (Reclamation) announced on January 5th that it is continuing to seek public comments on the proposed reallocation of non-Indian agricultural water within the Central Arizona Project system. In October 2015, Reclamation, in cooperation with the Arizona Department of Water Resources (ADWR) and the Central Arizona Water Conservation District, began preparing an Environmental Assessment (EA) for a proposed reallocation of 46,629 acres of non-Indian agricultural water for use by municipal and industrial users in the Phoenix, Pinal, and Tucson Active Management Areas (AMAs).

The reallocation of the subject water would be used by the AMA's to augment their existing water supplies, which are located within the Central Arizona Project service area, and to

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help these users meet their targets for reducing groundwater overdraft, while still developing their economies. The proposed reallocation is based on a prior recommendation provided by the ADWR.

The Arizona Water Settlements Act of 2004 outlines that this water can be reallocated to municipal and industrial users upon approval by the Secretary of the Interior (Secretary). The EA is being prepared to meet the requirements of the National Environmental Policy Act. The EA will help Reclamation and the Secretary understand the effects the proposed reallocations will have on the environment and natural resources, and will inform the Secretary's decision on whether to approve the proposed reallocations based on ADWR's recommendation.

Reclamation is currently seeking public input regarding the potential impacts of the proposed action, the alternatives that should be considered, and other concerns and issues that should be addressed in the EA. Comments on the proposed recommendations should be sent by postal mail to Reclamation's Phoenix Area Office, 6150 W. Thunderbird Rd., Glendale, AZ 85306, Attn: PXAO-1500, or via facsimile to 623/ 773-6486 by January 18, 2016. Submitted comments on the proposed recommendations are available for public review at any time.
For info: Public Scoping Newsletter available on Reclamation's website at: www.usbr.gov/lc/phoenix

FISHERY REGULATIONS CA
POTENTIAL FINES & ORDER

The State Water Resources Control Board (SWRCB) of California on December 21st provided information regarding violations of an order to protect Central Coast coho salmon and steelhead in the Russian River basin in northern California. Approximately 80% of more than 10,000 property owners and water suppliers in four Russian River tributary watersheds have complied with the SWRCB Informational Order issued this past fall to protect the coho salmon and steelhead.

The SWRCB issued 1,881 Administrative Civil Liability (ACL) complaints in the week prior to December 21st to the remaining 20% of property owners and water suppliers in the four tributary watersheds who failed to comply with the Order. The complaints were issued to property owners in the Dutch Bill, Green Valley, Mark West, and Mill Creek watersheds, who were required to submit information on their sources and uses of water. The information was due in late August and September, and a reminder letter was sent in late October.

The ACL complaints carry a potential fine of up to $500 per day of violation, which could total up to $24,000 to $31,000, depending on the watershed. If the property owners and water suppliers submit the required information within 20 days of receiving the ACL complaint, no fine will be issued. Property owners also have the option of requesting a hearing before the SWRCB within 20 days of receiving the complaint, which could result in a reduced or increased fine.

On June 17, 2015, SWRCB adopted an emergency regulation to protect federal- and state-listed anadromous fish in the four Russian River tributary watersheds. The emergency regulation requires: (1) enhanced water conservation in critical areas of the four watersheds; and (2) information on water use if requested by the State Water Board. The enhanced conservation is intended to maintain the small amount of water necessary to support the minimum temperature and oxygen conditions needed for summer rearing and migration of coho salmon and steelhead in the four watersheds. The information on water use requested by SWRCB will be used to inform future actions that may be needed if the enhanced conservation measures are not sufficient.
For info: SWRCB website: http://www.waterboards.ca.gov/ >> Russian River

CLIMATE CHANGE OR
WILLAMETTE VALLEY REPORT

On December 4, the Willamette Water 2100 Project, a five-year, $4.3 million study funded by the National Science Foundation and led by Oregon State University, in partnership with researchers from the University of Oregon, Portland State University and University of California at Santa Barbara, was released. During the next 85 years, temperatures in Oregon's Willamette River basin are expected to rise significantly, mountain snowpack levels will shrink dramatically, and the population of the region and urban water use may double — but there should be enough water to meet human needs, the new report concludes.

Fish may not be so lucky. Although ample water may be available throughout most of the year, the Willamette Valley and its tributaries likely will become sufficiently warm as to threaten cold-water fish species, including salmon and steelhead, the scientists say. "The Willamette River basin today is characterized by abundant annual water and sometime seasonal shortages," said Anne Nolin, an OSU professor of environmental sciences and principal investigator on the study. "That should continue into 2100, despite much warmer temperatures, more people and a substantial loss of snowpack. The reason for optimism is the region's 11 storage reservoirs coordinated by the Army Corps of Engineers that act as a valve for seasonal differences and preserve water for times of need," Nolin added. "Without them, the picture would look quite a bit different."

Analysis of global circulation models suggest that the Willamette River basin will warm between two and 13 degrees F. by the year 2100. Scientists used three separate scenarios to look at potential impacts based on low, medium and high rates of temperature increase. These temperature increases will result in a dramatic decline in snowpack — from 63 to 95 percent lower than average — changing seasonal water flow patterns.

There is little doubt that temperatures will increase, the report notes, but there is less certainty about the impact of a changing climate on precipitation. Winters may actually be slightly wetter, though more of the precipitation will fall as rain instead of snow. Summers should be drier, necessitating more reliance on water held behind the region's 11 storage reservoirs. Warmer temperatures,

less snowpack and drier summers will greatly increase the danger of wildfire in the mountains feeding the Willamette River basin – by about 200 to 900 percent. Their simulations show that fire will open up lands to new forest types and reduce the availability of forestland for timber harvest.

Increasing urban use of water from a population that could double will involve costly expansions in infrastructure. As the population grows, more agricultural land near urban areas will be developed for housing and other needs. However, the report shows that in some cases where urban areas are expanding into what are now irrigated farmlands, these locations may see a net decline in water use. "The report notes the difference between water 'diversions' and water 'consumptive use,'" Samuel Chan, a watershed health specialist with Oregon Sea Grant, noted. "As the population grows, the need for water will increase, but much of it will be used, and then treated in wastewater plants and returned to the system. Other uses, like forests and agriculture, consume the water through evaporation and transpiration to the atmosphere. The downside, though, is that treated water that is returned to the river is often warmer, increasing the impact on cold-water fish species," he added.
For info: Anne Nolin, OSU, 541/ 737-8051 or nolina@geo.oregonstate.edu

RESERVOIR LOSS WEST
EVAPORATION QUESTIONS

Water managers scrambling to meet the growing demand for increasingly scarce water supplies caused by large populations, climate change, and drought need to focus more effort on conserving water, including addressing reservoir evaporation, say University of Colorado Boulder researchers. The loss of water from reservoir evaporation is an issue already affecting the growing population of the West, said CU-Boulder Associate Professor Katja Friedrich. The reservoir water loss is becoming even more important as broad uncertainties in precipitation projected by climate change and early snowmelt require more reservoir storage, she said.

"Evaporation of water from open reservoirs in the arid western US cannot be neglected any more, especially with the possibility of precipitation decreases occurring as a result of a changing climate," said Friedrich, a faculty member in the Department of Atmospheric and Oceanic Sciences.

An October workshop convened by researchers at CU-Boulder and the Desert Research Institute (DRI) in Reno, Nevada, brought together experts in atmospheric science, hydrology, land use and water resource management from the western US and Canada.

Water managers have little information on evaporative loss, relying on outdated methods like "pan evaporation," developed in the 1920s and still in use today. In pan evaporation, a 4-foot-in-diameter, 10-inch deep pan is set next to selected reservoirs where water managers fill the pan and measure water evaporation in 24-hour increments and extrapolate the results to corresponding reservoirs. The method is used today in many Colorado reservoirs as well as major Colorado river impoundments.

Not all reservoirs are equal in terms of location, elevation, shape, or evaporation. Workshop attendees proposed using high-resolution weather models coupled with sophisticated reservoir models, which could estimate and forecast evaporation — a method not previously considered. Little research has been done on quantifying evaporation with instrumentation and numerical models. Friedrich said, "We need to better understand evaporation, which will require continuous measurements of wind direction and speed, air and reservoir temperatures, humidity, solar radiation and vegetation at individual reservoirs."

Evaporation is a large and continuing problem in the Colorado River basin, including Lake Mead and Lake Powell where about 500 billion gallons of water evaporate annually, according to CU-Boulder Assistant Professor Ben Livneh of the Department of Civil, Environmental and Architectural Engineering. This represents roughly 10% of the total natural flow of the Colorado River Basin — about five to 10 times the amount of Denver's annual water use.

Proposed "geo-engineering" techniques for reducing reservoir evaporation include covering surface water with thin films of organic compounds, reflective plastics, or extremely lightweight shades. Other proposals include moving reservoir water underground into new storage areas or aquifers or relocating or building new storage reservoirs at higher elevations where less evaporation occurs.

"One thing we do know is that you can only reduce evaporation and not eliminate it unless you store it underground," said Friedrich. "But that has its own set of problems. Our intention is to help water managers reduce evaporation for current and future reservoirs."

To study evaporation differences in different reservoirs, a team of scientists, water managers and federal and state agency representatives led by DRI researcher Justin Huntington deployed high-tech buoys at reservoirs in California, Idaho, and Nevada to better understand the water evaporation process. In addition, there is ongoing research on evaporation from the Great Lakes by CU-Boulder geography Professor Peter Blanken and his Canadian and U.S. colleagues.

Participants in the workshop included a number of universities and federal and state agencies like the Bureau of Reclamation, the Colorado Water Conservation Board, Environment Canada, and the National Center for Atmospheric Research. The researchers hope to test new techniques and tools related to evaporation on a Front Range reservoir starting next year, said Friedrich.
For info: Peter Blanken, CU-Boulder, 303/ 492-5388 or blanken@colorado.edu

GROUNDWATER BANKING CA
SAN JOAQUIN RESTORATION PROGRAM

A sandy basin in California's San Joaquin Valley has been soaking up and banking any excess water to recharge groundwater supplies.

On December 17, 2015, the local Tulare Irrigation District held a groundbreaking ceremony for its project to quadruple the existing groundwater recharge basin, from 20

WATER BRIEFS

acres to 80, increasing storage capacity to approximately 300 acre feet — nearly 98 million gallons of groundwater.

The US Bureau of Reclamation is providing roughly half of an estimated $4 million for the district's Cordeniz Basin Project under authorization to provide financial assistance for local agencies within Reclamation's Central Valley Project, towards groundwater projects. Construction was expected to begin in this month and end in December 2016.

The San Joaquin River Restoration Program is a long-term plan for releasing flows to maintain fish populations over an area of 153 river miles in the San Joaquin River from Friant Dam to the confluence of the Merced River. The Cordeniz project is the first of four planned recharge projects intended to help make up for future water losses to irrigation districts and others during the river's restoration. Even while California is experiencing historic dry weather, the Tulare Irrigation District is taking charge to be prepared for when the rains eventually return to the San Joaquin Valley.

For info: San Joaquin River Restoration Program website: www.restoresjr.net/

RECLAIMED WATER US

RISKS-BENEFITS ANALYSIS

On December 22, the National Academy of Sciences released a new report entitled, *Using Graywater and Stormwater to Enhance Local Water Supplies: An Assessment of Risks, Costs and Benefit*s.

The Report's preface states:

> Chronic and episodic water shortages are becoming common in many regions of the United States, and population growth in water-scarce regions further compounds the challenges. Increasingly, alternative water sources such as graywater-untreated wastewater that does not include water from the toilet but generally includes water from bathroom sinks, showers, bathtubs, clothes washers, and laundry sinks and stormwater — water from rainfall or snow that can be measured downstream in a pipe, culvert, or stream shortly after the precipitation event — are being viewed as resources to supplement scarce water supplies rather than as waste to be discharged as rapidly as possible. Graywater and stormwater can serve a range of non-potable uses, including irrigation, toilet flushing, washing, and cooling, although treatment may be needed. Stormwater may also be used to recharge groundwater, which may ultimately be tapped for potable use. In addition to providing additional sources of local water supply, harvesting stormwater has many potential benefits, including energy savings, pollution prevention, and reducing the impacts of urban development on urban streams. Similarly, the reuse of graywater can enhance water supply reliability and extend the capacity of existing wastewater systems in growing cities.
>
> Despite the benefits of using local alternative water sources to address water demands, many questions remain that have limited the broader application of graywater and stormwater capture and use. In particular, limited information is available on the costs, benefits, and risks of these projects, and beyond the simplest applications many state and local public health agencies have not developed regulatory frameworks for full use of these local water resources.
>
> To address these issues, U*sing Graywater and Stormwater to Enhance Local Water Supplies* analyzes the risks, costs, and benefits on various uses of graywater and stormwater. This report examines technical, economic, regulatory, and social issues associated with graywater and stormwater capture for a range of uses, including non-potable urban uses, irrigation, and groundwater recharge. [The Report] considers the quality and suitability of water for reuse, treatment and storage technologies, and human health and environmental risks of water reuse. The findings and recommendations of this report will be valuable for water managers, citizens of states under a current drought, and local and state health and environmental agencies.

For info: www.nap.edu/catalog/21866/using-graywater-and-stormwater-to-enhance-local-water-supplies-an

WATER INVESTMENTS US

NEW INTERIOR DEPARTMENT CENTER

On December 15, 2015, US Secretary of the Interior Sally Jewell announced that the Interior Department will establish a Natural Resource Investment Center to spur partnerships with the private sector to develop creative financing opportunities that support economic development goals while advancing the Department's resource stewardship mission.

At a White House Roundtable on Water Innovation, Jewell outlined that the Center will use market-based tools and innovative public-private collaborations to increase investment in water conservation and critical water infrastructure, as well as promote investments that conserve important habitat in a manner that advances efficient permitting and meaningful landscape-level conservation.

The Center will work closely with the private sector and others to identify innovative ideas and financing options for projects that conserve scarce Western water resources and protect species habitat.

The Center will focus on three objectives:

1) Increase investment in water conservation and build up water supply resilience by facilitating water exchanges or transfers in the Western US.
2) Increase investment in critical water infrastructure – both major rehabilitation and replacement of existing infrastructure and new infrastructure needs – by developing new financing approaches and helping to execute project ideas.
3) Foster private investment and support well-structured markets that advance efficient permitting and effective landscape-level conservation for species, habitat, and other natural resources.

The Center is part of the President's "Build America Investment Initiative" — which calls on federal agencies to find new ways to increase investment in ports, roads, water and sewer systems, bridges, broadband networks, and other 21st-century infrastructure projects; and "Pay for Success" — an initiative that seeks to employ innovative

new strategies to help ensure that the essential services of government produce their intended outcomes. The infrastructure improvements are facilitated by building partnerships among federal, state, local and tribal governments, and private-sector investors. The US Departments of Transportation and Agriculture and the Environmental Protection Agency also have centers initiated in response to these Initiatives.

Interior's Natural Resource Investment Center will harness the expertise of the Department's bureaus, including: the Bureau of Reclamation; US Fish and Wildlife Service; Bureau of Land Management; National Park Service; Bureau of Indian Affairs; and US Geological Survey. The Center will tap external private sector experience to deliver on its objectives.

The Center will model its water efficiency and transfer efforts in part on the successful initiatives of the Central Valley Project (CVP) in California. The CVP improves operational flexibility and water supply reliability through expanded use of voluntary water transfers. Individuals or water districts receiving CVP water can transfer all or a portion of their water to other California water users or a water agency, state or federal agency, tribes, or private non-profit organizations. Through this program, between 300,000 and 400,000 acre-feet of water is transferred in a typical year, allowing high-value agriculture and cities to maintain deliveries through scarcity.

To promote increased investment in critical water infrastructure, the Center will also work to develop new financing approaches and engage with non-federal partners to make investments that build water supply resilience. These could include: storage; pipelines; canals; and investments in efficiency that help to stretch and better manage scarce water supplies and sustain river ecosystems. One recent example of this approach is the Warren H. Brock Reservoir in California. To respond more effectively to the changing conditions on the river, Reclamation and stakeholders in Nevada, Arizona, and California collaboratively constructed this storage facility to conserve water and maximize the use of available water supplies. Reclamation conducted environmental compliance, oversaw construction, and integrated the project into its operations in the Lower Colorado River system, and the project was completed in roughly two years.

The Center will also identify opportunities for private sector investments in important habitat conservation needs on public and private lands. One creative example is demonstrated in a partnership between Interior, Barrick Gold of North America, and The Nature Conservancy to enhance habitat in Nevada for the greater sage grouse. The agreement allowed Barrick to accumulate credits for successful habitat improvement projects on its private ranchlands. In return, the company receives assurance from Interior that the credits can be used to offset impact to habitat from planned future mine expansion on public lands.

The Department of the Interior manages approximately 20 percent of the land in the United States, and is the largest wholesale water provider in the country. The Department is establishing the Center under its existing authorities.

The US Department of the Interior has appointed Martin Doyle, professor of river science and policy at Duke University, as Senior Conservation Finance Fellow at the Center.
For Info: Martin Doyle, Duke University, 919/ 613-8026 or martin.doyle@duke.edu

NUCLEAR PLANT IMPACTS US

NRC PROPOSED GUIDANCE GROUNDWATER PROTECTION

On December 11. 2015, the US Nuclear Regulatory Commission (NRC) issued for public comment draft regulatory guide (DG), DG-4025, "*Assessment of Radioactive Discharges in Ground Water to the Unrestricted Area at Nuclear Power Plant Sites*." This DG proposes guidance for an approach that the NRC staff considers acceptable for use in assessing abnormal, inadvertent radioactive releases that may result in discharges of contaminated ground water from the subsurface to the unrestricted area at commercial nuclear power plant sites.

The public comment period ends February 9, 2016. Comments received after this date will be considered if it is practical to do so, but the NRC is able to ensure consideration only for comments received on or before this date.
For info: Thomas Nicholson, NRC, 301/415-2471 or Thomas.Nicholson@nrc.gov; Federal Register Doc. 2015-31254

BAY HEALTH CA

SANTA MONICA BAY REPORT

The "2015 State of the Bay Report" (Report) is a science-based comprehensive assessment of the Bay's environmental condition. The Santa Monica Bay National Estuary Program (SMBNEP) periodically conducts and makes a report on this assessment, with the goal of measuring progress in restoring the Bay's natural habitats and resources, educating the public about the Bay's valuable natural resources, and identifying and helping scientists and managers to address remaining and emerging challenges. More specifically, the Report provides information that can be used both to gauge the progress in implementing the Bay Restoration Plan (BRP) and to guide updates of the BRP to meet new and existing challenges.

The Report covers a broad range of issues across all major Bay habitats, closely following the three priority issues addressed by the BRP: water quality, natural resources, and benefits and values to humans. It represents the multi-year collaborative effort of the SMBNEP's Technical Advisory Committee (TAC), with participation of outside experts and several partner agencies and organizations. The Report includes an assessment of the ecological health of all major habitats in the Bay and the Bay watershed, using a refined rating system and available data on the indicators recommended by panels of experts. Professional judgments by the TAC and expert panels were also considered and applied to the assessments for indicators with no available data.
For info: http://urbancoast.org/volume-5-issue-1-special-issue-state-of-the-bay/

CALENDAR

January 15 WA
SEPA & NEPA Seminar, Seattle. WA State Convention Ctr. For info: Law Seminars Int'l, 800/ 854-8009, registrar@lawseminars.com or www.lawseminars.com

January 15-17 MT
2016 CLE & SKI, Big Sky. Big Sky Resort. Presented by the MT Bar. For info: www.montanabar.org/events/event_details.asp?id=711713

January 19-21 ID
Idaho Water Users Ass'n Annual Convention, Boise. The Riverside Hotel. For info: IWUA, 208/ 344-6690 or www.iwua.org/

January 21 WEB
A New Look at Wastewater: A Valued Resource Webinar, Presented by EPA, National Ass'n of Clean Water Agencies & the Water Environment Federation. For info: https://attendee.gotowebinar.com/register/7630553893102798849

January 21 OK
Illinois River Instream Flow Pilot Study Public Forum, Tahlequah. Tahlequah Armory Municipal Center located at 100 North Water Street, 6:30-8:00 pm. For info: http://www.owrb.ok.gov/news/news2/pressreleases/2016/010816.php

January 21-22 WA & WEB
23rd Annual Endangered Species Act Conference, Seattle & WEB. Washington Athletic Club, 1325 6th Avenue. For info: The Seminar Group, 800/ 574-4852, info@theseminargroup.net or www.theseminargroup.net

January 21-22 AZ
Tribal Water in Arizona Seminar, Phoenix. Radisson Phoenix North. For info: Law Seminars Int'l, 800/ 854-8009, registrar@lawseminars.com or www.lawseminars.com

January 22 CA
SoCal's Water Future & Drought Proofing Strategies - Southern California Water Committee Luncheon, Riverside. Western Municipal Water District Headquarters, 14205 Meridian Parkway. For info: http://www.acwa.com/events/scwc-quarterly-luncheon

January 23 CA
Local Action and Global Perspective: Innovation for the New Normal in California Water - 2016 California Water Law Symposium, Sacramento. University of the Pacific, McGeorge School of Law. For info: http://www.waterlawsymposium.com/

January 25-26 CA
California's New Water Realities: Solving the Puzzle - 2016 Conference, Sacramento. Hilton Sacramento Arden West. Presented by California Irrigation Institute. For info: http://www.caii.org/

January 25-28 CA
2016 International Symposium - Potable Reuse & Biological Treatment, Long Beach. Renaissance Long Beach. Presented by American Water Works Ass'n. For info: http://www.awwa.org/store/productdetail_event.aspx?productId=52608761

January 27 WEB
Drinking Water Contamination: Lessons Learned From Operational Upsets & Failures - Webinar, WEB. Presented by American Water Works Ass'n. For info: http://www.awwa.org/store/productdetail_event.aspx?productId=56267114

January 28-29 TX
Texas Wetlands Conference, Houston. JW Marriott. For info: CLE Int'l, 800/ 873-7130 or www.cle.com

February 1-5 TX
2016 Membrane Technology Conference & Exposition, San Antonio. Henry B. Gonzales Convention Center. Presented by American Membrane Technology Ass'n & American Water Works Ass'n. For info: http://www.amtaorg.com/awwa/mtc16reg

February 2 TX
Conservation, Come Drought or High Water Symposium, Austin. St. Vincent de Paul Auditorium, 1345 Philomena Street. Presented by Texas Water Foundation. For info: www.texaswater.org/

February 4-5 CA
Water 101 Workshop: Learn the Basics & Beyond, Sacramento. Presented by the Water Education Foundation. For info: http://www.watereducation.org/foundation-event/water-101-workshop-1

February 4-5 NV
Law of the Colorado River Conference, Las Vegas. The Wheelhouse. For info: CLE Int'l, 800/ 873-7130 or www.cle.com

February 7-8 CA
Ocean Desalination in California Seminar: Examining Technical, Regulatory & Practical Solutions, Santa Barbara. Fess Parker's DoubleTree Resort. For info: The Seminar Group, 800/ 574-4852, info@theseminargroup.net or www.theseminargroup.net

February 10-12 CA
Urban Water Institute Spring Water Conference, Palm Springs. Hilton Palm Springs Hotel. For info: http://www.urbanwater.com/conference/

February 18-19 NV
2016 Family Farm Alliance Annual Conference, Las Vegas. Monte Carlo Resort. For info: www.familyfarmalliance.org

January 20 OR
Environmental Due Diligence: An Attorney's Checklist - Luncheon, Portland. The Hotel Monaco. Presented by Real Estate & Land Use Section - Oregon State BAR. For info: Jon.Goodling@MillerNash.com

February 21-24 CA
Back to Basics: Will Compliance Concerns Derail Efforts to Innovate? - National Ass'n of Clean Water Agencies (NACWA) Winter Conference, San Diego. Westin San Diego. For info: NACWA, www.nacwa.org/16Winter/

February 22-24 England
World Water-Tech Investment Summit: Adaptive Solutions for Future Water Security, London. Hilton Tower Bridge. For info: http://worldwatertechinvestment.com/

February 23 CA
Dry, Wet or Average? The Challenge for Water Project Operations, Sacramento. Sacramento Convention Center. Presented by California Dept. of Water Resources & the Water Education Foundation. For info: http://www.watereducation.org/conferences

February 23-25 DC
ACWA 2016 Washington, D.C. Conference, Washington. Mayflower Hotel. Presented by Association of California Water Agencies. For info: http://www.acwa.com/events/acwa-dc2016

February 23-25 CO
2016 UIC Annual Conference, Denver. Embassy Suites Downtown. Presented by Groundwater Protection Council. For info: www.gwpc.org/events

February 24-27 CA
Water Environment Federation (WEF) 2016 Utility Management Conference 2016, San Diego. Hilton San Diego Bayfront. Presented by Water Education Foundation. For info: http://wef.org/conferences/

February 26 OR
Freshwater Trust's Annual Gala & Auction, Portland. Portland Art Museum. For info: www.thefreshwatertrust.org

February 26 CA
Endangered Species Act Conference, San Diego. The Westin. For info: CLE Int'l, 800/ 873-7130 or www.cle.com

February 29 NV
Water Rights in Nevada Seminar - 2016 NWRA Annual Conference, Las Vegas. Tuscany Suites & Casino. Presented by Nevada Water Resources Association. For info: http://www.nvwra.org/2016-water-rights-seminar

February 29 NV
Southern Nevada Dinner Forum - 2016 NWRA Annual Conference, Las Vegas. Tuscany Suites & Casino. For info: http://www.nvwra.org/2016-sonvdinnerforum

February 29-March 1 OK
Oklahoma Water Law Conference, Oklahoma City. Skirvin Hilton. For info: CLE Int'l, 800/ 873-7130 or www.cle.com

February 29-March 3 NV
2016 NWRA Annual Conference Week, Las Vegas. Tuscany Suites & Casino. Presented by Nevada Water Resources Association. For info: http://www.nvwra.org/2016-annual-conference-week

March 2-4 NV
Lower Colorado River Tour 2016, Hoover Dam. River Tour. For info: www.watereducation.org/general-tours

March 3-4 CA
California Wetlands Conference, San Francisco. Hotel Nikko, 222 Mason Street. For info: CLE Int'l, 800/ 873-7130 or www.cle.com

March 7-10 RI
American Water Works Association (AWWA) Sustainable Water Management Conference, Providence. Providence Biltmore. For info: http://www.awwa.org/conferences-education/conferences/sustainable-water-management.aspx

March 9 CA
ACWA 2016 Legislative Symposium, Sacramento. Sacramento Convention Center. Presented by Association of California Water Agencies. For info: http://www.acwa.com/events/2016-legislative-symposium

The Water Report
Water Rights, Water Quality & Water Solutions in the West
260 N. Polk Street • Eugene, OR 97402

CALENDAR

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March 10-11 CO
2016 Martz Winter Symposium: A Celebration of the Work of Charles Wilkinson, Boulder. Wolf Law Bldg., Wittemyer Courtroom. Presented by the Getches Wilkinson Center for Natural Resources, Energy & the Environment. For info: www.colorado.edu/law/research/gwc/events

March 10-11 DC
Natural Resources Damages Seminar, Washington. Arnold & Porter LLP Conference Center. For info: Law Seminars Int'l, 800/ 854-8009, registrar@lawseminars.com or www.lawseminars.com

March 16 CA
Imagine H2O Water Gala '16 - Annual Celebration of Water Innovation & Entrepreneurship, San Francisco. The Palace Hotel Ballroom. For info: www.imagineh2o.org

March 17 CA
Defining the New Normal: 2016 Executive Briefing, Sacramento. DoubleTree by Hilton, 2001 Point West Way. Presented by Water Education Foundation. For info: http://www.watereducation.org/foundation-event/2016-executive-briefing

March 17-18 MT & WEB
Buying & Selling Ranches in Montana Seminar, Billings. Hilton Garden Inn. For info: The Seminar Group, 800/ 574-4852, info@theseminargroup.net or www.theseminargroup.net

March 21 AZ
Water Resources Research Center Annual Conference 2016, Tucson. UA Student Union. For info: https://wrrc.arizona.edu

March 21-25 DC
Western States Water Council Spring (180th) Council Meeting & Washington, D.C. Roundtable, Washington. Grand Hyatt Washington Hotel. For info: http://www.westernstateswater.org/upcoming-meetings/

March 24 MT
Trends in Environmental Law CLE, Helena. Sponsored by the Montana State Bar. For info: MSB, www.montanabar.org

March 29-30 TX
34th Annual ABA Water Law Conference, Austin. Hyatt Regency Austin. For info: http://shop.americanbar.org/ebus/ABAEventsCalendar/EventDetails.aspx?productId=202302853

March 31-April 1 OR
Pacific Northwest Timberlands Management Conference, Portland. World Trade Center. For info: The Seminar Group, 800/ 574-4852, info@theseminargroup.net or www.theseminargroup.net

April 7-8 TX
Water Acquisition & Management for Oil & Gas Development: Legal & Regulatory Requirements, Houston. TBA. Presented by Rocky Mt. Mineral Law Foundation & Institute for Energy Law. For info: www.rmmlf.org

April 11-13 DC
Federal Water Issues Conference, Washington. Washington Court Hotel. Presented by National Water Resources Ass'n. For info: www.nwra.org/upcoming-conferences-workshops.html