The Water Report™

Water Rights, Water Quality & Water Solutions in the West

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WASHINGTON WATER REGULATION

NEW DEPARTMENT OF ECOLOGY DIRECTOR INTERVIEWED

by David C Moon, Editor

Early last year Jay Manning returned to the Washington State Department of Ecology (Ecology) to become its Director after six years in private practice. Director Manning faces both persistent water issues, familiar to him from his tenure as counsel to Ecology's Director in the 1990s, and a range of developing water conundrums. The Water Report sat down for an interview with Director Manning on December 16, 2005. Joe Stohr, Special Assistant to the Director, and Curt Hart of Ecology's Public Information Office also contributed to the interview and provided additional information for this article.

Water Quality and Quantity: One Agency

Ecology is charged with taking care of both the State's water quality program and its water quantity program. The Water Report asked Director Manning how this arrangement has worked out. "They are both very difficult programs and both are very challenging. ...Getting rid of one or both of them sounds like a great idea some of the time, just because there are really hard issues and there are no easy answers. But the bottom line is there is no separating the two. Water quality and quantity are, as we often say around here, inextricably linked. We could pretend otherwise and separate them and that would be politically easier in some ways...but [that] would be ignoring the actual reality that they are linked."

Manning explained the advantages of having one large agency coordinating the approach to water issues. "What we avoid is what a lot of states get themselves into — [i.e.] the water quality agency and the water quantity agency fighting with each other. ...Our two programs...squabble some...but it comes together at [my desk] and we have to make decisions about how to balance the interests of those two programs. That is infinitely superior to having two agencies who aren't required to come to one unified position. It is surprising to me how rare it is. Across the country there are not that many states where the two programs are together in one agency. ...I think they should be."

Besides undergoing common decision-making at the highest level, the two components of water quality and quantity "work side by side with lots of connections" according to Manning. He specifically noted the example of Washington's watershed planning process which the Washington Legislature created in 1998 (the "Watershed Planning Act"—see below). This process focuses on water use and quantity issues for both instream and out-of-stream purposes—simultaneously taking on water quality issues while the plans are being developed.

Total Daily Maximum Loads: "The Frontier"

Setting Total Daily Maximum Loads (TMDLs) for impaired water bodies as mandated under the federal Clean Water Act is primarily overseen by Ecology's water quality program. However, this is another effort which benefits greatly from close coordination between the water quality and water quantity programs, according to Manning. "Whether it's temperature or dissolved oxygen, a lot of water quality

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303(d) List

"Great Frontier"

Mixing Zone Limits

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parameters are very much affected by flow, so they have to make assumptions about flow when they are doing their modeling, when they are trying to figure out...how much [point sources have] to improve discharges. All of that is dependent on a model that has a flow assumption," Manning explained.

Washington has a large and growing number of "impaired water bodies" being designated as such under section 303(d) the Clean Water Act. "We have one of the longest 303(d) lists in the country. We [also] have one of the best monitoring systems in the country. [This] is no coincidence. ...I think a lot of states have little, short 303(d) lists because they 'ain't lookin'—we look. In fact, we turn over rocks and look. We are trying to establish a complete and accurate list, and then move water bodies to legitimate clean up actions. ...It's a hard long road."

Manning said that he would like to "see our list of impaired water bodies...start to shrink. We are working hard on TMDLs on a lot of different rivers in this state right now, so I'm hoping to see that list of impaired water bodies start to go down."

After "impaired water bodies" have been identified for specific shortcomings, TMDLs must be developed and implemented to allocate pollutant loads amongst dischargers. Manning described this process as "one of the great frontiers of environmental protection." The Director pointed out that, while the 303(d) lists and TMDLs have existed since the Clean Water Act was originally written over 30 years ago, TMDL implementation is still in the formative stages. "But we, along with a bunch of other states, are at that front edge of states that are getting to implementation," Manning commented.

Discussing efforts to address **d**issolved **o**xygen (DO), which he characterized as being particularly problematic, Manning discussed the difficulties of implementing the TMDL process for the Spokane River. "We wrote an outstanding TMDL. [We have] very, very good hard science supporting that TMDL. But now it's [time for] implementation. Now we're at the point where most of the local governments and a couple of industries are looking at very expensive and maybe not physically practical treatment technologies to get down to the standards that the model tells you that you have to get to. ...That's very hard. It's hard politically, it's hard financially, and it's hard technically. It's truly in my mind...one of the frontiers of environmental protection. ...Nobody yet across the country has demonstrated how you do this. We are breaking ground, along with a few other states and with EPA, in implementing TMDLs in a very real way."

Mixing Zones

The issue of mixing zones for discharges of pollutants under NPDES permits was also discussed. Mixing zones are discrete areas of effluent dilution inside of which water quality standards aren't required to be strictly adhered to. "As you know, there is an ever increasing scrutiny of the appropriateness of mixing zones and whether they are just a regulatory nicety that ends up causing even bigger problems in the long run. ...We don't have the same level of political heat around the issue here in Washington that Oregon does, but...the pressure to eliminate mixing zones will get here."

Director Manning explained that under Washington's regulations mixing zones are not allowed in the "impaired water bodies" identified on the 303(d) list. He noted, though, that such a position begs the questions: "What if you're not quite violating standards but you are right up next to them?" and "Should there [even] be mixing zones?" Manning went on to answer: "We think mixing zones are appropriate in some circumstances. Under the right conditions they are environmentally acceptable and they are certainly a tool from the regulatory perspective that make it easier to issue permits in a way that makes common sense. But as you get closer and closer to an impaired water body and...cross over that line into an impaired water body, they become less useful as a regulatory tool and less appropriate environmentally. I would say they are useful...and I don't see [mixing zone utilization] ending any time soon—but they are not useful, nor are they used, with impaired water bodies." [For Washington's Mixing Zone guidance document, see website: www.ecy.wa.gov/programs/eap/mixzone/mixzone.html]

Dissolved Oxygen and Temperature Exceedance: Biggest Quality Issues

The Water Report asked Manning to identify the biggest water quality issues in Washington. He responded: "My sense is that temperature and dissolved oxygen are our two biggest."

Manning launched into an informative discussion concerning dissolved oxygen. "Dissolved oxygen is the problem that we see violated over and over again. [While] the standard that is violated is dissolved oxygen...the process at work is an overloading of nutrients—primarily phosphorous and nitrogen. Phosphorous and nitrogen are discharged into the system, which causes algae blooms. The algae blooms and that's okay to a point—but then it dies. When it dies it starts to decompose and that decomposition process eats up oxygen. It pulls oxygen out of water column, resulting in very low or no oxygen areas in the water column. [This] can [occur in] salt water or fresh water...in a lake or in a river."

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Dissolved Oxygen Issues

Implementing TMDLs for dissolved oxygen becomes problematic due to several factors, Manning explained. "There are so many potential sources: failing septics; wastewater treatment plants; nonpoint runoff from agricultural areas—all of those can contribute nitrogen or phosphorus or both." Faced with a plethora of sources, solutions may not be readily available. "There is not great technology out there. A complete, fully functional septic system doesn't take nitrogen out of the effluent...basically clean water that comes from a fully functioning septic system [still] has elevated levels of nitrogen. ...It's just not designed to deal with nitrogen. So on the Hood Canal [for example], the scientists...determined that there is a pretty high nutrient load from natural systems. The river is bringing in a fair amount of nitrogen naturally. But the human contribution—by far the biggest contribution—[comes from] failing septics. But not just failing septics, functioning septics are also contributing nitrogen. So it's a hard problem. I don't know how many septics there are on Hood Canal, but I imagine it's [around] 10,000."

Alternative Solutions: Water Reclamation & Stream Rehydration

Treatment Alternatives

Given the lack of technology and huge expenses sometimes involved, TWR inquired about alternatives in water treatment being utilized in Washington. Manning responded, "The most innovative thing I'm aware of that deals with this problem is right here in Olympia with the Lacey, Olympia, Tumwater Thurston County (LOTT) Wastewater Treatment Plant. They discharge to Budd Inlet, with a very low exchange between water inside of Budd Inlet and outside so you don't get a lot of mixing. It's small, its narrow, [and] it's shallow. There's just not a lot of mixing of dilution to be had out there."

"[LOTT] went to a very high level of treatment at that central treatment plant, right in...Olympia. They are well past secondary treatment, well into tertiary, and Budd Inlet is still listed for DO on the 303(d) list—we're going to have to do a TMDL. [We] realized we could spend another zillion dollars on treatment and we're not going to get there. [LOTT] realized that we're just going to have to get out of Budd Inlet, stop discharging, or at least reduce our loading.

Reclaimed Water

"[LOTT is] now in the process of building a treatment plant right down the road [from Ecology's headquarters in Lacey, WA]. ...They are going to...pipe treated water from LOTT—[water which is] treated to a very high level already—and run it out here (that's the expensive part—getting it out here). ...When [this polishing plant is] done with it, that water is going to be not quite potable—but pretty darn close. They are promoting...that water like crazy. They want to use it as reclaimed water, for irrigation."

Treating for marketable reclaimed water is not the only strategy in the works. On-site infiltration galleries are also being planned for the new treatment plant, which is being built near the headwaters of Woodland Creek. As Manning noted, Woodland Creek is "a fairly typical small urban stream that has been vastly affected by urbanization. ...It doesn't have perennial [i.e., year-round] flow anymore because of all the impervious surfaces that have been put down." The level of the local aquifer has dropped and is no longer feeding the stream as it did in the past. "The infiltration gallery...will feed Woodland Creek with very clean water, very high quality water, year-round. ...We'll end up with a perennial stream again. So it's just a wonderful combination of helping Budd Inlet, helping Woodland Creek, and making a source of reclaimed water available out here in Lacey where we are desperately short."

Environmental Dilemma

However, a dilemma may arise in this project between marketing the reclaimed water and the benefits that a healthy aquifer provides for Woodland Creek (gaining flow from the aquifer). As Manning noted, this situation is essentially an **a**quifer **s**torage **r**ecovery (ASR) project. Water users could potentially seek water rights for the additional flow arising from the project. "When the aquifer gets full it starts leaking into Woodland Creek. The suspicion is for a while there is really not going to be enough of a market to really be pulling it out. When things might get tough is when you do have a big enough market for that reclaimed water, and now you've hydrated Woodland Creek. You've got it flowing year-round, you've got salmon running up and down Woodland Creek and then you start getting enough people saying 'Yeah, I'd like that reclaimed water now. I'm ready for that reclaimed water.' And you [reply]: 'Wait a second...we've got fish running in Woodland Creek.' That would be a good problem to have. We don't have fish in Woodland Creek and we don't have the market for that reclaimed water, so when we have that problem that will be a good thing."

Wasting Wastewater?

Looking ahead, Director Manning sees this sort of project as the "future of wastewater. I predict that fifty years from now we will look at [the current practice] of discharging millions, maybe billions of gallons [of water] into Puget Sound every day from our treatment plants, as being [an] archaic practice. This water will all be pumped back up into the watersheds to re-hydrate rivers, to make reclaimed water supplies." Joe Stohr of Ecology added that 17 different reclaimed water projects are at some level of investigation "all the way from Pullman [eastern Washington]...to Sequim [on the coast]." [See "*Case Studies in Reclaimed Water Use: Creating New Water Supplies Across Washington State*" at Ecology's website: ww.ecy.wa.gov/pubs/0510013.pdf]

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Collaboration

Engineered Impacts

Collateral Benefits

Restoration

Funding Cuts

Tri-Party Agreement

Radioactive Waste

Contamination Plumes

Worst Sources

Channelization & Aquifer Impacts: Restoring the Walla Walla Basin

A remarkable restoration project is occurring in Washington's Walla Walla Basin. Director Manning stated that the people in that basin are doing "amazing stuff" due to the "alignment between the Umatilla Tribe and the agricultural community, the likes of which I've never seen anywhere else. They really trust each other and talk to each other and they have the same goal in mind, which is 'We are going to keep the agricultural community strong and viable and financially successful and we're going to bring salmon back to the Walla Walla.'" Manning also acknowledged the close ongoing cooperation with Oregon.

After being pushed into a corner by the federal Endangered Species Act (ESA) impacts, the Walla Walla is now being touted often as a shining example of collaboration. Manning said that the "Walla Walla has run bone dry for decades because of over-appropriation. So we're in a basin where it is as hard as it gets—where you have to rebuild a flow where you have had none for decades." Manning provided some history about a flood control project instigated by the US Corps of Engineers that resulted in channelization of the Walla Walla River. The problem that became evident was that the prior "flooding had hydrated this big aquifer, and that aquifer fed the river in the summer. ...Each year...flood...water would get into the soil and it would show up in [the river in] July and August—just when you needed it. Well, when they channelized it to stop the flooding, that aquifer just disappeared. So they are now re-engineering these dikes [to] put water back out in the aquifer on an annual basis during the flood, so water will show up when you need it."

While the ESA may have been the impetus of changes to the status quo in the Walla Walla, water users have realized that a healthy river is to their benefit. Manning noted that the biggest and most powerful water users in the area are wine grape growers who are "building [a] whole economy around the tourism that comes into the area. ...If you have a dry channel flowing through town that's sort of unsightly that's one thing. But if you have a flowing river with salmon in it that's another thing. So it's part of this vision of restoring Walla Walla as a destination for tourists who come in for wine, who come in for the river, and for natural amenities—whether it's mountain biking or skiing or wine tasting."

The efforts at restoration in the Walla Walla are driven partly by the vision of increased tourism, but also by the fact that the water users "just think it is the right thing to do and they want to do right by the river and the salmon and the Tribe." Director Manning expressed how special he finds the attitude in the Walla Walla basin: "I can be as cynical as the next guy. I've been doing this for a long time. But what is going on down there has a different feel than just about anything else I've been around."

Hanford Cleanup Stalled

Cleanup at the Hanford Superfund site, adjacent to the Columbia River, has received national attention lately due to the Bush Administration's decision to cut funding for cleanup activities. Hanford was formerly a federal nuclear weapons production complex. The site, located in south-central Washington, is home to what has been described repeatedly as the most contaminated area in the United States. The site occupies 586 square miles northwest of the cities of Richland, Pasco, and Kennewick, with a combined regional population of over 200,000. The Columbia River, the nation's second largest river and a source of hydropower production and drinking water for downstream communities, as well as a major route for salmon migration, flows through the site for almost 50 miles.

Recent actions by federal officials would delay the Hanford cleanup by seven or more years to at least 2018—in violation of a legally binding federal-state consent order executed during the administration of President George H.W. Bush in 1989 (the "Tri-Party Agreement"—see Niles, this TWR). Numerous officials from Washington have criticized the Hanford budget cuts and chastised President Bush's federal budget rescission proposal that listed the Hanford waste treatment facility as a "lower priority" program (making it a prime candidate for congressional budget reductions).

The Tri-Party Agreement was negotiated in the late 1980s and signed in 1989 by the State of Washington, the US Environmental Protection Agency and the US Department of Energy (DOE). The Agreement has been the principal master plan for Hanford cleanup. DOE is the agency responsible for the Hanford Site and the cleanup of 53 million gallons of highly radioactive waste that is stored in 177 obsolete tanks.

Director Manning, discussed on-going efforts to deal with the extremely complex water contamination problems that exist at Hanford. "There are literally hundreds of different plumes of contaminated groundwater. Some of them have mixed together," noted Manning.

The central plateau area, about seven miles from the Columbia River, is "the worst of it by far." The central plateau is the location of Hanford's 177 underground storage tanks. The "source of the worst of the contamination out there" is the 149 single shell tanks—tanks which have just a single wall of steel

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Leaking Tanks

Site Hydrology

Past Practices

River Threats

Contamination Plumes

encased in concrete to contain contamination. DOE estimates, based on tank monitoring data and other techniques to detect contamination in the soil, that 67 of the 177 underground storage tanks have leaked contaminants into the soil. Although most of the liquids have been pumped out of the single-shell tanks into double-shell tanks, the remaining problem is that "you can't pump all the liquids out. It's the stratified layer after layer, you know, this layer is hard like cement, and then there is some liquid, interstitial liquids, so you can't get in there and pump everything. We've pumped what we can pump. So the worst of the current risk in terms of leakage from the tanks has been reduced," Manning said.

The tanks range in size from 55,000 to one million gallons, with the oldest ones dating back to the mid-1940's. Manning described the problem in more detail: "There is a very significant plume of contamination coming off of those tanks. Most of it is still in the vadose zone [the span of soil and rock between the ground's surface and the groundwater beneath]. Groundwater is 200 feet deep, so there is a vadose zone that is 200 feet thick. Most of those contaminants from the tanks are still in the vadose zone, but not all of it. Some of it has gotten into the groundwater." Joe Stohr of Ecology pointed out that in addition to the tanks, "up until production stopped in the 1980's" there were "re-processing facilities where they had discharges...to gravel trenches. So large volumes of less contaminated stuff was discharged directly into the vadose zone and then made its way [into the groundwater]...so you see the big plumes...tens of miles [in length]."

Manning commented on the most serious contamination that must be dealt with to prevent disastrous impacts to the Columbia River. This contamination consists of "the world's largest plume of carbon tetrachloride...which is a nasty solvent. We have technetium-99, which is a nasty radionuclide that is highly mobile in soil and groundwater. It is really long-lived, with a half-life of thousands of years. Most of that is either in the soil or in the groundwater, but still in the central plateau area and has not reached the river yet. That's the plume that cannot reach the river. We cannot allow that to happen."

In addition to the central plateau issues, Manning said there are other smaller contamination plumes near the Columbia River that are already reaching the river. "There are the 13 reactors that produce the fuel, from which we got weapons-grade plutonium. They were all built right out on the river because they needed a big source of cooling water. [Contamination] plumes were created. A lot of these are metals...there are some radionuclides, but a lot of chrome 6 [hexavalent chromium], others are lead, metals like that. They are going into the river. Large volumes of tritium are going into the river right now. That's the primary radionuclide that's going into the river. Tritium has a relatively short half-life and we can't find it in the river. You know it's coming in—in large volumes, but the river [flow] is so big [that] once you get into the water column we can't even detect it. The concern is about the tritium. ...There are a couple of smaller plumes of strontium, cesium and uranium on the river. We're focusing on those right now and the chrome 6. Those are the most harmful plumes getting into the river right now. They are small and minor compared to the central plateau plumes. But those plumes aren't hitting the river yet and these plumes are—so we are working hard on these."

Aerial view of the N Reactor on the Columbia River. The zig-zag trench was once used for waste disposal, leading to severe soil and groundwater contamination.

Ecology is exploring environmental and human health impacts. One issue is: what impact does the tritium, strontium, cesicium, and uranium have on salmon? "We haven't seen signs of direct mortality; we haven't seen dead fish out there; [and] we're not catching fish with noticeably high concentrations that have collected in their bodies." The second issue that is being investigated is impact on redds (salmon eggs buried in the river's gravel). Impact on salmon is extremely important since, as Manning noted, the Hanford Reach of the Columbia River is the primary spawning ground for fall chinook salmon—which is the biggest salmon run left and still the biggest run in the Northwest.

"Most of that spawning happens in Hanford Reach. They spawn in those gravels. They burrow down into the gravels and lay their eggs. Those eggs are not in the water column. They are down in the gravel. So up comes this tritium from below and it comes right into the gravels. It is not fully diluted yet

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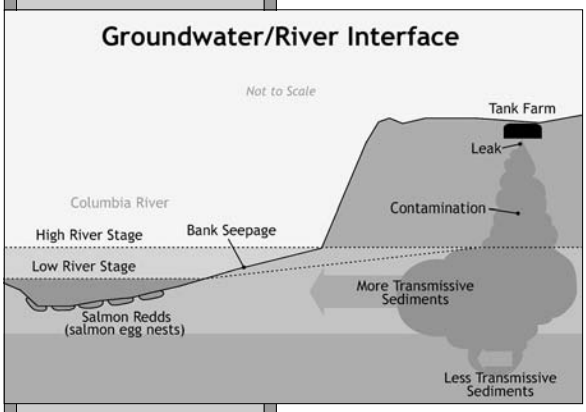
when it hits the salmon redds. So the concern is, is there some sub-lethal, or even genetic, mutagenic effects of those radionuclide plumes coming up into those redds? The science is inconclusive right now." Despite the uncertainty of this impact, Manning said that, "It can't be doing anybody any good, so the best thing to do is to get rid of these plumes. That's easier said then done."

Cleanup Options

Hanford Groundwater Cleanup Challenges

The dilemma with cleanup options for the groundwater contamination at the Hanford site, Manning stated, is that the existing "technology...doesn't work very well. You put in pump and treat systems, barrier walls, grout curtains, and reverse pressure well fields that suck plumes back. They are all expensive and none of them work very well." Manning explained that "at a Superfund site, what you do first is you hold your breath and hope that it hasn't gone to groundwater yet. Because if it hasn't, you can probably really effectively do something about it. Even if it isn't some scary radionuclide and it's just oil, if it has gotten to groundwater you're going to have real problems doing anything about it. Because we just don't have good groundwater cleanup technologies right now."



A human health issue attracting attention right now involves the "at-water plumes" close to the river. "The human health issue is that the City of Richland [has] one of their well fields...right up next to the border with the Hanford Site. The '300 Area'—which is one of the heavy industrial areas—is right there. So, there is a big plume of uranium contaminated groundwater not very far from the City of Richland's well field." Manning was quick to point out that the contaminated plume has not reached Richland's well field, and Ecology "think[s] the plume can be controlled through up-gradient wells that pull that plume back." The "risk" remains, however, and cannot be ignored since pumping from the "well field wants to pull in the plume." Ecology is working with DOE, EPA, and Richland to try and make sure that doesn't happen.

Permit Exemptions

"Exempt Wells" – Agricultural and Stockwater Use

One issue causing substantial controversy in Washington, as it has elsewhere in the West, concerns irrigation use from "exempt wells." As in many western states, Washington's statutes allow limited uses of groundwater without obtaining a permit from Ecology. "Exempt wells" were interpreted to be an option for "de minimus uses" as an exemption from the permit requirement. However, as Manning noted, it is not an exemption "from all of water law. It's not a license to impair; it's just that you don't have to get a permit."

Irrigation Exception

The controversy arose recently during the watershed planning process in the Quilcene-Snow watershed, due to a misunderstanding by Ecology staff about the applicability of a court decision to groundwater use by small farmers in the area. In what was referred to as an "about face" by some news accounts, Joe Stohr of Ecology corrected the initial statements by other Ecology staff to acknowledge that, in accordance with the *Kim* case, "exempt wells" include use for irrigation purposes, so long as the use does not exceed 5,000 gallons/day.

***Kim* Case**

The *Kim* case, Stohr explained, involved a small commercial greenhouse using a few hundred gallons of water per day. Their attorney approached Ecology because they wanted some certainty about how the well exemptions were interpreted. Ecology felt that since the use was commercial, and there was no exemption for agricultural use specifically mentioned in the statute, the Kims needed to obtain a water right permit. The Kims took the issue to court and ultimately the Court of Appeals reversed the ruling at the administrative level (i.e. the Pollution Control Hearings Board), holding that the small commercial operation equates to an industrial use. As an industrial use (one of the four well uses exempted), the Kims were entitled to use up to 5000 gallons per day without a permit. See *Kim v. Pollution Control Hearings Board*, 115 Wn. App. 157, 61 P.3d 1211 (2003). Ecology chose not to appeal *Kim* to Washington's Supreme Court, so it became the ruling precedent.

When Ecology was first asked about "exempt wells" and agricultural uses during the planning process, staff members reasoned that "agriculture" involved large uses of water, so the de minimus uses allowed under the exemption for wells probably would not apply, Stohr said. The attorney for the Kims, however, lived in the area and discussed the court ruling with locals so questions kept coming back to Ecology, forcing those at headquarters to revisit the question and reverse the initial statements.

Director Manning pointed out that the issue may not be dead since Washington's Supreme Court never weighed in on the question. "There are folks out there in the world—[e.g.] the environmental community and the Tribes—who will probably say, 'Wait a second. This [statute] says industrial. It

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doesn't say agricultural. If it was intended to be an agricultural exemption, the Legislature could have said that.' So, I don't know that this has played out yet."

Another section of the exemption statute has also recently received attention, in the form of an Attorney General's Opinion (AGO). Stockwater use from "exempt wells" had always been interpreted by Ecology as being limited to the same 5000 gallon/day limitation as the other uses under the statute (industrial, lawn or noncommercial garden not exceeding 1/2 acre, and domestic purposes). The AGO, however, determined that under the clear language of the statute (RCW 90.44.050) "stock-watering purposes" had no 5000 gallons/day limit. Although Director Manning thinks that the AGO "doesn't make much sense" in that most of the other exemptions clearly have a 5000 gallon limit and "why would you have an unlimited exemption" just for stockwater, Ecology will abide by the AGO. [To view the complete AGO on the stockwater exemption, go to: www.atg.wa.gov/opinions/2005/2005_17.htm]

Groundwater Rules & Exempt Wells

When the new AGO regarding stockwater use was publicized, it drew immediate attention from agricultural groundwater users in the Quincy area. Their concern was that the groundwater aquifer in the area was very fragile and has a limited supply; rules were already in place that limit how much groundwater can be used. The federal Bureau of Reclamation also weighed in, asserting that the groundwater was, at least in part, return flow from irrigation provided by the Columbia Basin Project, Manning said. One particular concern was whether or not the AGO interpretation would allow a large dairy to come in and begin pumping an unlimited amount of groundwater in the area. If 5000 dairy cattle suddenly could have an unlimited use of groundwater, the impacts could be significant.

Fortunately, the second part of the AGO dealt with the issue of Ecology's power to promulgate rules that limit stockwater usage where necessary, despite the exemption statute. Manning pointed out that the AGO stated that "where there are limited groundwater supplies or an impaired aquifer, or an over-appropriated aquifer…Ecology can pass rules to limit the use of groundwater for any purpose, including stockwater." Thus, the groundwater rules in the Quincy area and elsewhere are still in place and enforceable. The Director thought it was "highly ironic that it was the agricultural interests" who were very concerned about the impact and who were supportive of the existing groundwater restrictions—as opposed to other water interests groups.

Both Stohr and Manning reflected on the potential impact of the lack of limitation on a stockwater "exempt well" due to the fact that one Pollution Control Hearings Board case ruled that stockwater use includes "reasonable ancillary uses." Thus, stockwater use for dairy cattle would include cleaning and cooling uses in addition to consumption by the cattle (approximately 60-70 gallons per day per cow; versus the typical bovine consumptive use of 35 gallons/day).

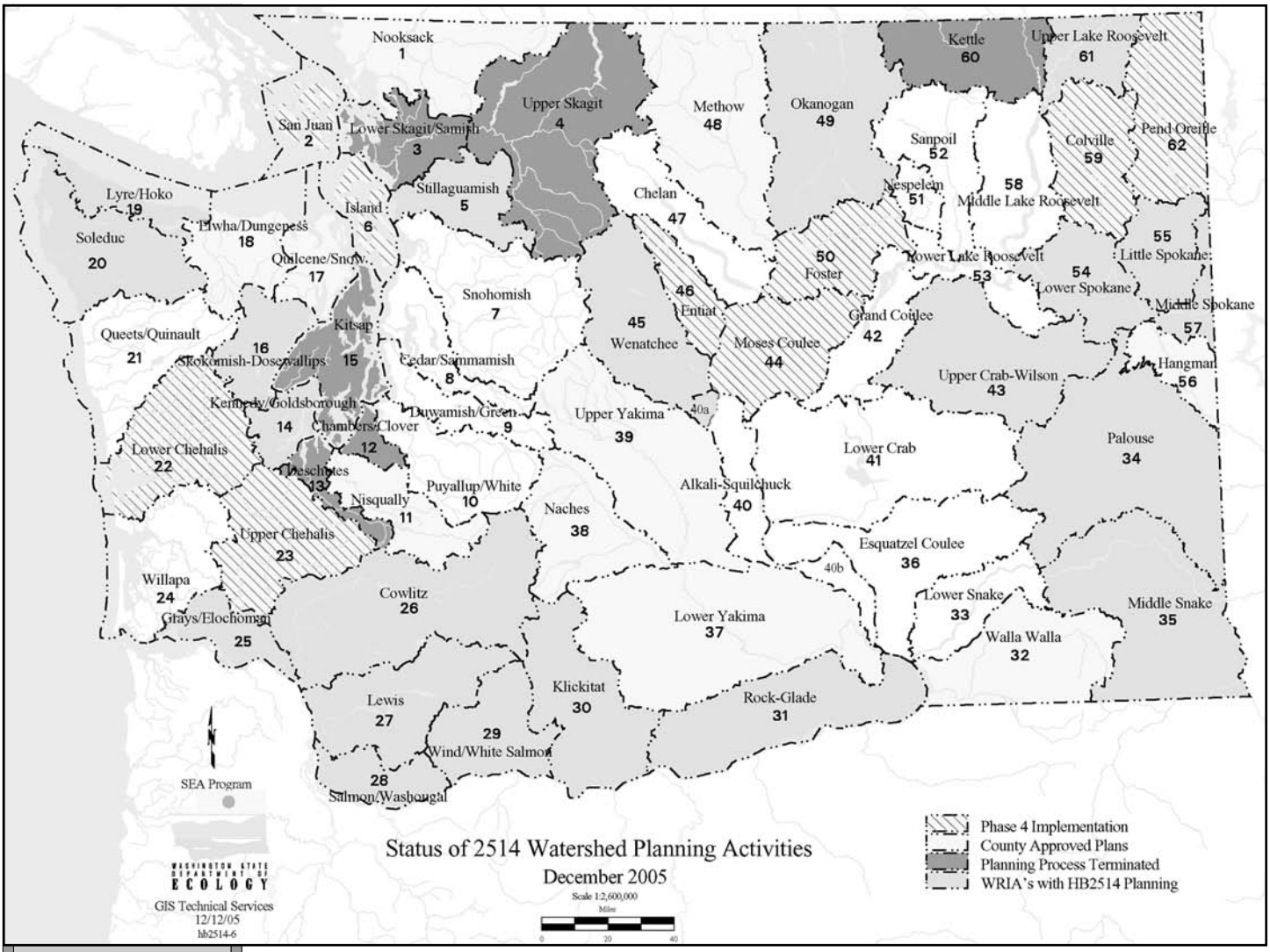
The Watershed Planning Act

INSTREAM FLOWS & WATER MANAGEMENT RULES

The same year Washington's Legislature created the Department of Ecology it also passed the Water Resources Act of 1971. Among other mandates, this Act required Ecology to establish base flows for every river in the state, adequate to protect fish and wildlife, recreation, and navigation. Ecology in the late 1970's and early 1980's enacted 18 instream flow rules, on a basin-wide, watershed basis. As part of that process, tributaries could be closed to further water appropriations if Ecology determined they were fully appropriated or over-appropriated.

The rule-making process establishing instream flows "has always been controversial," Manning said. "There were always unhappy folks out in the basin when we set the flows. There have always been big arguments about what is an appropriate minimum flow. How much water do fish need? ...The fish biology and science isn't there yet. We use the most advanced techniques around—IFIM [Instream Flow Incremental Methodology], modeling, fish biology—and the number [for instream flows] usually comes up pretty dang high because [the techniques] are conservative."

In 1985, the process ground to a halt when the Legislature "got so unhappy with the program that they passed a moratorium, and said Ecology, '...Even though we told you in 1971 to do this, we are now telling you to stop.'" Manning noted that Ecology didn't get back into the process until the Watershed Planning Act passed in 1998. That Act changed the process to actively include local input. "Instead of Ecology coming in from on high and saying okay we know what's best and we'll decide what the instream flow rule is, the idea was these local groups, with all the different stakeholders represented, would work in the watershed and talk about: 'What do we need water for? Here are these instream values that we want to protect. ...Here is how much water we have available. Here is how much is spoken for, in terms of existing rights, leaving this much to play with. How do we want to use that water?'"



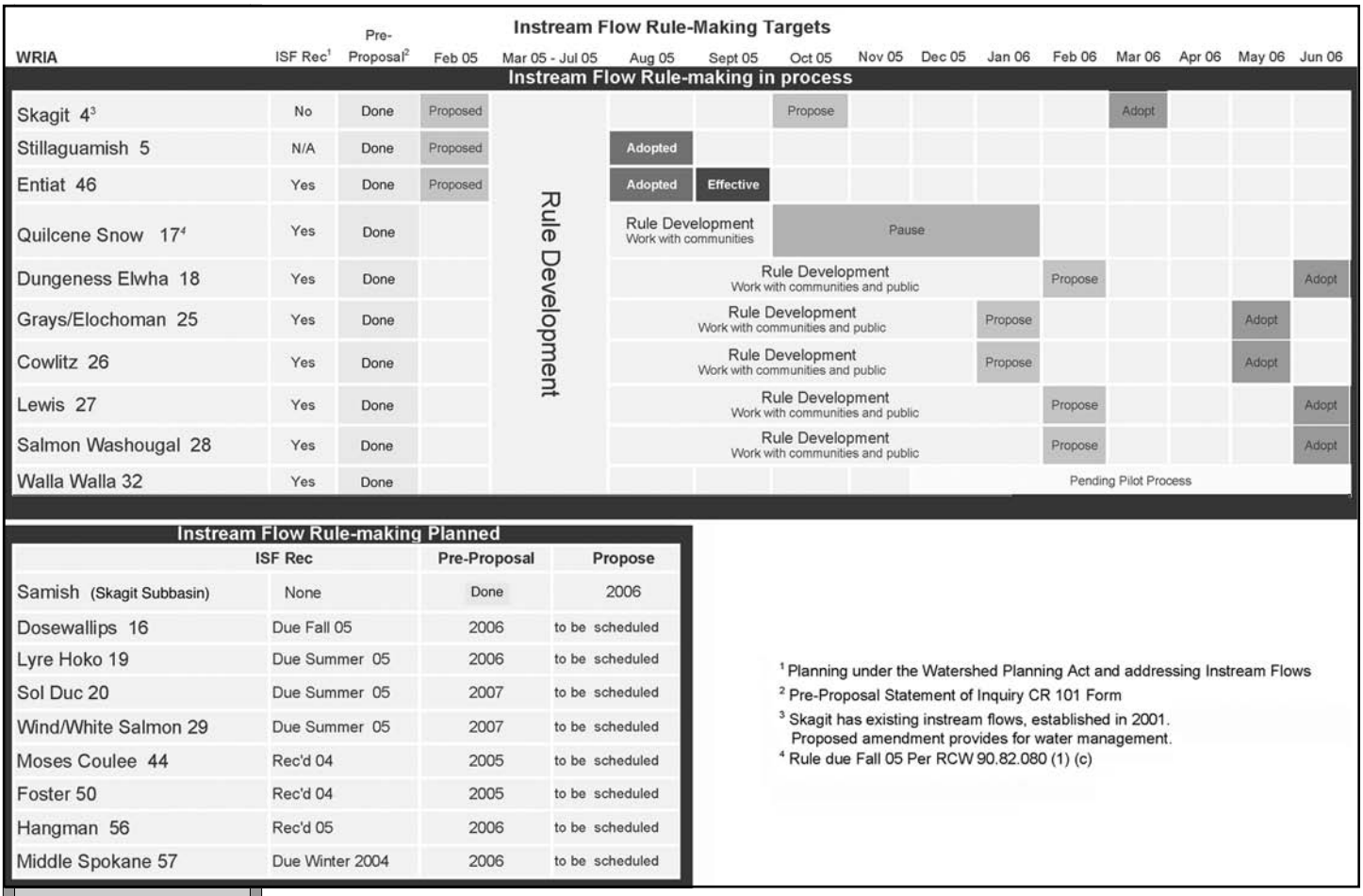
Mixed Results

The post Watershed Planning Act process has had uneven results, with relatively quick adoptions in some basins and drawn-out controversy in others. Manning contrasted the Entiat River Basin, which embraced watershed planning, had a "really functional planning unit" and adopted instream flows that all the parties seemed happy with, to the Skagit River Basin, where planning never happened. Ecology ended up adopting an instream flow regimen for the Skagit in 2001 and "it was immediately challenged by everybody." Nonetheless, Manning believes that Ecology is "getting pretty darn close to a rule that everybody can live with on the Skagit." Ecology pulled various interest groups together and let it be known that instream flows were indeed going to be adopted ("We're not going to go away") and facilitated a process whereby local parties helped "remodel" the water management rules.

A Lesson

Manning also thought that there was a cautionary "lesson" to be gained from examining the Quilcene-Snow watershed planning experience. In that basin, "a pretty functional planning unit worked for four years. They delivered a flow recommendation to us and we thought, 'this is going to be [easy], just like the Entiat. We'll just go adopt this thing.' And then all hell broke loose. A bunch of folks who weren't at the table in the planning process" challenged adoption of the rules. Ecology thought all the critical players were working on the rules, but it turned out that a significant group of small farmers — "the budding organic farm industry up in Jefferson County"—were not involved in the process. They were concerned about several issues, including the "exempt well" issue (see above). As Director Manning put it, the primary issue was "Who the hell are you, Ecology, to tell us how to use our water?"

Ecology pointed out that the recommendations being objected to were made by the basin's planning unit—not Ecology. Joe Stohr is now working with objectors in the Quilcene-Snow watershed, Manning said, "to explain our approach." Ecology is again emphasizing that the passage of adequate instream flow rules is inevitable and it is only the matters of the specific approach and configuration which are up for discussion.



Slower Approach

Director Manning said that Ecology was unable to meet its expectation of adopting water management rules for instream flows in eleven watersheds last year. "Because, as it turns out, watershed planning isn't inoculation from controversy. We are going to have to go a little slower than we thought. [We need to] get these things adopted with an adequate level of support, so that we don't end up...in litigation. ...Our experience is you might as well take the time at the front end to build the support. You are not going to get everybody, but get enough support so the rule can actually be implemented and can have an effect on the ground."

Instream Flow & Growth

The challenge for Ecology when developing the water management rules is that—in contrast to earlier efforts—"watershed planning is all about balance between instream and out-of-stream needs" according to Stohr. "You've got to meet...a basic set of responsibilities...to protect instream resources. But the challenge is: can you do that? [Can you] recognize the rights granted for out-of-stream use and still find some water to deal with growth projections?"

"Reserve" Uses

Reserves for Future Consumptive Uses: Skagit Basin Example

In the Skagit River Basin's watershed planning process, Ecology is working to create water reserves that allow for new water rights for consumptive uses. "We have a flow that will be set by rule, but we are also creating...reserves for various uses—agricultural reserves, municipal reserves—that [provide for] a certain quantity of water that is set aside for certain uses. Most of [the reserves]...at least on the municipal side...[will be taken up by use from new] exempt wells. So there are all kinds of complex requirements in that rule for monitoring, for construction, and the placement of the wells. There are assumptions about how much water they are going to use, and metering requirements. We will account for how many [exempt] wells go in and the usage of that reserve. When that reserve is gone, it is gone."

Skagit Reserve

According to a November 7, 2005 press release, Ecology's amended proposal would keep the current instream flows in place (set in 2001 rule) and would modify the rule by setting aside six million gallons of surface and groundwater per day to provide for more than 2,000 acres of new agricultural irrigation. This "reserve" of irrigation water would not be subject to the stream flow levels under the rule, but farmers would need to get a new water right from the Ecology in order to have access to this "reserved" water.

Washington State

Municipal Reserves

County Involvement

The proposed reserves in the Skagit basin "are big enough that they allow the full projected growth in Skagit County. ...For agriculture it [even] exceeds all growth projections—so they are satisfied," Manning said. On the municipal side, Stohr said that the proposed reserves provide for 25 to 50 years of growth (depending on the scenario used). Stohr also noted that Ecology is working on reserve proposals in two Skagit subbasins where the future supply is not quite sufficient for 20 years: "We are actively working with the county and the water supplier...to [determine] how they might be able to move supplies out [to these subbasins]. …The county takes a lot of heat, they have to change their ordinances, enter in a more dramatic and integrated way into their water management—which is an uncomfortable position."

County involvement is critical, according to Manning, because the county knows when exempt wells are drilled due to the building permit process. "We can use our well logs, but [the counties] are much closer to the ground. They know where the development is happening. So we work very hard to bring [the counties] along."

Changes in Rights

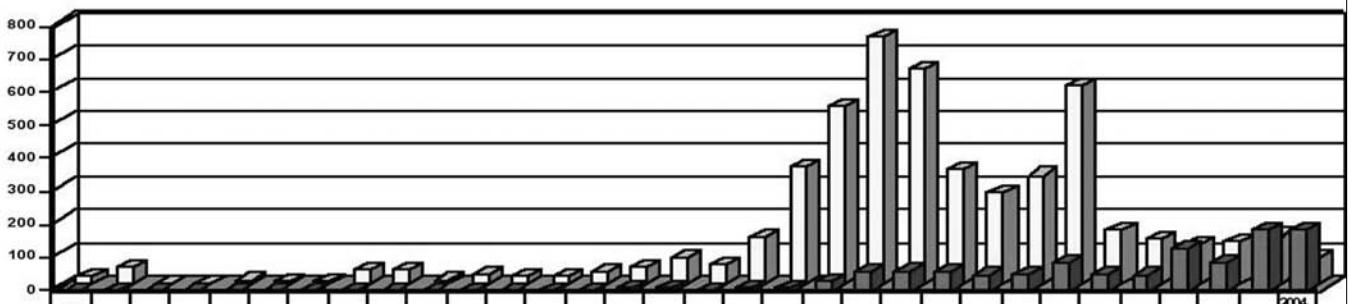
Watershed Planning & De Facto Moratoriums on New Water Rights

Watershed planning, which includes setting instream flows, can take several years to work through and adopt rules. As concerns new applications for water rights while this process is ongoing, Manning said that Ecology has a "de facto moratorium, because we don't process applications in the basin where we are going through planning and we are leading up to an adoption of a flow rule." Applications for new rights are processed once the new flow rules are in place. A different approach is taken in regard to transfers or change applications. "Applications for changes: change in place, purpose or transfers—those we will process." Stohr added that following the controversy over the instream rules from the mid-80's through the 90's, Ecology struggled with the basic issue of, "[I] s water a limited resource?" Staff cuts resulted in the "permit staff" being "essentially gone." When new staff was "given back to us in 2001" they "were specifically focused on changes and transfers." Due to this focus, Ecology has not been processing many new water right applications. "I think we did 135-140 a year the last several years. ...We have this huge backlog of applications that is kind of a millstone around our necks."

Exempt Wells

Another issue that came up during watershed planning is the impact of "exempt wells" that might be drilled *after* instream flows are set by rule. Ecology's position is that the instream flow rules that are being proposed will address exempt wells. "We are not going to write flow rules anymore that just sort of have this giant loophole in them that defeats the whole rule. If we are going to take on the pain and agony of adopting these rules, we are going to make them real."

DEMAND SHIFT: New Water Rights versus Changes to Existing Water Rights



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NEW APPS	23	51	3	1	13	7	8	47	46	13	28	23	25	40	49	81	60	143	354	541	751	650	349	279	330	601	166	136	123	129	147	78

Totals: 1,166 Pending Water Right Change Applications; 5,295 New Water Right Applications

"No Impairment" Standard

Hydraulic Connectivity & the "One Molecule" Theory

Conflicts between groundwater and surface are a source of consternation for nearly all the Western states. TWR inquired into how Washington is handling the issue. Based on a Washington Supreme Court decision known as the *Postema* case, Washington's standard "has been tagged with the unfortunate name 'the one molecule theory,'" Manning lamented. See *Postema, et al. v. DOE, et al.,* 142 Wn.2d 68 (2000).

Washington's statute governing water rights requires that there be "no impairment" to an existing water right due to a new use. The Supreme Court strictly interpreted that phrase, holding that "[T] he statutes do not authorize a de minimis impairment of an existing right. RCW 90.03.290 plainly permits no

Washington State

Impairment Proof

impairment of an existing right. This does not mean, however, that there is no need to show any impact on the surface water resource, nor does it mean that measurement is irrelevant to the inquiry." *Postema* at 92. The "one molecule theory" tag stems from the dissent in *Postema* at page 126: "Thus, according to the majority, a well water permit should be denied when we can say with scientific certainty that as little as a thimbleful, or even a molecule, of water would be diverted from the surface flow."

As explained by Manning, while 'no impairment' is the standard, the question of *proof* of impairment remains an important issue. "So the standard is, if you as a senior can prove that one molecule is taken away, one molecule that you have a right to…then I'm impairing you. That is still a factual question: I'm pumping water over here, it's groundwater, you've got to prove that I'm taking one molecule away." Proof of impairment inevitably involves groundwater modeling. Important factors include the timing of the impact. Is the pumping year-round or seasonal (even more complicated if seasonal); is the impact seasonal; and when is the impact going to show up? "Is it going to show up in the critical months when there is not enough water to go around? Or is it going to show up in January when nobody cares?" Manning questioned. These are the critical questions that will only be answered in individual cases, with battles of proof and experts involved.

"We probably have one of the toughest impairment statutes of any state in the union," Manning noted. He also said that, to date, the Washington courts have not settled the ultimate question of: what do you have to prove? "So, the *Postema* case has set up a situation where...if there is any real question about it, you're probably going to assume hydraulic continuity. That means you are going to have to put together a pretty sophisticated mitigation scheme to make sure that you're not impairing any senior [water user] and you're not causing problems for fish and flows."

Mitigation Requirements

Mitigation: USGS Groundwater Studies

Mitigation to avoid impacts to existing water rights is becoming more and more sophisticated in Washington. It is a "cutting edge topic for us," according to Stohr, with the standard being "in place, in kind, in time." The groundwater/surface water rights impairment issue has led to a number of new groundwater studies. As examples, Stohr said that "the entire Yakima Basin is in the fourth or fifth year of a six-year USGS review. The Quilcene just finished a USGS review. We're doing one with Idaho over on the Spokane Rathdrum [aquifer]. There are just groundwater studies going on all over the place to try and get a sense of the extent of groundwater connectivity. We'd like to put some kind of common sense to it and we've been thinking about what that might look like. But we had these court cases that [Director Manning] talked about and at some level sort of tie our hands."

Allusive Legislation

Director Manning, however, brought up political reality. "In this state, nobody has the political power at this point to pass a significant water bill that is strongly opposed by another segment of the water world. [Farmers] don't, the Tribes don't, the environmental community doesn't. Cities don't…So that means if you're going to come up with a solution it's going to have to be a negotiated solution that all the primary parties can live with. And that has alluded us."

Conclusion

Joe Stohr providied a brief overview of the priority areas Ecology is emphasizing regarding water issues in Washington's future.

Ecology's Water Priorities include:

- Supply issues in the Columbia River mainstem (including Odessa groundwater, municipal supplies, "interruptible rights" and the backlog of water right applications)
- Instream flows - setting and achieving
- Watershed Plan implementation
- Storage Development
- Clarification of Water Rights (Adjudications and Tribal water rights)

As the interview approached its end, Manning spoke in general about what the future holds, stating, "We [Ecology] have a lot of ideas; we have an aggressive agenda. It's not necessarily legislative. But, we've got a lot of plans; we have a lot of good stuff we're going to do. I think we're smart enough to know that some things are not possible. You can't fix everybody's problem, but we are taking on a lot of the big ones. And we'll see. We'll see if people are maybe tired of stalemate, because that's where we've been—a stalemate [where] nobody is getting what they want right now."

For Additional Information, Contact: Joe Stohr, Special Assistant to the Director, Washington Department of Ecology, 360/ 407-7015 or email: jost461@ecy.wa.gov

(Continued)

Washington State

(Continued from previous page)

Jay Manning was appointed by Governor Christine Gregoire in February 2005 to be the Director of the Washington State Department of Ecology. Before coming to Ecology, Jay spent six years in private law practice, most recently as the managing partner in one of the Pacific Northwest's leading environmental law firms, Brown, Reavis and Manning PLLC, where Jay advised private and municipal clients on how to comply with federal and state environmental laws. He also worked extensively with Indian tribes and environmental organizations. During this time, Jay was a lead negotiator in resolving the lawsuit over the state's shoreline management guidelines, achieving agreement among business, environmentalists and Ecology on the first update to the regulations in more than 30 years.

Before his stint in private practice, Jay spent 15 years working as an Assistant Attorney General, including nearly six years as head of the Ecology Division, where he served as counsel to Ecology's director and managed the 32-person division. As an Assistant Attorney General, Jay helped craft the Hanford cleanup agreement (Tri-Party Agreement) and led the litigation team that prevailed before the U.S. Supreme Court in a groundbreaking water pollution case.

Jay received his bachelor's degree in political science from Eastern Washington University in 1980 and his law degree from the University of Oregon in 1983.

On-Line Resource

Washington Legal Resource: "*Digest of Water Resource Decisions*"

AVAILABLE ONLINE

Even for water professionals, finding out exactly how standards have been interpreted or how the administrative agency has ruled on various issues is a constant struggle. Washington State has a unique system in this regard. The Attorney General's office works with private attorneys and turns out a digest that is publicly available. The digest is peer-reviewed so it doesn't represent anyone's particular opinion and it is screened through a number of different perspectives to provide a straightforward review of legal cases. Current digest coverage extends through 2002—an update is expected soon. To access the Digest of Water Resource Decisions (Pollution Hearings Control Board), go to Ecology's website at www.ecy.wa.gov/biblio/0211015.html.

Editor's Note on Following Article: Most of the next article was based on a presentation given by John Echohawk at the 2005 Northwest Tribal Water Rights Conference held in October of 2005 at the University of Oregon. That conference was sponsored by The Center for Tribal Water Advocacy, the Environmental and Natural Resources Law Program (University of Oregon Law School), the Indian Law Section (Oregon State Bar), the Wayne Morse Center for Law and Politics, the Mountaineers Foundation and the Squaxin Island Tribe.

Tribal Water

TRIBAL WATER RIGHTS UPDATE

JOHN ECHOHAWK: INDIAN WATER LAW ELDER

by David C. Moon, Editor

NARF Affiliations

John Echohawk, the Executive Director of the Native American Rights Fund (NARF) in Boulder, Colorado, is a true elder of Indian water rights law. Mr. Echohawk graduated from the New Mexico School of Law and began working with NARF at its inception. Echohawk proudly told this author it is the only job in the legal profession he has ever held. NARF, which was founded in 1970, considers Indian water rights to be one of the most important Native American rights issues. NARF has been involved in nine of the 21 Indian water rights cases that have resulted in settlements. NARF currently represents four tribes in water rights matters: the Nez Perce Tribe of Idaho, the Klamath Tribes of Oregon, the Tule River Tribe of California and the Kickapoo Tribe of Kansas.

History and Status of Native American Water Rights

Conflicts

Echohawk began his presentation with a brief history of Native American water rights. Until the 1970's, Indian water right issues were largely unaddressed. Most tribes were composed of low income members with only the United States representing their interests. All too often the tribes and the US had conflicts over the issues involved.

Tribal Water

Tribes' Goal

Echohawk believes that the tribes are now "starting to rebuild our Nations based on Treaty rights"—including water rights. At first, this effort entailed "fighting the destiny of termination" as well as the "assimilation" efforts by the United States government. The tribes' goal remains the "protection of lands and the water needed for our lands." Echohawk noted that tribal rights to water were recognized early on, citing the *Winters* decision—*Winters v. United States*, 207 U.S. 564 (1908)—which concerned the Fort Belknap Reservation in Montana. In that case, upstream non-Indian use threatened the tribal use of water. Echohawk emphasized that tribal rights to water entails both present *and* future uses because tribal reservations were envisioned as permanent homelands.

Distinct Priorities

Echohawk then discussed *Arizona v. California,* 373 U.S. 546 (1963), which involved five tribes along the lower Colorado River. One outcome of that case was that approximately 900,000 **a**cre-**f**eet (AF) of water was reserved for the five tribes based on the "practicably irrigable acres" standard. See McGinnis & Albert, TWR #20 for a more thorough discussion of federal reserved water rights.

Regional differences lead to distinct issues for tribes as they deal with their water rights and potential settlements. Echohawk stated that the "practicably irrigable acreage" standard is critical for tribes in the Southwest, while instream flows are more important to tribes in the Northwest.

Judicial Uncertainty, Settlement Negotiations & Federal Inflexibility

Federal Costs

Echohawk provided an overview of recurring national proposals to settle Indian water rights by negotiation rather than adjudication. He noted that the costs to the federal government in such settlements are bound to remain an issue. Echohawk pointed to one of the first settlements of Indian water rights, involving the Tohono O'odham Nation of Arizona. President Reagan initially opposed that settlement on the basis of excessive federal expense, but reversed course following pressure from Arizona's business community, according to Echohawk.

Adjudication Jurisdiction

Echohawk addressed jurisdiction questions regarding the most appropriate forum for Indian water rights adjudication. He noted that tribes have generally found that "federal courts are more favorable forums for us. State judges are elected judges—and we are not as comfortable with them." The 1983 US Supreme court case of *Arizona v. San Carlos Apache Tribe*, 463 U.S. 545(1983) held that cases could go forward in state court, based on the 1952 McCarran Amendment. "This was a real blow to our tribes. There is not much faith in the US Supreme Court assuring us to trust state courts" Echohawk said. He added, however, that tribes do have the right to appeal from state courts to the US Supreme Court.

"You never know what's going to happen in the US Supreme Court," Echohawk remarked.

***Wyoming v. U.S.* Deadlock**

The presentation turned to a 1989 case involving a state adjudication of water rights that included Indian water rights on the Wind River Reservation in Wyoming. The Shoshone and Arapahoe Indian Tribes had won their case before the Wyoming Supreme Court on a 3-2 decision, receiving approximately 500,000 AF of water in the Bighorn River Basin. See *In Re Big Horn River System*, 753 P.2d 76 (Wyo. 1988). The case was appealed to the US Supreme Court, which affirmed the Wyoming Supreme Court's decision by deadlocking 4-4 (*Wyoming v. U.S.*, 492 U.S. 406 (1989)). The deadlock occurred due to the fact that Justice O'Connor recused herself at the last minute due to a conflict of interest; otherwise the decision would have been 5-4 reversing the Wyoming Supreme Court. Both Echohawk and Mason Morisett, another speaker at the conference, pointed out that a review of O'Connor's draft opinion (discovered by a biographer of Justice Marshall) showed that the 5-4 decision would have drastically altered Indian water law by changing the *Winters* Doctrine in ways not favorable to Indian tribes.

Negotiation Impetus

Echohawk explained that the Wyoming case was a "wakeup call"—i.e. an impetus that "really drove people to the negotiating table." There are currently around 19 sets of on-going settlement negotiations over Native American water rights. The "major stumbling block"—according to Echohawk—is the same one encountered previously with President Reagan: what is a fair share for the federal government to pay to achieve settlement? Echohawk said that a Joint Federal Tribal Water Funding Task Force, set up during the Clinton Administration, has been helpful. The current federal budget deficit prompted NARF to convince Senator Pete Domenici of New Mexico to propose a funding mechanism. One proposal is to exempt settlements from the ceiling of the Budget Act, so that settlement money wouldn't come out of the budgets of the Department of Interior or the Bureau of Indian Affairs. Echohawk said that Congress in 2002 let the Budget Act expire, however, so currently "there is nothing to exempt [settlements] from." Every two years, settlement symposiums are held in conjunction with the Western States Water Council to "bring people together to discuss how to achieve success," Echohawk noted.

Cost Issues Remain

The settlement costs issue is unlikely to go away, especially in light of the two most recent settlements. The Gila River Settlement involved approximately $600 million and the Nez Perce Settlement involved approximately $193 million. Negotiated settlements can do much to lessen

Tribal Water

Settlement Lessons

Compromise

Coordinated Advocacy

Organization

Activities

"litigation exposure" for the federal government. However, Echohawk said that due to the additional challenge presented this year by Hurricane Katrina "there is not as much federal flexibility." When "negotiations go onto the rocks" a "collusion course in the courts" occurs. With the federal government's "inability to contribute its fair share of funds to settle" cases, the result is that the "feds are walking away from a crisis."

Conference attendees were urged to take lessons from the Gila River and Nez Perce settlements. In both those situations, the settlements had statewide support—including federal legislators. Settlements are very beneficial to the states. Supporters "need to make it a very high priority" in order to have "enough political horsepower to settle," Echohawk said.

For Indian tribes, settlements represent a compromise situation. While they don't satisfy all the needs and rights that tribes have, settlements avoid court battles and the inherent uncertainty of litigation, according to Echohawk. With 19 on-going settlement negotiations, a "crisis" is brewing "unless each state realizes how important these are and pushes to get the federal government to come up with its share of the money."

Tribal Supreme Court Project

Echohawk spoke with The Water Report about the Tribal Supreme Court Project. It is part of the Tribal Sovereignty Protection Initiative and is staffed by NARF and the National Congress of American Indians (NCAI). The Project's purpose is to coordinate and strengthen the advocacy of Indian issues before the Supreme Court, and ultimately to improve the deplorable win-loss record of tribes before that tribunal. In the past two decades Indian tribes have lost approximately 80% of their cases before the Supreme Court. Echohawk said that that some of the losses have been devastating to Indian water rights and that coordinating with tribes and Supreme Court specialists is vital in order to improve the success rate before the court.

The Project is housed at NARF's office in Washington, DC and is staffed by one NARF attorney and support personnel. NARF has established a Supreme Court Project Working Group—a group of more than 200 noted attorneys and academics from around the nation who participate in the Project as their time and interest allows. An Advisory Board of Tribal leaders, made up of NCAI Executive Committee members and other tribal leaders willing to volunteer their time, also assists the Project by providing necessary political and tribal perspective to the legal and academic expertise.

The Tribal Supreme Court Project:

- Monitors and analyses Indian cases in the state and federal appellate courts that have the potential to reach the Supreme Court
- Offers assistance in determining whether to file a Petition for a Writ of Certiorari
- Fosters discussions among attorneys nation-wide about pending Indian law cases
- Coordinates an Indian Amicus Brief writing network
- Assists in retaining specialized Supreme Court counsel, as well as specialists in particular areas of law
- Coordinates and conducts Moot Court and roundtable opportunities for attorneys presenting before the Court

An "Update on Recent Cases" memorandum dated October 21, 2005, generated by the Tribal Supreme Court Project, is available on the NARF website: www.narf.org/sct/caseupdates/pdf.

For Additional Information: The NARF website is an excellent site to access information regarding tribal water rights: www.narf.org

John Echohawk, a Pawnee, is the Executive Director of the Native American Rights Fund. He was the first graduate of the University of New Mexico's special program to train Indian lawyers, and was a founding member of the American Indian Law Students Association while in law school. John has been with NARF since its inception in 1970, having served continuously as Executive Director since 1977. He has been recognized as one of the 100 most influential lawyers in America by the National Law Journal since 1988 and has received numerous service awards and other recognition for his leadership in the Indian law field. He serves on the Boards of the American Indian Resources Institute, the Association on American Indian Affairs, the National Committee for Responsive Philanthropy, Natural Resources Defense Council, and the National Center for American Indian Enterprise Development. He received his J.D. from the University of New Mexico in 1970 and was a Reginald Heber Smith Fellow (1970-72). Echohawk was also appointed by President Clinton to serve on the Western Water Policy Review Commission.

Hanford

Budget Cut

Plutonium Production

A River Runs Through It

HANFORD SUPERFUND SITE UPDATE

by Ken Niles, Assistant Director, Oregon Department of Energy

For the past 16 years, the world's largest environmental cleanup has been underway at the Hanford nuclear site in south central Washington state. Currently, funding cuts, cost escalations, technical challenges, on-going litigation and renewed threats to the site's administration compact — the "Tri-Party Agreement" — have once again raised concerns about the future direction of Hanford cleanup.

Highly radioactive and chemically hazardous wastes from Hanford continue to present a serious, long-term threat to the Columbia River and to Northwest residents.

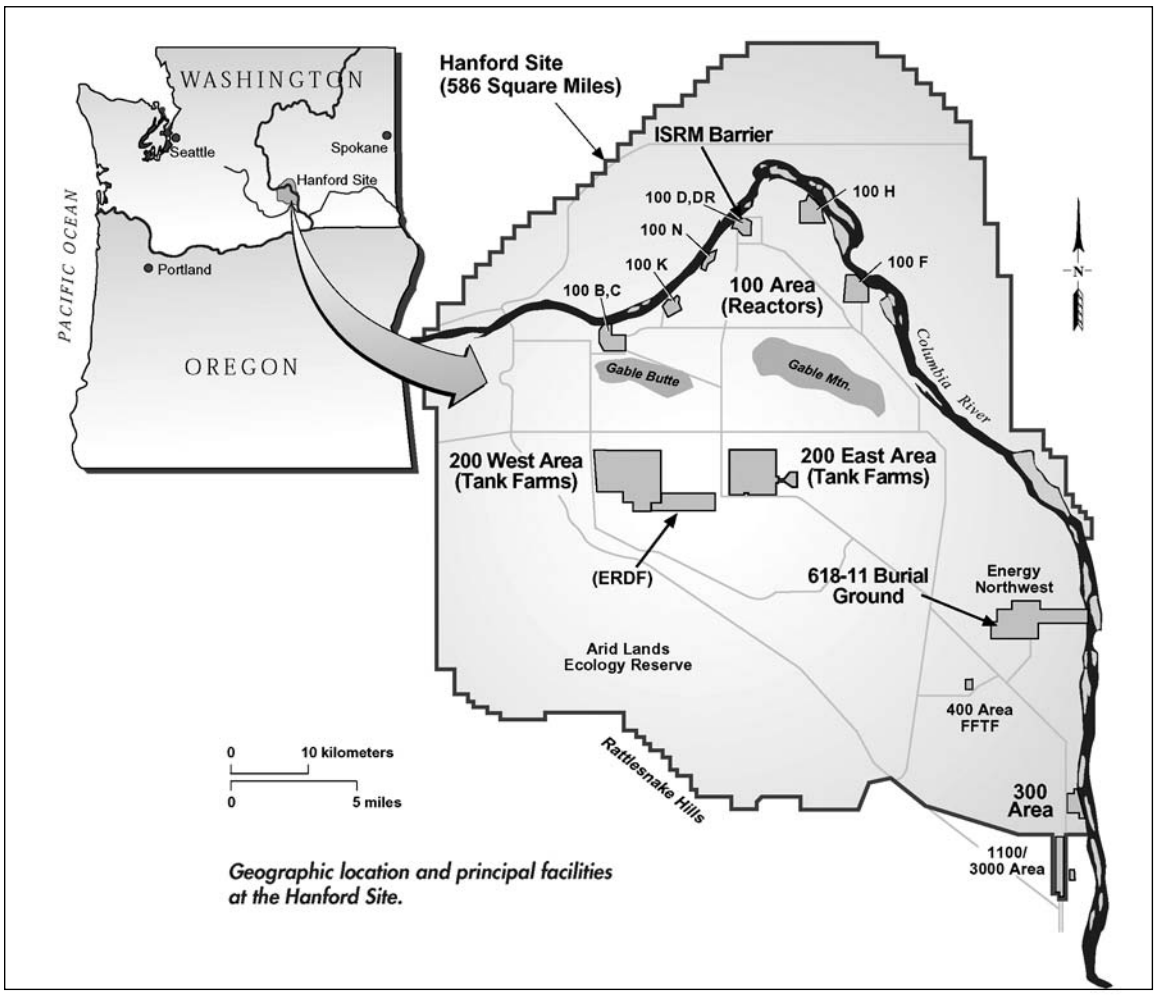
Hanford's cleanup budget was recently slashed by about a quarter of a billion dollars for the current federal fiscal year. These cuts come at a time when increased security requirements and a variety of technical challenges are requiring more—not less—money.

Issues related to bringing hazardous wastes from around the country into Hanford for disposal are unresolved despite nearly three years of litigation. Washington state voters passed an initiative intended to severely restrict this practice over a year ago, but implementation remains illusive. Meanwhile, a Congressional leader is calling the Tri-Party Agreement inflexible, saying it hinders actual cleanup.

All of this occurs as US Department of Energy (DOE) officials are struggling to regain momentum on the interrupted construction of the multi-billion dollar waste treatment complex intended to immobilize Hanford's most dangerous wastes.

Background

For more than 40 years, the United Sates produced plutonium for nuclear weapons at Hanford. In early 1943, at the height of World War II, the federal government selected a remote area of Washington state as the location to manufacture plutonium for a nuclear bomb. Plutonium is produced when uranium fuel rods are irradiated in a nuclear reactor. The nuclear reactions produce heat and new elements, including plutonium. Eventually, nine nuclear production reactors were built along the banks of the Columbia River at Hanford. Hanford's first nuclear reactor began operation in September 1944.



Geographic location and principal facilities at the Hanford Site.

Hanford

Liquid Wastes

A series of chemical processes are used to separate the plutonium from the other elements. The uranium fuel was put into large tanks where nitric acid and other chemicals dissolved the fuel. Other chemical processes separated the plutonium from the other radioactive materials.

The chemical separations process created huge amounts of liquid wastes. The vast majority of these wastes contained small amounts of radioactivity and chemicals and were dumped directly into the ground. It is estimated that 440 billion gallons of contaminated liquids were dumped into the Hanford soils between the mid-1940s and 1997, when the practice was finally stopped. This resulted in extensive contamination of Hanford's soil and groundwater.

Underground Tanks

The most hazardous of the liquid processing wastes were stored in underground tanks. Sixty- four waste storage tanks were built during World War II to support the chemical separation operations. Following World War II, as the United States and the Soviet Union fought the Cold War, Hanford went through several expansions. Each expansion resulted in the construction of additional underground storage tanks. By 1964, Hanford had 149 underground storage tanks in 12 tank farms. The newer tanks were larger — 758,000 and 1,000,000 gallons in size.

Cleanup continues at the N-Reactor site Next to the Columbia River

At times the tank space needs were so critical that even high-level waste was disposed directly to the soil. The initial belief was that the radioactive materials would attach to the soil particles and move very slowly, if at all. This theory, however, didn't always prove to be the case.

By the mid-1950s, Hanford officials realized that some of the tanks, which were designed to be used only 10 to 20 years, might be leaking. By the late 1950s to early 1960s, several tanks were confirmed leakers. A total of 67 tanks are known or presumed to have leaked about one million gallons of waste.

Eventually, to try and prevent future leaks, tanks with a double-shell containment were designed and built, beginning in the late 1960s. A total of 28 double-shell tanks were built, mostly in the site's "200 East" area. The newest of these tanks have 50-year design lives.

The 54 million gallons of wastes in Hanford's 177 underground tanks contain organic chemicals and solvents, radioactive materials (mostly cesium and strontium, along with uranium, plutonium, technetium and other elements) and miscellaneous wastes. Before the waste was pumped into the tanks, sodium hydroxide was added to neutralize acidic liquids (otherwise, the acid would have quickly corroded the tanks).

Dealing with the waste in the tanks is the most costly and complex cleanup problem at Hanford.

More than 2,600 waste sites have been identified at Hanford — ranging from contaminated tumbleweeds to the 177 underground tanks. There are five chemical processing facilities; nine shut-down nuclear reactors; plutonium laboratories; hundreds of support facilities; contaminated soil and groundwater; and thousands of barrels of buried contaminated waste. Each of these waste sites presents unique challenges.

CERCLA

Following the collapse of the Soviet Union and the end of the Cold War in the late 1980s, plutonium production at Hanford ended in 1988. Hanford was included on the National Priorities List (NPL) as a site to be cleaned up under the federal Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Superfund program in 1989.

Tri-Party Agreement

Hanford cleanup is governed by a Tri-Party Agreement (TPA) among DOE, which owns and operates the site, and the Washington Department of Ecology and US Environmental Protection Agency (EPA) as regulators. The TPA includes milestones for when specific work is to be completed.

Hanford Site Activities

Leaking Tanks

MAJOR HANFORD SITE ACTIVITIES INCLUDE:

The Tank Waste Storage Project manages highly radioactive waste in the 177 underground storage tanks. Most (149) of the tanks are single-shell tanks, 67 of which are known or assumed leakers that have released more than 1 million gallons of waste to the soil and groundwater; this waste is now moving toward the Columbia River. More than 3 million gallons of waste from single-shell tanks has

Hanford

Major Activities

been placed in new, double-shell tanks. Eventually the waste will be transferred to the Waste Treatment Plant for vitrification and immobilization.

The Waste Treatment Plant Construction Project is reported to be 35% completed. The plant is designed to treat the more than 53 million gallons of hazardous and high-level radioactive nuclear waste currently stored in 177 aging tanks. Tank waste will be mixed with molten glass and poured into stainless steel containers for cooling and storage while the radioactivity levels decrease over hundreds-to-thousands of years.

The Hanford Waste Management Project involves mixed wastes (waste with hazardous and radioactive components) at Hanford and at waste sites throughout Washington state. Facilities handle liquid as well as solid waste and include the Waste Receiving and Processing Facility, the Central Waste Complex, Low Level Burial Grounds, Pacific EcoSolutions, US Ecology operating facilities, the 200 and 300 Area Effluent Treatment facilities, and the Liquid Effluent Retention Facility.

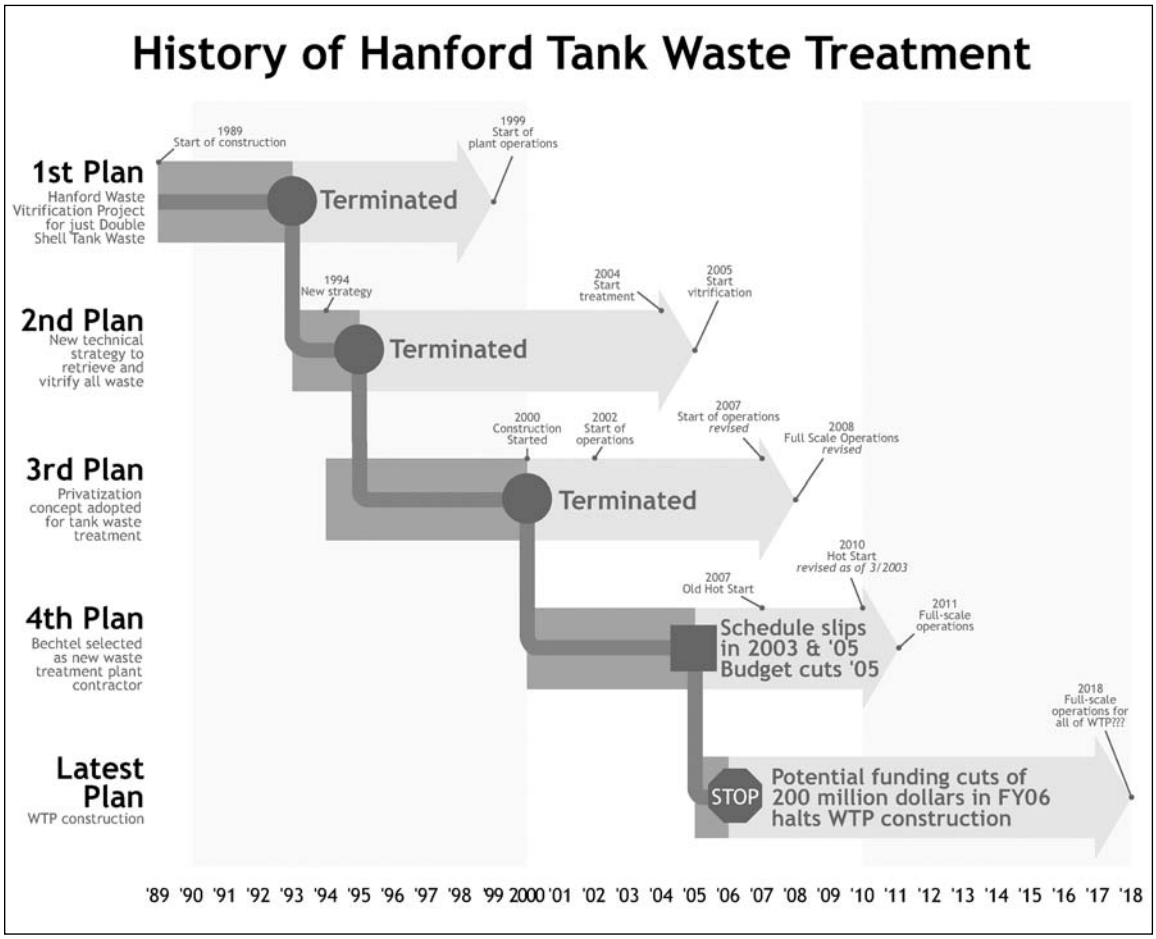
The Environmental Restoration Project oversees the cleanup of contaminated soil, groundwater and ancillary buildings throughout the Hanford site. It focuses on contamination in soil, groundwater, surface water, sediment, plants, and animals.

The Facility Transition Project involves the decontamination and decommissioning of Hanford facilities. Those facilities include: 100 area reactors; a generating plant; plutonium finishing plant; U plant; B plant; plutonium uranium extraction facility; waste encapsulation storage facility; facilities in Hanford's 300 area (including facilities operated by the Pacific Northwest National Laboratory); and Hanford's Fast Flux Test Facility.

"Vitrification"

Tank Waste Treatment Plans

Since the TPA was signed in May 1989, the planned "solution" for dealing with Hanford's tank waste has been vitrification — a process which immobilizes the waste in glass-like material. The wastes would be treated to separate the high-activity waste from the low-activity waste (waste which contains smaller amounts of radioactivity in large volumes of materials, but which still poses a hazard). Most of the waste will be low-activity. The high-activity waste will be converted to a glass-like material, then poured into steel containers to harden. These containers will be stored at Hanford until a national high-level



Hanford

Immobilizing Contamination

Privitization

Waste Treatment Plant

Seismic Requirements

Draft Corps Study

Funding Cut

Bulk Vitrification

Radioactive Sludge

waste repository is constructed. The low-activity waste will also be vitrified through a similar process and then permanently buried at Hanford. By changing the waste into a solid form, the material will still be radioactive, but will no longer be mobile and able to enter the environment through the soil or groundwater.

The original schedule for construction and operation of a vitrification plant to immobilize Hanford's tank waste called for the facility to be operational in 1999. After continual delays and lack of funding, it was cancelled in 1993.

In 1994, DOE began pursuing a strategy of privatization for the tank waste treatment program whereby a private company would pay all up-front design, construction and operating costs. The company would then get paid when they had turned waste into glass. That process continued until the spring of 2000, when the privatization contractor, BNFL Inc. said it would cost $15.2 billion to build the facilities and vitrify 10 percent of Hanford's tank waste. That was about two and a half times the government's cost estimate. DOE terminated its contract with BNFL and hired Bechtel Inc. to finish the BNFL design and construct the facilities in a more traditional pay-as-you-go process. The TPA now calls for the vitrification facilities to be fully operational by 2011 and have all the waste immobilized by 2028.

Construction on the vitrification plant complex (called the Waste Treatment Plant or WTP) began in July 2002 and significant progress on the facilities occurred during the next two and a half years. The WTP consists of the pre-treatment facility, high-level vitrification facility, low-activity vitrification facility, an analytical laboratory, and support facilities.

In late 2004, DOE realized the seismic requirements to which the facilities were being built had been underestimated by as much as 38 percent. Construction was slowed in December 2004 and more than 1,000 workers were laid off within a few months as DOE and others began to evaluate whether design changes were necessary. The foundations for the major vitrification facilities are tremendously robust, and the expectation is that additional reinforcement will not be necessary but changes will be needed for how tanks and pipes are installed in the facilities. Regardless, all of the design documents must be reviewed to determine the impacts of meeting the revised seismic standards.

Construction has been dramatically slowed on the pre-treatment facility and the high-level vitrification plant while this evaluation occurs. Work continues at a faster pace on the other facilities.

A draft Army Corps of Engineers study indicates that the impacts from the revised seismic standards, the higher price of steel and other factors may cause a four year delay in beginning operations and increase costs by another four billion dollars. Those preliminary estimates are being validated and DOE expects to have enough information by June 2006 to fully understand cost and schedule impacts.

The potential four-year delay presumed that funding for the WTP would continue at a flat $690 million each year. However, the WTP received a $164 million funding cut in the FY 2006 budget. The Bush Administration also proposed that $100 million in FY 2005 carryover be used to help pay for Hurricane Katrina relief. The Bush Administration characterized this $100 million (and other cuts identified to help pay for Katrina relief) as "unnecessary" national expenditures. Congress did not approve this additional $100 million reduction. Funding for other Hanford programs in FY 2006 was also reduced — but not as significantly.

Well before the vitrification schedules had begun to slip, DOE announced in November 2001 that to even come close to meeting the TPA milestone of immobilizing all of Hanford's tank waste by 2028, it would need some type of supplemental technology to use on a majority of the low-activity waste. DOE looked at three potential technologies and is moving forward to demonstrate the viability of using "bulk vitrification." DOE believes this process, which will hold the low-activity waste in a different type of glass, will work as well as the vitrification process that will be done at the WTP. Costs for the bulk vitrification demonstration program have escalated to $160 million, and this program is also behind schedule.

Struggles With Sludge

Another cleanup program that has been struggling has been a project to gather up and treat radioactive sludge contained in two water-filled basins near the Columbia River. These basins — at the K-East and K-West reactors — had contained more than 1,100 metric tons of corroding spent nuclear fuel. In one of the most significant cleanup accomplishments at Hanford, that fuel was cleaned, repackaged, dried, and moved away from the river between December 2000 and October 2004.

There has been recurring difficulty in collecting the sludge that is at the bottom of the basins and the program is well behind schedule. Sludge in the K-East basin was supposed to be vacuumed into underwater containers by the end of 2004, beating a TPA milestone of March 1, 2005. Now, DOE is saying this work will likely not be done until October 2006. The sludge must be removed from the basins before the water can be treated and removed. The K-East basin has leaked in the past and is only about a quarter

Hanford

Groundwater Options

mile from the Columbia River. DOE is proposing that sludge in the other basins would be vacuumed up by July 2007 — a year later than the TPA milestone. All the sludge would be removed from the basins and packaged for disposal by November 2009 — again well after the TPA milestone.

Hanford Groundwater Issues

Hanford's past operations resulted in extensive contamination of the groundwater beneath the site. Hanford used ponds, cribs, trenches, French drains and reverse wells to dispose of liquid waste to the soil. In addition to the planned releases, spills and leaks also contributed to the liquid releases to the ground.

For years, DOE and its contractors insisted that leaked tank waste had not reached the groundwater, despite concerns by others. In February 1996, new tests showed cesium leaking from the tanks had gone deeper in the soil than had been thought. Cesium was detected in dry wells 125 feet below the surface, just 85 feet above groundwater. Earlier predictions were that cesium would attach to the soil and move very little, if at all.

Hanford Cleanup Crew at Work

In November 1997, DOE confirmed that waste from the tanks had reached groundwater from five tank farms. Two months later, it was determined that waste from three other tank farms had also reached the groundwater.

Radioactive contaminant plumes at Hanford include: tritium; iodine-129; technetium-99; uranium; and strontium-90. Chemical contaminant plumes include: nitrate; carbon tetrachloride; hexavalent chromium; and trichloroethene. In all, groundwater under about 80 square miles of the Hanford Site is contaminated above regulatory limits.

Hanford's groundwater protection program lists five essential actions for groundwater protection: 1) controlling high-risk sources of contamination; 2) reducing artificial recharge; 3) implementing final, effective groundwater remedies; 4) shrinking the footprint of the contaminated areas; and 5) integrating Hanford monitoring needs.

Cleanup Actions

Large sources of strontium and chromium have been targeted for removal. Leaking water lines are being repaired or depressurized. Unnecessary wells are being sealed. Since March 1994, pump-and-treat systems have been operated at Hanford in an attempt to contain several of the contaminant plumes. Several have been very successful — others less so. Pump-and-treat systems are in place for chromium, uranium, technetium, carbon tetrachloride and strontium. A vapor extraction system has successfully removed thousands of pounds of carbon tetrachloride. Chemicals have been injected into the subsurface to change the hexavalent chromium into a less toxic, less mobile form of chromium. DOE and its regulators have been working to ensure that when possible, monitoring wells can perform several functions, reducing the number of new wells that are needed.

Progress

Cleanup Accomplishments

While the list of cleanup challenges remains daunting, after sixteen years of cleanup, the list of accomplishments is also long. All liquid waste discharges to the soil have been halted. The spent nuclear fuel was moved away from the Columbia River. Several tons of plutonium-bearing materials were treated for safe, secure, long-term storage. Two hundred and twenty-nine truck loads of transuranic waste (a specific type of long-lived radioactive waste) have been shipped to a permanent repository in New Mexico. Five reactors have been "cocooned" for long-term storage. To reduce the threat of tank leaks, free liquids in all of Hanford's 149 single-shell tanks have been moved into the double-shell tanks. More than four million tons of contaminated soil have been moved away from the Columbia River to an engineered disposal facility near the center of the Hanford Site. Thousands of barrels of transuranic waste have been retrieved from burial grounds.

DOE's Richland Operations Office reported significant cleanup progress for federal fiscal year 2005 — which ended on September 30.

KEY ACCOMPLISHMENTS FOR 2005 INCLUDE:

- Completing the removal of about 2,300 tons of spent nuclear fuel from two water-filled basins located 400 yards from the Columbia River. In all, about 105,000 individual fuel assemblies were removed containing 50 million curies of radioactivity — almost 95 percent of the radioactivity in the Columbia River Corridor.

Hanford

2005 Actions

- Completing an 11-year effort to upgrade infrastructure of the double-shell tanks system, the largest mixed-waste tank storage complex in the United States.
- Disposing of more than a million tons of contaminated material in the Environmental Restoration Disposal Facility, bringing the total disposed to more than 6 million tons since operations began in 1996.
- Completing 98 percent of the work to place H Reactor in interim safe storage for up to 75 years. When finished, H Reactor will be the fifth of nine retired plutonium-production reactors to be placed in safe storage.
- Completing demolition of the 313 Building, a 79,000 square-foot fuel fabrication facility located one mile north of the city of Richland.
- Completing disposal of 12,241 drums of contaminated waste from the 183-H Solar Basin, including 5,757 drums of unstable waste that had to be specially treated before disposal at the Environmental Restoration Disposal Facility.
- Retrieving the first 13,500 of 75,000 drum equivalents of suspect transuranic waste five months ahead of the Tri-Party Agreement (TPA) regulatory milestone.
- Completing the 100th shipment of transuranic waste in fiscal year 2005. To date, the site has made more than 221 shipments of transuranic waste, containing more than 6,400 drums, to the Waste Isolation Pilot Plant in New Mexico for disposal.
- Completing removing plutonium material "held-up" in equipment and piping in the Plutonium Finishing Plant more than a year ahead of the TPA milestone. The project resulted in removing more than 500 drums of radioactive waste for shipment to the Waste Isolation Pilot Plant in New Mexico for disposal.
- Disposing of 825 metric tons of low-enriched uranium fuel from Hanford's River Corridor more than a year ahead of the TPA milestone and $1 million under budget.
- Demolishing 53 excess facilities near B Plant, U Plant, and in the 300 Area.

Below:
Waste Treatment Plant Construction
September, 2005

- Placing one of six groundwater pump-and-treat systems on standby status after removing the heart of the contaminant plume. More than 210 million gallons of groundwater have been pumped from wells near U Plant and more than 440 pounds of uranium and technetium-99 have been removed since treatment operations began in 1994. Monitoring of the site continues.
- Installing a cumulative total of 45 groundwater monitoring wells ahead of the TPA regulatory schedule; to date, 267 excess wells have been decommissioned.
- Awarding the Hanford River Corridor Closure Contract, which enables cleanup of 210 square miles to be completed by 2015 with significant incentives to finish by 2012. The work transitioned to the new contractor, Washington Closure Hanford, in late August 2005.

Waste Shipments Challenged

EIS Questioned

Legal Battles

For the past two years, very little waste has come to Hanford for disposal from other DOE sites, despite the fact that Hanford has been designated by DOE as a disposal site for low-level and mixed low-level waste from throughout the nation. On March 4, 2003 the State of Washington, later joined by four citizen groups (Columbia River Keeper, Heart of America Northwest, Sierra Club and Washington Physicians for Social Responsibility) filed suit to prevent transuranic waste (a specific type of long-lived radioactive waste) from coming to Hanford (filed April 2, 2003). DOE had indicated it wanted to ship transuranic waste to Hanford from a number of smaller DOE sites so that cleanup could be completed at these other sites. The concern by Washington and the citizen groups was that some of this waste did not have a definitive path out of Hanford and could end up there indefinitely. Federal District Court Judge Alan McDonald granted a preliminary injunction in May 2003.

On July 16, 2004, Washington announced its intent to expand the litigation to include low-level and mixed low-level radioactive waste. Washington's action followed release of the Record of Decision for the final Hanford Solid Waste Environmental Impact Statement (EIS). Washington contends the EIS did not include an adequate environmental analysis of the impacts of disposing of waste at Hanford. DOE disagreed, but offered to temporarily stop most waste shipments to Hanford until a legal ruling was issued. Some shipments were not affected by the agreement.

Hanford

EIS Calculation Errors

Washington Initiative

Restraining Order

Legal Uncertainties

State Authority

Yakama Lawsuit

CERCLA

Relief Requested

Tri-Party Agreement Issues

In January 2005, Judge McDonald barred the federal government from shipping a certain category of waste – mixed transuranic waste – from sites around the country to Hanford unless DOE can meet state storage requirements.

On May 13, 2005, Judge McDonald ruled that DOE could ship some of the Battelle waste to Hanford, but kept in place the injunction against mixed transuranic waste. DOE scheduled shipments from Battelle but then one of its contractors discovered errors in some of the groundwater calculations used in the Hanford Solid Waste EIS. DOE agreed to again hold off on the shipments until the EIS is corrected. The Battelle waste ended up being shipped to the Savannah River Site in South Carolina.

The issue of bringing waste to Hanford for disposal was further complicated in November 2004, when Washington State voters approved Initiative 297—the "Cleanup Priority Act" (CPA)—which intends to block most shipments of radioactive waste to Hanford until cleanup of the site is completed. The initiative passed with 69 per cent of the vote and was supposed to take effect 30 days after the election.

The federal government requested a temporary restraining order in December 2004 to block the CPA from becoming law, claiming it violates federal laws governing nuclear waste and interstate commerce.

Judge McDonald granted a temporary restraining order December 2, 2004 against implementation of the CPA. Judge McDonald also agreed to a request from Washington State to refer some questions regarding implementation of the CPA to the Washington State Supreme Court. These questions include the definition of mixed waste under state law and whether the initiative bans movement of waste already at Hanford. The State also wanted the State Supreme Court to decide if the entire act would be nullified if the federal court finds portions to be unconstitutional.

Oral arguments were presented to the Washington State Supreme Court on May 19, 2005. One of the key questions debated was whether voters were seeking to expand the State's power to regulate radioactive waste. The State of Washington contended that the measure simply directs the State to use its existing authority. DOE contended that the initiative dramatically expanded the State's authority beyond what is allowed by federal law. The Washington State Supreme Court responded in July 2005 that the CPA would not necessarily be invalidated if portions of the law are ruled unconstitutional. The court did not determine (and was not asked to determine) whether portions of the law are unconstitutional. Further oral arguments on the CPA are not scheduled until May 2006. In the meantime, Washington cannot enforce the measure.

The Confederated Tribes and Bands of the Yakama Nation (Yakama Nation) filed a civil action against the US Department of Energy and Department of Defense that is pending in US District Court for the Eastern District of Washington (Case No. CY-02-3105-LRS). The Yakama Nation has filed a motion for leave to file a seconded amended complaint, which is opposed by the federal government; oral argument on the motion is set for March 10, 2006. The complaint for natural resources damages and other relief was filed pursuant to the Comprehensive Environmental Response and Liability Act, 42 U.S.C. § 9601 et. seq. (CERCLA or Superfund). The lawsuit is seeking recovery of monetary damages and costs resulting from the release of hazardous substances and contamination at the Hanford Site. The Second Amended Complaint also alleges that the defendants "have breached the trust obligation or fiduciary duty they owe the Yakama Nation and its members as a result of the Treaty of June 9. 1855 and other laws." The relief requested includes all past and future response costs; all past and future natural resource injury assessment costs; all funds for assessing the injury, destruction or loss of natural resources; all sums necessary to restore, replace or acquire equivalent natural resources; declaratory relief that DOE is not complying with applicable risk assessment standards; an injunction enjoining DOE from failing to comply with risk assessment standards (human health and ecological risks); reasonable attorney's fees; and all other just and proper relief. The Yakama Reservation is located twenty-five miles west of the Hanford Site and has approximately 1.3 million acres of land within its boundaries.

Challenges to Tri-Party Agreement

Last November, the chairman of the US Senate Energy and Natural Resources Committee, Senator Pete Domenici of New Mexico, said the TPA needs to be rewritten. Domenici urged DOE and its regulators to negotiate a new agreement, saying the TPA is inflexible, has hindered cleanup and increases costs. Domenici's comments came during a hearing on DOE's cleanup program, just a day after Washington State Governor Christine Gregoire threatened to sue the federal government for funding cuts that will result in missed TPA milestones.

Domenici indicated he is growing increasingly concerned about the cost of cleanup at Hanford and the frequent confrontations between Washington State and DOE. He said there has to be a way found to do the cleanup at a more reasonable price and suggested those who "oppose, argue, insist and litigate" need to negotiate a new agreement with DOE.

Hanford

TPA Deadlines

Washington Enforcement

Long-Term Threats

Waste Transportation

Emergency Planning

This is not the first time that Congressional leaders or top DOE officials have suggested that the TPA should be dramatically changed. In 1993, DOE Assistant Secretary nominee Tom Grumbly suggested that one of his first priorities upon confirmation would be to work with state and federal regulators to renegotiate cleanup agreements to make them more realistic. Energy Secretary Hazel O'Leary suggested about the same time that some TPA deadlines should be deleted and replaced with a new agreement without commitments.

In March 1995, a Report to Congress concluded that many TPA schedules are "unworkable, disjunctive, lack scientific and technical merit, and undermine any sense of accountability for taxpayer dollars." That report prompted Louisiana Senator J. Bennett Johnston and Alaska Senator Frank Murkowski to introduce legislation that would cap Hanford's cleanup budget and scrap the TPA. The legislation did not pass out of the Senate.

Washington State officials say regulators have been very lenient with DOE when there are legitimate obstacles to meeting TPA milestones. As concerns flexibility, there have been more than 400 changes to the TPA. However, the State has not been sympathetic to DOE's occasional claims that it doesn't have sufficient funding to meet some milestones.

Oregon Interests at Hanford

The State of Oregon works with DOE and the two Hanford regulators — the Washington Department of Ecology and EPA — to ensure issues of concern to Oregon are addressed. Oregon has no regulatory authority over the Hanford cleanup.

Oregon's prime concern is the Columbia River. The river is vital to irrigation and the region's inland commerce. The Columbia fishery is an important economic resource and the river is a valuable recreational asset.

Hanford's contaminated groundwater and leaked tank waste pose a long-term threat to the river. Oregon's position is that treatment of the groundwater must continue and that waste in the tanks must be removed and solidified to eliminate that threat to the river.

Concern about the river is just one of several reasons for Oregon's involvement in Hanford issues. Radioactive waste from around the country is currently being transported across Oregon to Hanford on nearly a daily basis. As cleanup moves along, much larger numbers of shipments, involving much more dangerous types of waste, will likely be trucked from Hanford across northeast Oregon to permanent disposal sites in other states.

Portions of two Oregon counties are within the 50-mile nuclear emergency-planning radius of the Hanford Site. The people here could be at risk in the event of a major accident at Hanford. Moreover, this area includes important agricultural, fishing and other natural resource areas vital to the economy of the state. Oregon has worked with these two counties to develop an emergency plan to respond to an incident at Hanford.

Oregon works to involve the public in Hanford issues. The Oregon Hanford Cleanup Board is a key part of this public involvement process. The 20-member Board, which includes ten citizen members, strongly believes the public must have a say in critical Hanford decisions. Oregon and the Cleanup Board have helped identify methods to better involve the public in Hanford issues.

For Additional Information: Ken Niles, Assistant Director, Oregon Department of Energy for the Nuclear Safety & Energy Siting Division, 503/ 378-4906 or email: Ken.Niles@state.or.us

Ken Niles is the Assistant Director for the Nuclear Safety & Energy Siting Division of the Oregon Department of Energy. Ken manages Oregon's involvement in operations and cleanup at the Hanford Nuclear Site, the safe transport of radioactive materials through Oregon, and emergency preparedness in the event of a nuclear accident or petroleum shortage. He also oversees Oregon's energy facility siting process which regulates the siting and operation of large scale natural gas, coal, biomass, solar, and wind energy facilities in Oregon. Ken joined the Oregon Department of Energy in July 1989. Prior to that, he spent 11 years as a broadcast news reporter, working in both radio and television. A native Oregonian, Ken earned his Bachelor of Science degree from Eastern Oregon State College in March 1992.

Oregon Hanford Cleanup Board Website: http://oregon.gov/ENERGY/NUCSAF/HCB/hwboard.shtml
USDOE Hanford Website: www.hanford.gov/

RE: Columbia River Risks: Government Accountibility Office (GAO) Report: "*Preliminary Information on the Potential for Columbia River Contamination from the Hanford Site*" (Department of Energy), GAO-06-77R, dated November 4, 2005; available on the GAO website: www.gao.gov/docsearch/abstract.php?rptno=GAO-06-77R

Utah Water Conservation

Utah Lake System Status

Purposes

Conservation Definitions

Funding

Conservation Options

CLARIFICATION
RE: CENTRAL UTAH WATER CONSERVATION

Editor's Note: Subsequent to our going to press with our last issue (TWR #22), Nancy Hardman, author of the article "*Central Utah Water Conservation*" notified us that one section of her article might benefit from some clarification. At her request, we are printing her rewrite of the article's "Water Conservation Credit Program" section verbatim.

Ms. Hardman writes: I would print the entire section on the Water Conservation Credit Program as an "official statement and description of the credit program." So that there is no opportunity for misunderstanding of the Utah Lake System design/construction issue, it would also be good to include this clarification: "The Utah Lake System is currently in the data gathering pre-design phase. Actual design and construction are several years in the future."

Central Utah Water Conservation Credit Program

On October 30, 1992, Public Law number 102-575 was signed into legislation as the Central Utah Project Completion Act (Act). Section 207 of the Act—entitled "Water Management Improvement"—authorized a comprehensive program to study and improve water management within the District.

THE SIX STATED PURPOSES OF SECTION 207 ARE:

- encourage the conservation and wise use of water;
- reduce the probability and duration of periods necessitating extraordinary curtailment of water use;
- achieve beneficial reductions in water use and system costs;
- prevent or eliminate unnecessary depletion of waters in order to assist in the improvement and maintenance of water quantity, quality, and streamflow conditions necessary to augment water supplies and support fish, wildlife, recreation, and other public benefits;
- make prudent and efficient use of currently available water prior to any importation of Bear River water into Salt Lake County, Utah; and
- provide a systematic approach to the accomplishment of these purposes and an objective basis for measuring their achievement.

The Act defined water conservation measures as actions taken to improve the efficiency of the storage, conveyance, distribution, or use of water, exclusive of dams, reservoirs, or wells. This definition, and the stated purposes of Section 207 quoted above, provided the basis for what was considered water conservation and what type of conservation measures would be counted towards achieving a District water conservation goal. Section 207 originally authorized $50,000,000 in federal funds to finance up to 65 percent of the cost of implementing water conservation measures within CUWCD. The remaining funding, a minimum of 35 percent, has come from local sources. Since 1995 with the publication of the first Water Management Improvement Study and subsequent request for conservation projects, the Section 207 Water Conservation Credit Program (Credit Program) has assisted in the funding of 33 different water conservation projects which "saved" 94,969 acre-feet of water during the 2004 irrigation season.

While the entire original authorization of $50,000,000 has been committed to projects through fiscal year 2008, Section 1(d) of Public Law 107-366 amended the original CUPCA legislation to allow for the possible use of unexpended funds under Section 207 from other authorized but not implemented units of the CUP not already allocated to other CUPCA projects (Uinta Basin Replacement and the Utah Lake System projects). The amendment also extended conservation projects types to include reverse osmosis (RO), membrane technologies, water recycling, and conjunctive use. The District plans to move forward with an update to the Water Management Improvement Study which will outline these changes in possible funding and new project types, as well as incorporate several items discussed in the Final Environmental Impact Statement and Record of Decision on the Utah Lake System project.

WATER BRIEFS

INSTREAM FLOWS IN COLORADO

TRANSFERS & INJURY: PROTECTIONS FOR JUNIOR USERS

In an opinion that drew widespread attention in Colorado, the Colorado Supreme Court recently clarified the protections afforded instream rights when water right transfers and exchanges are involved. On November 28, 2005, *Colorado Water Conservation Board v. City of Central* (No. 04SA145) reversed the water court in favor of protection for the Board's instream water right. The City of Central ("Central") sought approval of a change of water rights, an approval of a plan for augmentation, and an adjudication of an appropriative right of substitution and exchange. The Colorado Water Conservation Board ("Board") objected on the basis that the plan for augmentation and exchange would injure its 1987 instream flow right. Central agreed to subordinate its exchange, for which it sought an August 1, 1992, appropriation date, but declined to protect the instream flow right under its plan for augmentation. Central maintained that C.R.S. § 37-92-305 does not require it to replace depletions associated with its augmentation plan that affect the instream flow, because the instream flow is not a senior right. Central also argued that its plan for augmentation is independent from the exchange and it may divert under its plan for augmentation, consistent with its senior priority dates, without regard to the Board's instream flow right.

The Board insisted that its instream flow water right should be protected from injury by the various transfers and exchanges of water, *even though* the instream flow water rights were junior in priority to the water rights at issue. As stated by the Colorado Supreme Court: "Based on the possibility that Central's out-of-priority diversions would reduce the amount of water historically available to the Board's instream flow right, the Board requested Central 'include in its plan terms and conditions prohibiting Central from making out-of-priority diversions from points tributary to North Clear Creek at times the Board's instream flow right is not met.'"

The injury alleged by CWCB would occur due to a complicated factual situation. A negative impact to the instream water right would occur if Central was allowed to divert "out of priority" (at variance with their place in line based on the priority date of their water right). Historically a "call" (i.e. a downstream senior water right "calling" on upstream junior rights to cease diverting) would have resulted in the water being left in the stream in order to reach senior downstream water users. The ultimate result being that water remains instream, through the stretch where the instream right exists, due to the "call."

The parties sought a determination of law from the water court as to whether a plan for augmentation, diverting from points associated with senior water rights, was required to protect a junior instream flow right from injury. The water court held that Central was not required to include terms and conditions in its proposed decree that would protect the Board's junior instream flow right from diminished flows resulting from Central's operation of the plan for augmentation.

On appeal, the Colorado Supreme Court stated that the crux of the issue was the "injury standard" set forth in section 37-92-305 for augmentation plans affecting instream flow rights. The court reversed the water court's determination of law that Central need not include terms and conditions to protect the instream flow right from injury under its plan for augmentation. The Court concluded the Colorado General Assembly plainly intended that the Board be entitled to impose terms and conditions to protect a junior instream flow right from injury under a plan for augmentation or a plan for augmentation including an exchange.

The Supreme Court relied on precedent that recognized the protection that junior water rights are entitled to: "This court has often said, in substance, that a junior appropriator of water to a beneficial use has a vested right, as against his senior, in a continuation of the conditions on the stream as they existed at the time he made his appropriation. *If this means anything, it is that when the junior appropriator makes his appropriation he acquires a vested right in the conditions then prevailing upon the stream, and surrounding the general method of use of water therefrom. He has a right to assume that these are fixed conditions and will so remain,* at least without substantial change, unless it appears that a proposed change will not work harm to his vested rights. ..." *Vogel v. Minn. Canal & Res. Co.,* 47 Colo. 534, 541-42, 107 P. 1108, 1111 (1910) (emphasis added by court).

> "We hold the noninjury requirement applicable to changes of water rights also applies to augmentation plans affecting instream flow rights. We likewise hold that an adjudicated instream flow right entitles its holder to maintain the stream conditions existing at the time of its appropriation and to resist proposed developments through changes of water rights or augmentation plans, regardless of the means, that in any way materially injure instream flow rights. This rule best effectuates the clear legislative intent to protect and preserve the natural habitat through minimum streamflows…We recognize that instream flows thus potentially complicate development in the form of changes, augmentation plans, and new appropriative rights by "tying up" a stream. Yet all water rights complicate the efforts of new or existing users to develop sources of supply. Christopher H. Meyer, "Instream Flows: Integrating New Uses and New Players Into the Prior Appropriation System," in *Instream Flow Protection in the West,* 2-13 (Lawrence J. MacDonnell & Teresa A. Rice eds., 1993)." (emphasis added by court).

For info: The case is available for viewing at the Colorado BAR website: ww.cobar.org/opinions/opinionlist.cfm?CaseDate=11/28/2005&CourtID=2

WATER BRIEFS

HYDROPOWER RULES US LAWSUIT OPPOSING FILED

A coalition of environmental groups filed suit in late December challenging federal regulations that govern procedures for a new category of hearings for hydropower licenses governed by the Federal Energy Regulatory Commission (FERC). The new rules are important due to the potential impact they have on conditions and requirements that FERC may require during re-licensing of hydropower projects.

The Interim Final Rules, which became effective on November 17, 2005 (see Brief, TWR #22), enable hydropower license applicants and other parties to hydropower licensing proceedings to request expedited hearings on disputed issues of material fact before an administrative law judge. The environmental groups maintain that the new processes available under the new rules unfavorably defer to hydropower interests and could result in overturning agreed-upon protection measures designed to safeguard rivers from the damaging effects of dams (that have already been finalized as part of the licensing process). According to an Earthjustice press release, if the new rules are successful adopted, numerous utilities would be able to avoid installing fish ladders, or insure that rivers have sufficient flows to protect fish and wildlife that are affected by their dams.

The new rules allow applicants and other parties to license proceedings to submit alternative conditions or prescriptions for consideration by the respective federal departments, which will accept them unless they make specific findings as to why they cannot. Such alternatives might propose ways to lower costs to utilities and consumers while still protecting critical resources, according to a press release by the Departments of Interior, Commerce and Agriculture (Departments). The new rules apply to any current license proceeding before FERC, i.e., one in which a license has not yet been issued, as well as to all future license proceedings.

The coalition that filed the lawsuit includes American Rivers, Trout Unlimited, American Whitewater, Idaho Rivers United, Friends of the River, and Upper Chattahoochee Riverkeeper. The complaint also accuses federal agencies – Departments of Interior, Commerce, and Agriculture – of illegally publishing the new rules as "final" without providing for public comment, according to the Coalition's press release.

The new rules, which were passed as part of the Energy Policy Act of 2005, were published in the Federal Register on Nov. 17, 2005. The public does have 60 days from that date to review and submit comments on the rules, which could result in changes in a revised Final Rule. The Departments' press release stated that the Departments would consider the comments in implementing the new processes, and consider issuing revised Final Rules within approximately 18 months.

For info: Jan Hasselman, Earthjustice, 206/ 343-7340 x 25, or website: www.earthjustice.org/news/ or Robbin Marks, American Rivers, 202/ 347-7550 x 3051; DOI: John Wright, 202/ 208-6416; USDA: Dan Jiron, 202/ 205-0896; and NOAA: Connie Barclay, 301/ 713-2370

UST LEAKS/$400,000 FINE CA GROUNDWATER POLLUTION

The Central Valley Regional Water Quality Control Board's Executive Officer has proposed a penalty of $400,000 against the Franks One Stop gasoline service station in Manteca. The Administrative Civil Liability complaint names Frank Jr. and Sherri Guinta, current owners and former operators, and James and Marilyn Ramsey, former owners of the station. According to the complaint, the owners and operators failed to comply with Water Board orders to clean up gasoline discharges to groundwater from six underground storage tanks and failed to maintain treatment systems for domestic wells.

The leaks were reported in 1992 by the San Joaquin County Environmental Health Department. Groundwater has been polluted by gasoline including the additive Methyl Tertiary-Butyl Ether (MTBE). The plume of polluted groundwater under the tanks migrated to domestic water supply wells of neighboring residences. The owners initially used a state grant for the cleanup but did not finish within the $1.5 million budget.

In 2003, the Water Board issued a Cleanup and Abatement Order requiring the owners and operators to maintain wellhead treatment systems for 11 domestic wells, test additional supply and monitoring wells, and to complete the investigation and cleanup of the groundwater plume. In January 2005, the owners and operators stopped all environmental work at the site. Water from the polluted wells is being treated and tested to ensure it meets water quality standards at the State's expense. The State is also paying to maintain the treatment systems.

For info: Brian Newman (UST Program Manager), CVWB, 916/ 464-4834, or website: www.waterboards.ca.gov/ centralvalley/

TREATMENT DISCHARGES US PEAK WET WEATHER

On December 19, EPA proposed a new policy for addressing peak wet weather discharges at wastewater treatment plants. Many municipal wastewater treatment systems experience problems during heavy rain events (peak wet weather) when flows to the plants exceed the plant's biological treatment capacity. During peak wet weather, limited diversions around biological treatment units can help prevent raw sewage from being discharged into the nation's waters, backing up into homes and other buildings, or damaging biological treatment units, according to EPA. EPA's goal in proposing this new policy is to ensure that all feasible solutions are used by local governments when addressing problems related to peak wet weather.

EPA's press release stated that the policy reflects the joint recommendations of the Natural Resources Defense Council (NRDC) and the National Association of Clean Water Agencies (NACWA). The

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policy encourages public participation via the National Pollutant Discharge Elimination System (NPDES) permit process, and provides for public notification in the event that a diversion does take place. EPA will accept written comment for 30 days after the policy is published in the Federal Register.
For info: EPA website: http://cfpub.epa.gov/npdes/wetweather.cfm?program_id=0

NOAA RECOVERY PLAN CA
CENTRAL CA COHO

NOAA has announced its intent to prepare a recovery plan for the Central California Coast coho salmon. The recovery plan will include: (1) a description of management actions that may be necessary to achieve the plan's goals for the conservation and survival of the species; (2) objective, measurable criteria which, when met, would result in the species being removed from the endangered species list; and (3) estimates of time and costs required to achieve the plan's goal. NOAA will work closely with the California Department of Fish and Game to integrate, where appropriate, the recently developed and State-approved February 2004 Recovery Strategy for California Coho Salmon with the Federal Recovery Plan.

Interested members of the public are invited to submit any relevant information that should be considered during preparation of the draft recovery plan. All information must be received by April 14, 2006.
For info: Charlotte Ambrose, NOAA, North-Central California Coast Recovery Coordinator, 707/ 575-6068, email: Charlotte.A.Ambrose@noaa.gov, or website: http://www.nmfs.noaa.gov/fishnews/2005/12192005.htm#anchor4

NONPOINT POLLUTION US
EPA GUIDANCE: STORMWATER

On December 6, 2005, EPA released National Management Measures to Control Nonpoint Source Pollution from Urban Areas. The comprehensive 512-page guidance will help local governments and others protect water resources from polluted runoff that can result from everyday activities and urban development. The guidance will also help municipalities and other regulated entities implement Phase I and Phase II Stormwater Permit Programs.
For info: EPA website: www.epa.gov/owow/nps/urbanmm/

WELL METERING NM
GROUNDWATER REQUIREMENTS

The Office of the State Engineer of New Mexico will be mailing out brochures this month to the more than 6,000+ water right owners in the Lower Rio Grande region to help them prepare for the imposition of metering requirements before the March 1, 2006 deadline. The brochure was produced to provide water right owners with all the information they will need to have a meter installed on their well. It includes information regarding the Lower Rio Grande Metering Order issued by the State Engineer in December 2004, state and local metering guidelines, meter installation information, and meter vendors.

The new metering requirements apply to groundwater wells other than stock wells and wells serving only a single household. The metering program is part of the Active Water Resource Management initiative, which was launched by the State Engineer in January 2004 (see Moon, TWR #15 and Water Briefs, TWR #20). The metering order will help the Office of the State Engineer manage and administer the waters of the Lower Rio Grande stream system; promote the expedited leasing and marketing of water; conserve water; and prevent the over-appropriation of water.

The metering order affects the Lower Rio Grande Water Master District, which extends from Elephant Butte Reservoir to the Texas border and includes the Lower Rio Grande, the Hot Springs and the Las Animas Creek underground water basins. The State Engineer declared the Lower Rio Grande Water Master District on December 3, 2005, to actively manage and administer the diversions and use of water from the Lower Rio Grande on a day-to-day basis.
For info: Sheldon Dorman (Lower Rio Grande Water Master), Office of the State Engineer, 505/ 524-6161 or 505/ 649-1480, or website: www.ose.state.nm.us/

RECLAMATION REORG US

Commissioner John Keys today announced a significant reorganization of the leadership of the Bureau of Reclamation, adding a third deputy commissioner and changing the reporting structure for several important programs within the bureau. Interior Secretary Gale Norton has approved the plan, which became effective January 3. The most significant aspect of the plan is the merging of several existing program areas under the new Deputy Commissioner for Policy, Administration and Budget (PAB), Larry Todd. The offices for which Todd will be responsible include Security, Safety and Law Enforcement (SSLE); Program and Budget; Program and Policy Services; the Chief Information Officer, Human Resources, Civil Rights, and the Management Services Office (Finance, Acquisitions and Property).

The Deputy Commissioner (Operations) remains William Rinne, whose responsibilities will now include the newly created Director (Technical Resources) who will provide oversight of the Technical Services Center and Research and Development. Additionally, Rinne will continue to have responsibility for Reclamation's regional directors; and, in the Washington Office, International Affairs and Native American Affairs. The responsibilities of David McCarthy, the Deputy Commissioner, External and Intergovernmental Affairs, remain the same. They include, among other functions, responsibility for Reclamation's national offices of Congressional and Legislative Affairs and Public Affairs.

A new position, Director, Administration, in which Larry Todd had been temporarily serving, will

provide direction, management, and coordination of administrative and management support and information technology services for Reclamation. The position, which will report to the Deputy Commissioner, PAB, will be filled after the first of the year.

The Director, Technical Resources, reports to the Deputy Commissioner, Operations. The position will be filled by Maryanne Bach. In her new position, Bach will direct and coordinate the scientific, engineering and research services related to water resource management and development, including engineering and scientific programs in the Technical Services Center; the Research and Development Program; a new power liaison function with the US Army Corps of Engineers and Tennessee Valley Authority; and Dam Safety and Design, Estimates and Construction (DSO/DEC) oversight.

The Technical Services Center (TSC) will now be managed by Michael Gabaldon, who until recently was Acting Director, Technical Resources. Mike Roluti, former TSC Director, will now serve in the newly created power liaison position. The DSO/DEC position will be filled competitively, as will the position of Director, Research and Development.
For info: Trudy Harlow, Reclamation, 202/ 513-0574, email: tharlow@usbr.gov; new Reclamation Organization Chart (PDF) is available at Reclamation's website: www.usbr.gov/main/images/br_org_chart.pdf ; Leadership Biographies at: www.usbr.gov/newsroom/presskit/index.cfm

UST INSPECTIONS ID
STATEWIDE EPA RESULTS

The US Environmental Protection Agency (EPA) has routinely inspected gas stations and convenience stores statewide in Idaho for the past two years as part of an ongoing initiative to protect Idaho's groundwater. The primary function of the inspections are to ensure that the proper leak prevention equipment is installed, maintained, and correctly operated. Idaho remains the only state without an UST program. The responsibility to inspect 1,350 facilities statewide falls to EPA.

Erik Sirs, EPA's UST Inspection Coordinator in Idaho, announced the results of the latest round of inspections. The inspections looked at facilities from Idaho Falls to Pocatello and surrounding areas. According to Sirs, in each case facilities were notified by mail in advance of the inspection.

Of the 80 facilities that were inspected, 53 percent were in compliance with key program requirements designed to prevent ground water contamination. The inspection effort found 72 violations and a total of $10,000 in penalties were assessed. Since 2003, compliance has slightly increased yet remains well below the national average.

On August 8th, 2005, the new federal Energy Act was signed into law, which included substantial changes for the underground storage tank program. One of the key provisions was to increase inspections nationwide so that each facility will be inspected once every three years.
For info: Erik Sirs, EPA, 208/ 378-5762 or email: sirs.erik@epa.gov

PULP MILL VIOLATIONS CA
FORMER OFFICERS/DIRECTORS PAY

The Humboldt County District Attorney's Office (DA) and the North Coast Regional Water Quality Control Board (Water Board) announced December 23, 2005, that they have reached a proposed $125,000 settlement with Stockton Pacific Enterprises, Inc., for water pollution caused during the company's operation of the Pulp Mill situated on Humboldt Bay. The two offices began their enforcement action against Stockton Pacific when it ran the mill before it was acquired by Evergreen Pulp, Inc., earlier this year.

The settlement is the result of an investigation that included the execution of a search warrant at the mill in 2004. The DA's office and the US Environmental Protection Agency's Criminal Investigation Division conducted subsequent additional investigations. The Water Board issued an administrative civil liability complaint for $1.7 million to enforce clean water violations. At the conclusion of the DA's investigation, the DA's office and Water Board representatives started settlement negotiations with Stockton Pacific. As the company is no longer doing business and has no assets, former officers and directors came up with the settlement monies.

Since taking over the plant in February 2005, Evergreen has incurred sporadic minor violations of its wastewater permit. The Water Board is considering enforcement action against Evergreen.

Effectuating the settlement requires actions by both the DA's Office and the Water Board. The DA has filed a civil complaint and proposed settlement in Humboldt County Superior Court. The complaint addresses alleged violations of environmental laws including: the Water Code; the Fish and Game Code; the Health and Safety Code; violations of the prohibitions on discharges or releases to waters of the state; and violations of permit requirements. The proposed settlement also recognizes the administrative civil liability action by the Water Board. This action must be concluded for the settlement to be finalized. The settlement recognizes that Stockton Pacific no longer has any assets or resources, nor is conducting business of any kind. The corporation has been foreclosed against and all of its assets—the pulp mill—have passed to Evergreen Pulp, Inc.

Terms of the proposed settlement include: $60,000 to the Humboldt County DA's Office; $10,000 in penalties for unfair business practices consisting of the violations above and $50,000 for environmental education and enforcement projects; $60,000 to the Water Board to be used for future environmental education and restoration; $5,000 to the North Coast Unified Air Quality Management District for costs and fees.
For info: Catherine Kuhlman, Water Board, 707/ 576-2220; Paul Hagen, Humboldt County DA, 707/ 445-7411; State Water Resources Control Board website: www.swrcb.ca.gov/press/docs/2005/05_rb1_pulpmill.pdf

WATER BRIEFS

DRINKING WATER RULES US
NEW EPA RULES

Treatmen & Storage

The EPA has proposed sweeping new water quality rules that could result in dramatic changes and costs for the nation's water suppliers. The new regulations affect treatment and storage practices for drinking water. Systems that utilize open reservoirs for storage of drinking water for municipalities are particularly affected by the new rules.

Two of the new rules are aimed at reducing harmful chemicals that can form during disinfection and at guarding against the cryptosporidium parasite that caused a lethal disease outbreak in Milwaukee, Wisconsin a decade ago. In addition, a new federal arsenic standard of 10 **p**arts **p**er **b**illion (ppb) will become effective for compliance determinations on January 23, 2006.

The two rules with the most significant impact are the "Long Term 2 Enhanced Surface Water Treatment Rule" (LT2 Rule) and the "Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 DBP). The LT2 rule is designed to reduce illness linked with the contaminant Cryptosporidium and other disease-causing microorganisms in drinking water. The impact on open reservoirs was noted on the EPA website regarding this rule: "Uncovered Finished Water Reservoirs: Systems that store treated water in open reservoirs must either cover the reservoir or treat the reservoir discharge to inactivate 4-log virus, 3-log Giardia lamblia, and 2-log Cryptosporidium. These requirements are necessary to protect against the contamination of water that occurs in open reservoirs." Monitoring starting dates are staggered by system size. The largest systems (serving at least 100,000 people) will begin monitoring in October 2006 and the smallest systems (serving fewer than 10,000 people) will not begin monitoring until October 2008. After completing monitoring and determining their treatment bin, systems generally have three years to comply with any additional treatment requirements. Systems must conduct a second round of monitoring six years after completing the initial round to determine if source water conditions have changed significantly.

The Stage 2 DBP rule builds on earlier rules that addressed disinfection byproducts to improve drinking water quality and provide additional protection from disinfection byproducts.

Arsenic Rule
EFFECTIVE JANUARY 23
COMPLIANCE TOOLS AVAILABLE

EPA has released a set of user-friendly multimedia products to help small drinking-water utilities meet revised regulations to control arsenic. The tools will provide owners and operators with information to guide them in making treatment decisions.

The anchor product of this suite of tools is the Arsenic Virtual Trade Show, a learning portal for arsenic-treatment technology. The website features a database of vendors, a treatment "decision tree," and tips for evaluating and selecting treatment providers.

RELEASED TOOLS ALSO INCLUDE:

- A brochure, Evaluating Arsenic Treatment Providers: A Guide for Public Water Systems, which includes a checklist of questions that owners and operators of small utilities should ask treatment providers.
- A CD-ROM disk, Interactive Workshop on Arsenic Removal from Drinking Water, features commentary from the nation's top experts. The disk is a companion to 11 arsenic-training events EPA held across the country during 2005.
- A DVD collection of videos, the Arsenic Treatment Technology Showcase, highlighting arsenic treatments currently being tested through EPA's Arsenic Treatment Technology Demonstration Program.

EPA has also updated its web site to improve navigation and reflect the latest consumer and technical information. Kits including all of the new arsenic tools will be delivered to EPA's state and technical assistance partners for distribution to public water systems affected by the arsenic regulation.

In 2001, EPA revised the regulation for arsenic in drinking water to lower the maximum allowable level from 50 parts per billion to 10 parts per billion. The new standard becomes effective on January 23, 2006. The Agency estimates that more than 90 percent of the systems affected by the revised rule are small, serving populations of 3,300 or fewer.

To view the Arsenic Virtual Trade Show, online: www.arsenictradeshow.org

For info:
RE: LT2 Rule and Stage 2 DBP, see EPA's Disinfection website: www.epa.gov/safewater/disinfection
RE: Arsenic Rule Compliance Tools, see EPA's Arsenic & Drinking Water website: www.epa.gov/safewater/arsenic

PHYTOTECHNOLOGY US
CONTAMINATED PLUME TECHNOLOGY

In 1999, Argonne National Laboratory-East (ANL-E) designed and installed a series of engineered plantings consisting of a vegetative cover system and approximately 800 hybrid poplars and willows rooted at various predetermined depths. The plants were installed using various methods including the TreeMediation® TreeWell® Treatment System developed by Applied Natural Sciences. The goal was to protect downgradient surface and groundwater by hydraulic control of the contaminated plume. This goal was to be accomplished by intercepting the plume with the tree roots, removing moisture from the upgradient soil area, reducing water infiltration, preventing soil erosion, and degrading and/or removing pollutants from the subsoil and groundwater.

The EPA Superfund Innovative Technology Evaluation Program (SITE) and ANL-E evaluated the demonstration for a three-year period (1999-2002). The effectiveness of the various plantings was monitored directly through groundwater and soil measurements and samples, and indirectly via plant tissue analysis, microbial surveys, geochemical

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analysis, soil moisture probes and sap flow monitoring. A weather station with data logging equipment was installed. ANL-E predicted physical effects of the plants on groundwater using a standard hydrological model. The treatment period will continue for up to 20 years.

This Innovative Technology Evaluation Report presents the results from sampling, monitoring, and modeling efforts to date. The project has demonstrated success in reducing contaminated groundwater flow and taking up contaminants at the source; it also provides insight into the techniques that are useful for measuring and predicting the effectiveness of future similar projects.
For info: Steve Rock, email: rock.steven@epa.gov, or website: www.epa.gov/ORD/NRMRL/pubs/540r05011/540r05011.htm

WATERSHED PLANNING US

EPA HANDBOOK RELEASED

EPA's Office of Water has published a guide to watershed management as a tool in developing and implementing watershed plans. The draft "*Handbook for Developing Watershed Plans to Restore and Protect Our Waters*" is aimed toward communities, watershed groups, and local, state, tribal, and federal environmental agencies.

"This handbook will help anyone undertaking a watershed planning effort, but it should be particularly useful to persons working with impaired or threatened waters," EPA Assistant Administrator for Water Benjamin Grumbles stated.

The 414-page handbook is designed to take the user through each step of the watershed planning process.
STEPS INCLUDE:
- watershed monitoring and assessment
- community outreach
- selection and application of available models
- best management practices
- effectiveness data bases
- implementation
- feedback
- plan adjustment

The handbook is intended to supplement existing watershed planning guides that have been developed by agencies, universities, and other nonprofit organizations. This handbook is more specific than other guides about quantifying existing pollutant loads, developing estimates of the load reductions required to meet water-quality standards, developing effective management measures, and tracking progress once the plan is implemented.

EPA is making this draft document widely available with the purpose of having it used and tested by a variety of watershed partnerships, whose advice will be considered in developing the final version. Comments should be addressed to watershedhandbook@epa.gov no later than June 30, 2006.

You can order a free copy from the National Service Center for Environmental Publications by calling 800-490-9198 or email ncepimal@one.net. When ordering, refer to EPA document number EPA 841-B-05-005.
For info: Anne Weinberg, EPA, 202/566-1217
EPA website: The draft handbook is available online at: www.epa.gov/owow/nps/watershed_handboo

RED RIVER VALLEY PROJECT ND

DRAFT EIS RELEASED

The US Department of the Interior, Bureau of Reclamation and the state of North Dakota, represented by the Garrison Diversion Conservancy District, announced December 30, 2005, the release of the Draft Environmental Impact Statement (DEIS) for the Red River Valley Water Supply Project. The purpose of this DEIS is to evaluate alternatives to meet the long-term water needs of the Red River Valley in North Dakota and three cities in Minnesota. Of the eight evaluated alternatives, three would use surface water and groundwater sources in North Dakota and Minnesota, four would import treated water from the Missouri River, and one alternative evaluates the future of the Red River Valley if no project is built. Preliminary cost estimates range from $500 million to $2.52 billion. The DEIS may be downloaded at www.rrvwsp.com

The DEIS was prepared in accordance with the Dakota Water Resources Act of 2000 and the National Environmental Policy Act of 1969 and is available for a 60-day review and comment period. Comments on the report should be sent to Red River Valley Water Supply Project, Dakotas Area Office, Bureau of Reclamation, P.O. Box 1017, Bismarck, N.D., 58502-1017, and should be postmarked by February 28, 2006. Seven public hearings will be held in February 2006 regarding the DEIS at various locations in North Dakota and Minnesota.
For info: Patience Hurley, Reclamation, 701/ 250-4242 x 3107, or email: phurley@gp.usbr.gov; Merri Mooridian, Garrison Diversion, 800/532-0074 or email: merrim@daktel.com

SEPTIC LEAKS CA

$6.6 MILLION FINE

The Central Coast Regional Water Quality Control Board on January 5 ordered Los Osos Community Services District to pay a $6.6 million fine for allowing septic tanks to leak pollutants over a six-year period, and for halting work on a sewer. District officials said they would appeal the fine.

Regional Water Quality Control Board prosecutors initiated proceedings in October and originally sought more than $11 million in fines against the District after it stopped work on the sewer mandated by the regional water board. The pollution affects groundwater and the Morro Bay estuary.

The District was fined $3,000 a day for discharging pollutants over a six-year period. It was also fined $10,000 a day for a six-day period after the recall election of District officials occurred and before the regional board prosecutors filed their complaint, according to news reports.
For info: Central Coast Regional Water Quality Control Board website: www.waterboards.ca.gov/centralcoast/

CALENDAR

Please Note: An extended Calendar containing ongoing updates now appears on The Water Report's website: www.thewaterreport.com. Subscribers are encouraged to submit calendar entries, email: thewaterreport@hotmail.com

January 18 US WEBCAST
"Using EPA's Handbook for Developing Watershed Plans to Restore and Protect Our Waters" **- EPA Watershed Academy Webcast. For info: www.epa.gov/owow/watershed/wacademy/webcasts/**

January 19-20 WA
13th Annual Endangered Species Act Seminar, Seattle, Red Lion on 5th. RE: DC Politics, ESA Litigation, Columbia River Hydropower Litigation, Listing & Critical Habitat, Agency Discretion & Clean Water Act, Takings Claims, Scientific Dialogue, Salmon Recovery, Comprehensive Irrigation District Management Plans, Conservation Banking, & Landowner Incentives. For info: The Seminar Group, 800/ 574-4852 or website: www.TheSeminarGroup.net

January 20 AZ
NEPA: Practical and Definitive Guide, Tucson, Hotel El Conquistator. For info: CLE Int'l, 800/873-7130, or website: www.cle.com

January 23 AZ
Water Expo – 2nd Annual, Phoenix, Arizona State Capitol, 11am-1:30pm. Sponsored by the Water Sustainability Project, Central Arizona Project & Salt River Project. RE: Water Conservation & Stewardship. For info: Pam Justice, WSP, 602/ 470-8086 x333, or email: pjustice@ag.arizona.edu

January 24-25 NE
NARD Legislative Conference (Nebraska Association of Resources Districts), Lincoln, Embassy Suites. For info: NARD, 402/ 471-7670, email: nard@nrdnet.org, or website: www.nrdnet.org

January 24-25 CO
Colorado Water Conservation Board Meeting, Denver, Holiday Inn Denver International Airport, 15500 East 40th Avenue. Held in conjunction with the Colorado Water Congress Meeting. For info: CWCB, 303/ 866-3441 or website: www.cwcb.state.co.us/

January 24-26 ID
IWUA 68th Annual Convention, Boise, DoubleTree Riverside Hotel. For info: Idaho Water Users Association, 208/ 344-6690, website: www.iwua.org

January 25 WA
SEPA/NEPA: The Latest Word on Compliance, Seattle, Renaissance Seattle Hotel. RE: Legal Developments, Current Proposals for NEPA Reforms, Legal Exemptions, Administrative Appeals & Judicial Review. For info: Law Seminars International, 800/ 854-8009, website: www.lawseminars.com/seminars/06SEPAWA.php

January 25 OR
Salmon 2100 Project: Alternative Futures for Wild Pacific Salmon in Western North America, Conference, Portland, RE: 33 Salmon Scientists, Policy Analysts, & Advocates Discuss Outlook for Wild Salmon in California, Oregon, Washington, Idaho, and southern British Columbia. Keynote Speaker: William Ruckelshaus, Chairman of the Salmon Recovery Funding Board for the State of Washington. For info: Robert T. Lackey, EPA, 541/ 754-4607 or email: lackey.robert@epa.gov

January 26 CA
Perchlorate 2006: Progress Toward Understanding and Cleanup, Santa Clara, Hyatt Santa Clara Hotel. Sponsored by the Groundwater Resources Association of California. For info: GRA, 916/ 446-3626, or website: http://www.grac.org/per.html

January 26-27 AZ
Environmental and Toxic Tort Litigation, Scottsdale, Scottsdale Plaza Resort. RE: Case Law, Statutory Enactments, Regulatory Changes, Procedural Developments, Class Action & Multi-Party Litigation, Disclosures, Expert & Scientific Evidence Issues, & More. For info: ALI-ABA, 800/ CLE-NEWS, or website: www.ali-aba.org

January 26-27 CA
California Wetlands, San Diego. For info: CLE Int'l, 800/873-7130, or website: www.cle.com

January 26-27 CO
Colorado Water Congress 48th Annual Convention, Denver. For info: CWC, 303/ 837-0812, email: macravey@cowatercongress.org, or website: www.cowatercongress.org

January 29-31 WA
Seafood Summit 2006: Sustainability and the Future of Seafood, Seattle, Seattle Waterfront Marriott, 2100 Alaskan Way. RE: NOAA Assistant Administrator for Fisheries, Dr. Bill Hogarth, is scheduled to speak on January 31. For info: Seafood choices Alliance, email: info@seafoodchoices.org

January 29-31 TX
2006 Inorganic Contaminants Workshop, Austin. RE: Regulatory Climate, Contamination Identification, Technology & Implementation of Treatment, Managing Residuals, Emerging Contaminants, Arsenic Treatment Technology, Membrane Desalination, New Techniques for Dealing with Contaminants, Contaminant Accumulation & More. For info: Dana Trujillo, AWWA, 303/ 347-6420, or email: dtrujill@awwa.org, or website: www.awwa.org/calendar/

February 2-3 WA
Hanford Advisory Board Meeting, Richland, 2/2: 9am-5pm; 2/3: 8:30am-3:30pm. For info: Erik Olds, 509/ 372-8656

February 2-3 OR
Environmental Regulations of Oregon: An Overview of Federal and State Law, Portland, Ecotrust (Jean Vollum Natural Capital Center) Conference Center, 721 NW 9th Ave, Suite 200, 8:30am-5pm. Instructors: Jeff Dresser, Bridgewater Group, Inc.; Dr. Shane Latimer, Jones & Stokes Consulting; Candee Hatch, CH2M Hill; Ann Levine, DEQ; and April Zohn, Jones & Stokes Consulting. For info: NWAEP 206/ 762-1976

February 2-3 CO
NEPA and Federal Land Development Conference, Denver. Sponsored by Rocky Mountain Mineral Law Foundation. For info: RMMLF, 303/ 321-8100, email: info@rmmlf.org, or website: www.rmmlf.org

February 2-3 CA
Toxic Releases, Los Angeles. For info: Law Seminars International, 800/ 854-8009, or website: www.lawseminars.com/

February 5-9 TX
National Water Conference USDA-CSREES, San Antonio, Marriott Rivercenter. RE: Ag Best Management Practices, Rural Environmental Protection, Conservation & Resource Management, Watershed Assessment & Restoration. For info: USDA-CSREES website: www.soil.ncsu.edu/swetc/waterconf/2006/main.htm

February 6-10 AK
Alaska Forum on the Environment 8th Annual, Anchorage, Anchorage Egan Convention Center. For info: Alaska Forum, 888/ 301-0185, email: info@akforum.com, or website: akforum.com

February 7 WY
Wyoming Water Forum Meeting, Cheyenne, State Engineer's Conference Rm, Herschler Bldg. 4E, 10am. RE: Instream Flow with Laurie Goodman of Trout Unlimited and Jeff Fassett of Fassett Consulting. For info: Wyoming State Engineer's Office website: http://seo.state.wy.us/forum.aspx

February 9-10 DC
Environmental Law, Washington D.C. (suburban). For info: ALI-ABA, 800/ CLE-NEWS, or website: www.ali-aba.org

February 13 CA
NEPA: Turning Complexities Into Strategies, San Francisco. For info: CLE Int'l, 800/873-7130, or website: www.cle.com

February 13-14 CA
2006 National Water Resource Symposium, La Jolla, Estancia La Jolla Hotel & Spa. RE: Market, Legal, Technical & Financial Components of Water Marketing and Water Resource Development. For info: Christa Riekert, WestWater Research, 307/ 742-3232 or website: http://waterexchange.com/symposium2006/conference2006.html

February 13-14 CO
NEPA: Focus on Transportation, Denver. For info: CLE Int'l, 800/ 873-7130, or website: www.cle.com

February 15 WA
Natural Resource Damage Litigation, Seattle, Renaissance Seattle Hotel. For info: Law Seminars Int'l, 800/ 854-8009, website: www.lawseminars.com/seminars/06NRDWA.php

CALENDAR

February 15-17 WA
Pacific Salmonid Recovery Conference, Seattle, Sponsored by the National Marine Fisheries Service's (NMFS/NOAA Fisheries') Northwest Fisheries Science Center. For info: Conference website: www.nwetc.org/bio-500_02-06_seattle.htm

February 16-17 GA
Wetlands Permitting & Water Law, Atlanta. RE: Permitting Issues, Development, Current Rules & Regs, Applications & Tools. For info: The Seminar Group, 800/ 574-4852, or website: www.theseminargroup.net

February 17 AZ
Innovations in Arsenic Management for Water Providers, Tucson. Sponsored by University of Arizona Water Sustainability Program. For info: Louise McDermott, WSP, 520/ 626-0592, or email: louisem@sahra.arizona.edu, or website: http://uawater.arizona.edu

February 20-22 KS
Kansas Dam Safety Conference 2006, Wichita, Radisson Hotel. For info: Kansas Division of Water Resources, 785/ 296-3710, website: www.ksda.gov/Default.aspx?tabid=173

February 20-23 CA
International Erosion Control Association Annual Conference, Long Beach, Long Beach Convention & Entertainment Center. For info: Kate Nowak, IECA Director of Conferences and Meetings, 970/ 879-3010 or website: www.ieca.org/Conference/Annual/LongBeach06.asp

February 22-25 CA
24th Annual Salmonid Restoration Conference, Santa Barbara, CA. "Rediscovering Urban Creeks and Creating Healthy Watersheds" For info: Dana Stolzman, Salmonid Restoration Federation, 707/ 923-7501 or email: srf@calsalmon.org or website: / www.calsalmon.org/

February 23-24 CA
24th Annual Water Law Conference (ABA), San Diego, Hotel Del Coronado. For info: ABA website, www.abanet.org/environ/committees/waterresources/home.html

February 27-28 TX
Texas Wetlands, Austin. For info: CLE Int'l, 800/873-7130, or website: www.cle.com

February 27-28 WA
Harvesting Clean Energy Conference, Spokane. RE: Bringing Together the Agriculture and Energy Industries. For info: website: www.harvestcleanenergy.org/conference

February 28 ID
Water Rights Sales and Transfers, Boise, Holiday Inn Boise Airport. RE: Historical Basis of Current Water Law, Status of Adjudication, Enforcement of Water Rights. Obtaining a New Right and Changes, Practitioner Tips on Transactions/Transfers. For info: Lorman Business Center, Inc., 866/ 352-9539, or website: www.lorman.com

February 28-March 2 DC
State/Tribal/Federal Coordination Workshop: Federal and State Wetland Programs in Transition: Opportunities and Challenges, Washington, D.C. RE: Opportunities for Restoring, Protecting & Enhancing Wetlands, Supreme Court Challenges, Funding, Federal and State Rule-Making, Program Integration, Wetland Status and Trends Analyses, Mapping, & Wetland Water Quality Standards. For info: Association of State Wetland Managers, email: laura@aswm.org or website: www.aswm.org

March 1-3 CA
Fourth Annual Environmental Industry Summit, Coronado, Coronado Island Marriott Resort. RE: The West Coast's Annual Gathering of Environmental Industry Professionals. For info: Environmental Business Journal website: www.ebiusa.com/summit2006/

March 2-3 NV
Family Farm Alliance 2006 Annual Meeting and Conference, Las Vegas, Monte Carlo Resort & Casino. For info: Jane, Family Farm Alliance, 707/ 998-9487 or email: ffameetomg@aol.com, or website: www.familyfarmalliance.org/

March 3 TX
NEPA: Rules, Regulations & More, Austin, Omni Hotel. For info: CLE Int'l, 800/873-7130, or website: www.cle.com

March 3 AK
Brownfields Redevelopment, Anchorage, Sheraton Anchorage Hotel. RE**:** Liability Protections, Funding Opportunities & New Enforcement Provisions. For info: Law Seminars International, 800/ 854-8009, or website: www.lawseminars.com/

March 6-7 CO
Colorado Water Law, Denver. For info: CLE Int'l, 800/873-7130, or website: www.cle.com

March 6-7 WA
Advanced Real Estate Purchases & Sales, Seattle, Renaissance Seattle Hotel. RE: Latest Developments in Structuring, Negotiating, & Documenting Major Commercial Property Sales. For info: Law Seminars Int'l, 800/ 854-8009, website: www.lawseminars.com/seminars/

March 7 WY
Wyoming Water Forum Meeting, Cheyenne, State Engineer's Conference Rm, Herschler Bldg. 4E, 10am. RE: NHD and FEMA Map Mod Projects with Paul Caffrey (WY Geographic Information Science Center). For info: Wyoming State Engineer's Office website: http://seo.state.wy.us/forum.aspx

March 7-10 Mexico
7th Specialised Conference on Small Water and Wastewater Systems, Merida, Hotel Fiesta Americana. RE: Decentralised Systems for Water Supply & Wastewater Treatment. For info: Dr. Simon Gonzalez, International Water Association, 52-55-5623-8662, email: small2006@pumas.iingen.unam.mx, or website: http://pumas.iingen.unam.mx/small2006

March 9-11 NM
11th Xeriscape Conference & Expo, Albuquerque, Convention Center. For info: www.xeriscapenm.com

March 9-12 CO
35th Conference on Environmental Law (ABA), Keystone, Keystone Resort & Convention Center. For info: ABA website, www.abanet.org/environ/programs/keystone/2006/

March 13-16 CA
16th Annual AEHS West Coast Conference on Soils, Sediments and Water, San Diego, Mission Valley Marriott. For info: Brenna Lockwood, 413/ 549-5170, or website: www.aehs.com/conferences

March 17 CA
NEPA: Turning Complexities Into Strategies, San Diego, Marriott San Diego Hotel & Marina. For info: CLE Int'l, 800/873-7130, or website: www.cle.com

March 20-21 WA
Clean Water and Storm Water, Seattle. For info: Law Seminars International, 800/ 854-8009, or website: www.lawseminars.com/

March 20-22 CA
International Symposium on Site Characterization for CO2 Geological Storage (CO2SC 2006), Berkeley. Sponsored by EPA with the International Association of Hydrogeologists, American Institute of Hydrology, Ground Water Protection Council, and International Association of Hydraulic Engineering and Research.RE: Site Characterization & Site Selection - Geologic Storage of CO2, Proposed Technological Option to Reduce Atmospheric Concentrations of CO2. For info: website http://esd.lbl.gov/CO2SC/

March 23 OR
Water Rights Sales and Transfers in Oregon, Salem, Black Bear Inn Conference Center. RE: Water Marketing, Due Diligence, Agricultural to Municipal Transfers, Klamath Water Bank, Legal Barriers, Transfer Injury Test, Trading: Solution or Exploitation & Alternatives to Purchases. For info: Lorman Education Services, 866/ 352-9539, or website: www.lorman.com

March 27-29 DC
Western States Water Council Meeting (150th Meeting and Water Policy Seminar), Washington DC, Holiday Inn Capitol. For info: Tony Willardson, WSWC Associate Director, 801/ 561-5300, email: twillards@wswc.state.ut.us, or website: www.westgov.org/wswc/meetings.html

(continued from previous page)

March 28-April 2 **IL**

Aquatech USA 2006, Water Quality Association Conference & Trade Show, Chicago, Donald E. Stephens Convention Center. RE: Showcase of International Water Technology. For info: Jeannine Collins, WQA, 630/ 505-0160 or email: jcollins@mail.wqa.org

March 29-31 **BC**

GLOBE 2006: 9th Biennial Trade Fair & Conference on Business and the Environment, Vancouver. RE: New Climate Change Agreements; Energy Policy; Carbon Trading Regimes; Environmental Technologies and Capital Markets; Meeting Shareholder Demands, Lots More. For info: Website: http://www.globe2006.com

April 2-6 **WA**

SAGEEP 2006: The 19th Annual Symposium on the Application of Geophysics to Engineering and Environmental Problems, Bellevue, WA, DoubleTree Hotel. "Environmental and Engineering Hazards - Advances and Constraints" Developments, Trends, and Applications of Non-invasive Subsurface Imaging Technologies and More. Over 150 Presentations. Also Workshops, Field Trips. For info: EEGS (Environment and Engineering Geophysical Society) 303/ 531-7517 or email: staff@eegs.org or website: www.eegs.org/sageep/index.html

April 3-5 **DC**

Federal Water Seminar, Washington, D.C., The Washington Court. Sponsored by National Water Resources Association. For info: NWRA, 703/ 524-1544, email: nwra@nwra.org, website: www.nwra.org/meetings.cfm

April 4 **WY**

Wyoming Water Forum Meeting, Cheyenne, State Engineer's Conference Rm, Herschler Bldg. 4E, 10am. RE: Water Forecast with John Lawson (Bureau of Reclamation). For info: Wyoming State Engineer's Office website: http://seo.state.wy.us/forum.aspx

April 6-7 **WA**

Hanford Advisory Board Meeting, Mission. 4/6: 9am-5pm; 4/7: 8:30am-3:30pm. For info: Erik Olds, 509/ 372-8656

April 6-7 **CA**

California Water Law, San Francisco. For info: CLE Int'l, 800/ 873-7130, or website: www.cle.com

April 6-7 **NV**

NEPA, Las Vegas. For info: CLE Int'l, 800/873-7130, or website: www.cle.com

April 7 **WA**

Wetlands, Habitat, and ESA Mitigation, Seattle. For info: Law Seminars Int'l, 800/ 854-8009, website: www.lawseminars.com/seminars/

April 10-14 **CO**

State of the Rockies Conference, Colorado Springs, Colorado College. For info: www.ColoradoCollege.edu/StateoftheRockies

April 20-21 **OR**

"Restoring the Rivers of Lewis & Clark," Portland, Oregon Convention Center. RE: Instream Flows & Success? Speakers include Charles Wilkinson & Other Water Law, Science, and Policy Experts. For info: Oregon Law Institute, (800) 222-8213 or website: www.lclark.edu/org/oli/objects/2006_Water_Savedate.pdf

April 23-26 **NM**

Inspiring Global Environmental Standards and Ethics (NAEP 31st Annual Conference), Albuquerque. RE: Balancing Needs of the Natural & Human Environments, Finding Solutions. For info: Donna Carter, 863/ 679-3852, or website: www.naep.org/CONFERENCE05/Alexandria.html

April 24-27 **OR**

9th National Mitigation & Conservation Banking Conference, Portland. RE: Trends & Issues Surrounding Mitigation and Conservation Banking, Land Trusts & More. For info: www.mitigationbankingconference.com

April 27-28 **NE**

Nebraska Water Law, Lincoln. For info: CLE Int'l, 800/873-7130, or website: www.cle.com

April 27-28 **WY**

Wyoming Water Law, Cheyenne. For info: CLE Int'l, 800/873-7130, or website: www.cle.com

May 1-2 **CAN**

The Canadian Environmental Conference and Tradeshow, Toronto (Ontario), Metro Toronto Convention Centre. RE: Environmental Engineering, Regulations and Compliance Issues. For info: Steve Davey, 905/ 727-4666, or website: www.canect.net

The Water Report
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