



EDITOR'S NOTES - THE COLOR OF WATER

Chris Pitre, Golder Associates

Is it money or is it water that makes the world go round? In some projects, water appears not to be had at any cost. For those planned projects, money isn't enough and they are not realized because of the lack of water. How much is water worth? In this newsletter, an article by Harry Seely and Christina Quinn of WestWater Research look at the auctioning of water rights. Auctioning, done properly, seems to be one way to establish a fair market value for both seller and buyer.

Once a water right is obtained, the awareness of project costs usually switches to other project components. However, the continuing cost of water in the form of an electrical bill for pumping of the water - at least for groundwater - continues and can eventually exceed the cost of the original water right. Michael Klisch of Golder Associates writes in this newsletter on how to manage those costs

The question of what is water worth continues to be asked. A brief review of easily available information on purchases of existing water rights range from less than \$1,000 to more than \$10,000 per acre foot per year, with a clustering in the \$1500-\$3,000 range. (That is if it is to be had at all because, like real estate, location is key - when a water right can be relocated at all, it can only be moved within strict limits.) Reactions to such cited value of water may be:

Shock: "What! - They only paid a \$10 application fee to get that water!"

Resignation: "OK, let's factor that into the project economics."

Smugness: "Boy, that will cover us well for retirement."

Indignation: "The law doesn't allow for speculation on water!"

The wide range reflects the immaturity of the water right market in Washington, the location and/or the parameters of the water right, and of course shifting demand and supply. Comparative sales are one means of valuing a water right, though such information is difficult to compile. Another means is to quantify the cost of alternative sources such as from a municipality.

Another 'commodity' in water resources is wetlands. Some discussion of this was provided at the July WA-AWRA dinner Meeting by Allison Ray and Dale Anderson of the Washington Department of Transportation in the context of transportation projects. Look for more development of this topic and wetlands banks in the next newsletter.

Your help with a few efforts of your state AWRA section would be appreciated. Applications for student fellowships are due September 30 (page 8). Please bring this to the attention of any enterprising student. Also, there are lots of people out there working hard to protect and enhance Washington's water resources. Is there someone you know who deserves recognition? Nominations for the 2006 Outstanding Service Award are due September 10 (page 7). Finally, letters of interest to serve on the 2007 WA-AWRA board are due September 13. You can help lead in the direction of this dynamic organization. Please call any board member to find out more about how it works (page 9).

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Upcoming Board Meetings - All are Welcome

Date	Host	Contact information
Sept. 11, 2006	Jacque Klug	Jklu461@ecy.wa.gov
Oct. 2, 2006	Pete Sturtevant Steve Foster	psturtev@ch2m.com sfoster@hdrinc.com

Using Auctions to Buy and Sell Water

By Harry Seely and Christina Quinn, WestWater Research

Water costs are increasing throughout the West as water users struggle to develop resources and infrastructure to meet growing demands. In some cases, the least-cost solution involves buying or leasing water rights or other types of water assets for direct use or mitigation purposes. Consequently, the demand and competition for reliable water sources is increasing along with the value of water rights associated with those sources.

The lack of mature water markets routinely frustrates development efforts. Due to a lack of market information, buyers and sellers often have vastly different price expectations making it difficult to complete a transaction. In addition, costs of trading, which are often paid by the buyer, tend to be high and further limit the potential for water right deals to be used as a method of achieving water supply goals. Though limited, water auctions are starting to be used to alleviate pricing issues and minimize transaction costs.

Types of auctions: There are two general auction formats that have been used to buy and sell water rights. The first is the reverse auction, and is used to acquire water rights. In a reverse auction, an entity will announce that it is seeking to purchase water. In response, water right owners will submit bids to sell. The buyer will purchase water at the lowest bid prices until the water supply goal is attained or available funds expended. The second type of auction is the forward auction. This auction starts with a seller, as opposed to a buyer, offering to auction water. A water right owner, such as a company or government, will hold the auction for interested buyers. The primary goal in this case is to sell the water at the highest price.

Auctions provide a mechanism for creating a forum where transactions occur in an consistent manner. When well-organized, auctions add efficiency to trades by revealing price information and encouraging competition.

Reverse Auction Applications: Most water auctions that have occurred within the United States are reverse auctions involving institutional water banks. Water banking currently occurs in twelve states west of the Mississippi.

The Deschutes Water Exchange in central Oregon, for example, annually leases water from irrigators to improve flows in the middle Deschutes River and provide mitigation credits to new groundwater users. Sellers have consisted primarily of irrigation district members. The auctions have resulted in large volumes of water purchased at low prices as winning bids have largely been based upon the annual assessments charged by the irrigation districts.

The Klamath Basin Water Bank, also in Oregon, balances irrigation water use with instream and tribal water use. The bank is required to supplement river flows with 100,000 acre feet of water for each year from 2005 to 2011. The bank uses a sealed, reverse

auction format. Each year, irrigators submit sealed bids for forgoing surface water deliveries, irrigating with groundwater in lieu of surface water, or pumping well water directly into irrigation canals. The amount of water transferred has nearly doubled since the inception of the program in 2002.

The Deschutes and Klamath water banks are examples of reverse water auctions to meet environmental water objectives at the lowest cost. The development of these auctions has also stimulated interest in auctions elsewhere in Washington and Oregon. For example, a number of agencies and local watershed groups are considering implementing similar programs in the Yakima and Walla Walla river basins.

Forward Auction Applications: Though there have been relatively few forward water auctions, the idea of using auctions to sell water is also gaining interest and are more frequently used than reverse auctions. Within the last several years, there have been a number of auctions in which water rights have been sold separately from other assets. The results of these auctions have been mixed largely due to differences in the selected auction format and pre-auction promotion. In some cases, the rights sold for the announced minimum price the seller was willing to accept. In others, the sale prices significantly exceeded expectations as the auction format promoted competition among bidders. For example, Washoe County, Nevada, received nearly \$7 million for the sale of 174 acre-feet of water rights in a 2005 auction compared to an expected value of \$2.6 million.

There has been at least one forward auction held in Washington. The Washington Department of Natural Resources (DNR) auctioned a groundwater right in February 2006 to generate revenue for the Common School Trust. The agency used an oral, ascending price forward format to auction 1,370 acre feet of water rights in a single block. The water right was previously used for irrigation in the Odessa Groundwater Management Sub-area. The auction attracted many onlookers but only one bidder that offered the minimum price set for the water right, \$250 per acre-foot. The selected auction format as well as the limited promotion and development of information regarding the water right's transferability to new locations and uses likely contributed to the lack of competition at the auction.

Auctions are also being used to market more esoteric water assets. The Town of Prescott Valley, Arizona, is planning to divest 2,724 acre feet of effluent water for use within the town borders. The auction will provide investment opportunities and a new source of water to support local development in an extremely water-short region. The town will hold what is expected to be the largest forward water auction in the United States in October 2006. Information about this auction will be available in the coming weeks on WestWater Research's web site at:

<http://www.watereexchange.com>.

Advice on developing an auction: Challenges in selling or buying water rights include identifying potential trading partners, negotiating acceptable terms, and regulatory approval. A well-planned auction can help to overcome some of the hurdles. Organizers should develop adequate information to allow bidders to be comfortable with the auction format and water rights. The following provides a few guidelines to consider when developing a water auction:

Selecting the Right Auction Format: There are a variety of auction formats that can be used depending on the objectives of the organizer as well as the reality of specific market conditions. For example, price collusion is a common concern where a limited number of auction participants are expected. Oral auctions and repeated reverse auctions are particularly susceptible to price collusion and predatory behavior. Well-informed bidders are likely to form price agreements and enforce the agreement through communications during the auction. Oral formats allow bidders to monitor and punish their competitors in case someone breaks an agreement. Punishment can come in the form of larger bidders outbidding the agreement breaker. Moreover, larger bidders can practice predatory behavior by quickly bidding up the price early on, discouraging smaller bidders from participating. Consequently, other auction formats such as a sealed bid format can be used if price collusion and predatory behavior is a concern. This format requires the bidders to submit a single, written bid thereby limiting communication among bidders. By limiting communication, bidders are less likely to work together to form a price agreement or limit competition. The disadvantage to the single, sealed format is that it does not reveal price information and allow the bidders to increase (or decrease in the case of reverse auctions) their bids.

Reserve Price: Both reverse and forward auctions will commonly set a reserve price to establish the minimum or maximum acceptable bid. Reserve prices can protect the both the seller in a forward auction and the buyer in a reverse auction by assuring that the price will not be too low in a forward auction or too high in reverse auction. There are two ways to establish a meaningful reserve price. The first method is a water appraisal. Appraisals provide a price range for buyers and sellers. The risk with appraisals is that an inaccurate appraisal used as a reserve price could inhibit transactions. A less risky option for forward auctions is to enter into a price-floor agreement with a third party such as an investment bank or private equity fund prior to the auction, essentially pre-selling the water. Price floors are not commonly used, though there is a growing interest on Wall Street in water investments and participation in these types of financial agreements. The price floor agreement allows the water to be auctioned but

acceptable bids must typically be ten to twenty percent higher than the price floor agreement. A "break-up" fee is paid to the third party underwriting the price floor agreement if the water is sold at a higher price.

Heterogeneous Water Rights: Not all water rights are equal. Water rights differ based on past use, transferability and reliability to name a few. These differences can affect the outcome of the auction and the price received. If, for example, an auction includes more than one water right with different priority dates requiring the bidder to price the water rights accordingly, auction participants are likely to discount their bids if the water rights are bundled together. Forward auctions with multiple types of water rights should consider grouping the rights in similar blocks or shares. This way prices will be more consistent with the real value of the water.

Auction Promotion: Auction promotion is important to participation. Making information easily accessible and marketing both indirectly and directly to buyers will encourage people to join an auction. One way to gauge the level of interest is through directly communicating with potential bidders prior to the auction. Determining level of interest is important to setting auction expectations. Marketing to potential bidders can expand participation. Providing easy access to auction information will increase participation.

Auction Procedures and Due Diligence: Auctions usually provide interested parties with auction procedures and due diligence packets. One of the objectives of the due diligence packets is to help establish the value of the water rights by guiding bidders to make informed bids. Water price information is difficult for bidders to gather in regions with few water transactions. In thinly traded markets, price expectations often vary widely and are based upon limited information. The due diligence packets typically include information on market activity and, in some cases, an appraisal of the water assets to be auctioned. Auction procedures outline the format of the auction, financial requirements for submitting bids, and procedures for submitting bids. Financial requirements such as bid deposits or financial statements are commonly required for submitting bids. These requirements help ensure that successful bidders perform and close on the transaction.

The use of auctions to reallocate water supplies is increasing as water buyers and sellers seek to maximize the market value of water rights or stretch available budgets. While not suitable for all locations or circumstances, auctions represent a trading tool worth considering when buying or selling water rights. Well-constructed auctions can be used to minimize the costs of trading and promote competition for water rights to help achieve price objectives as well as non-financial objectives such as equitable access for potential bidders and distributional goals.~

Water Resource Disasters in Washington: Risks and Recovery – WA-AWRA Fall Conference 11/16/06

By Kenneth Gish, Preston Gates & Ellis LLP, Seattle WA

The Washington Section of the American Water Resources Association is pleased to announce that Eric Holdeman, Director of the King County Office of Emergency Management will present the Keynote Address – “The Big One – Our Katrina” at the 2006 AWRA – WA Section Annual Conference. The 2006 Conference will take place on Thursday November 16, 2006 and will focus on the potential natural disasters that Washington State is susceptible to and their impacts on water resources.

The 2006 Conference moves to new location this year. The Conference will be held at Museum of History and Industry (MOHAI) in Seattle.

The MOHAI is located in the Montlake section of Seattle and is easily accessible by bus, SR 520 and the University of Washington campus.

The Committee is also excited about the planned agenda for the 2006 Fall Conference. Following the Keynote Address, a series of panels will dis-

cuss specific topics related to the conference theme. One of the panels will address technical aspects of the local risks for various natural disasters and their potential impacts on water resources. Another panel will address how communities and utilities prepare to avoid and minimize damage to water resources from natural disasters. Finally, a panel will discuss the legal, political, social and technical challenges arising from recovery efforts following a natural disaster.

The Fall Conference will also serve as the venue for the annual election of the Section’s officers and board of directors. Also, at the conference the Section’s annual awards will be presented.

The Conference Planning Committee hopes you will be able to join us at this year’s Fall Conference. The conference promises to raise interesting and important issues regarding critical water resource infrastructures. We hope you will be able to join us.☺

Do You Know the Hazard in Your Backyard?

-- USGS Launches Web Site and Facts Sheets on Earthquakes, Floods, Hurricanes, Landslides, Tsunamis, Volcanoes, and Wildfires --

Every year, natural hazards that occur in the United States can result in hundreds of lives lost and cost billions of dollars in the form of disaster aid, disrupted commerce and destroyed public and private properties.



To help educate the public about the threat of natural hazards, the U.S. Geological Survey (USGS) has launched a new Web site and seven easy-to-understand fact sheets on earthquakes, floods, hurricanes, landslides, tsunamis, volcanoes and wildfires. The hazards Web site highlights resources and information available from the USGS and provides links to the individual hazards Web pages for more detailed information. The Web site, fact sheets and other government resource links can be accessed at:

<http://www.usgs.gov/hazards/>.

“At the USGS, it is our goal to provide scientific research and analysis that help the public make informed decisions on where natural hazards occur,

how severe they may be, how to react to each hazard and how to safeguard people and communities,” said USGS Acting Director P. Patrick Leahy. “If we can use our science to help save lives and minimize the damage caused by natural hazards, we have achieved an enormous goal—helping to prevent natural hazards from becoming disasters.”

The USGS has the lead federal responsibility to provide notifications to the public about earthquakes, volcanoes and landslides. These notifications enhance public safety and reduce losses through effective forecasts and warnings based on the best possible scientific information. The USGS plays a supportive role to other federal agencies for flooding, wildfires, hurricanes, tsunamis and coastal storms. The USGS serves the nation by providing reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy and mineral resources; and enhance and protect our quality of life.☺

Freshwater fishing: Trout fishing is improving on a number of rivers and lakes in eastern Washington, where the bite is also on for perch and walleye. As the snow continues to recede, anglers are also gaining access to more high lakes, such as those in the William O. Douglas, Goat Rocks and Indian Heaven wilderness areas in southwest Washington. (From: <http://wdfw.wa.gov/do/weekendr/weekendr.htm>).

Economics of Groundwater Supply

By Michael Klisch, L.Hg., Golder Associates Inc., Redmond WA

The electrical bill for pumping groundwater is usually the largest cost for groundwater users. Energy losses due to inefficient groundwater supply systems cost water suppliers in the United States millions of dollars each year. Inefficiencies can be caused by many factors including:

- Poor well design and pump sizing;
- Inefficient operating and maintenance procedures; and,
- Deterioration of the well and pump with time.

Additional economic losses are also attributable to replacing or rehabilitating wells and pumps without first performing cost-benefit analysis to evaluate alternatives and determine the optimal time for rehabilitation or replacement.

Well design: Proper well design, from selection of casing size, well screen slot size and material, and completion (naturally-developed or gravel pack), enhances the efficiency of a well, resulting in a lower pumping lift and lower operations and maintenance costs. Proper well design starts with a preliminary well design that takes the anticipated well depth, desired yield, anticipated pumping rates, groundwater quality, and hydrogeologic conditions into account. Collection of representative formation samples and groundwater quality samples during drilling and hydrogeologic logging confirm conditions allow the well screen and gravel pack (if needed) to be selected based on the formation materials and placed in the most productive portion of the aquifer with the best water quality.

Wells with undersized well screens or poorly-designed gravel packs generally have large well losses, resulting in greater than expected pumping water levels, decreased pumping rates, and higher pumping costs. Oversized well screen materials or screens can result in sand pumping if the screen or gravel pack are improperly sized, allowing sand to enter the well. Sand pumping could require costly remedies such as a sand separator, replacement of the original well screen, pumping at a lower rate or total replacement of the well. Sand pumping could also result in damage to pumps, valves, and other system components.

Corrosion or encrustation of the screen or casing is also possible if the screen or casing are not compatible with the groundwater quality. This could result in lower flows and higher pumping lifts from the well if the screen becomes fouled with chemical or biological precipitates. If the well screen becomes corroded, the openings will enlarge, possibly resulting in sand pumping or collapse of the well screen.

Pump specifications: Poor selection of the pump and motor can result in high operating costs over

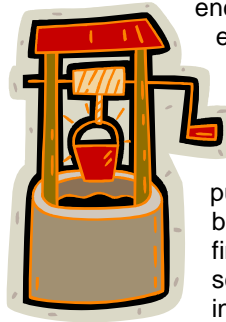
the life of the well. If the pump is larger than needed, it will have to be throttled back, resulting in higher electrical costs and possible pump damage. A properly designed and executed step-rate and constant-rate pumping tests completed prior to selection of the permanent pump are critical to evaluate the well efficiency, well capacity, pumping water levels, and selection of pump specifications.

Maintenance and Operation: Proper operation and maintenance procedures can reduce the long-term costs for well operations. This can include regular monitoring of pumping rates and pumping water levels to detect any changes or problems in well operation. Large savings can be realized from optimizing wellfield operation by minimizing interference between wells, or operation of the most efficient wells to supply water and using less efficient wells only when needed to meet demand.

Even properly designed wells may experience some decline in efficiency or pumping rate with time. This could be caused by encrustation of the well screen, migration of fine material in the aquifer towards the well screen, deterioration of the pump impellers, or interference from newer wells. Regular monitoring can help detect small changes in well performance and help select an appropriate method to restore the well capacity before significant costs occur. If there is a large decrease in well efficiency (e.g., a specific capacity decrease of more than 20%), the well and pump should be inspected. This typically involves pulling the and inspecting the pump, and performing a downhole video inspection and geophysical logging to evaluate the condition of the well.

Based on operational records and the video and pump inspections, appropriate measures can be taken to restore the well efficiency, ranging from replacement of the pump, well rehabilitation to remove encrusting materials, and/or changes in operations. In cases of severe damage to the well screen or casing, it may be more economical to replace the well.

Minimizing costs of groundwater production starts with a properly designed well that considers the anticipated pumping rates, water quality, and hydrogeology. A properly designed well can be operated more economically because the well efficiency will be maximized, reducing the pumping lift and need for well and pump maintenance. Regular monitoring of well operations can pinpoint operation problems at an early stage, reducing maintenance and repair costs. In the event a well requires rehabilitation or replacement, long-term operational records can provide valuable information for the design of a replacement well or development of a rehabilitation strategy. ☞



One such application of the I-405 WRI is Newcastle Beach Park, dealing with storm water drainage to Coal Creek in the vicinity of the I-405/I-90 interchange. The initiative proposed a deal between the Washington State Department of Transportation and the municipalities, exchanging aesthetic improvements for a cross-basin drainage easement, diverting excess storm water drainage from Coal Creek to Newcastle Beach Park. While appearing unconventional at first, the plan simultaneously provides park improvements and wetlands enhancement in exchange for improved flood control and water quality, and at a reduced cost of \$5.3 million taxpayer dollars instead of the estimated \$19 million needed to improve drainage in Coal Creek alone.

Another example of the application of the WRI is the Panther Creek Watershed Rehabilitation in Renton in the vicinity of SR 167. In a highly urban-

ized area, the creation of effective storm water runoff mitigation results in a lack of salmonid refuge, degraded water quality, a lack of functioning riparian habitat, and barriers to fish migration. Creative solutions to drainage issues have helped establish off-channel habitat and have included wetland delta planning to improve water aeration.

Overall, the goal of the I-405 WRI is to maximize the benefits of the I-405 Corridor Project while still balancing time and cost – getting the projects done quickly and on budget. To do this, alternative proposals are taken to the municipalities affected by the improvements, and then to the Department of Ecology and the local Port authority for approval. ~~~

For more information, visit:

<http://www.wsdot.wa.gov/Northwest/King/default.htm>

Nominations for 2006 Water Resources Award for Outstanding Service

WA-AWRA plans to honor an individual at our annual conference on November 16, 2006 for outstanding contribution to the water resources profession in the State of Washington. The winner will be awarded a handsome plaque commemorating the honor. In addition, the AWRA Board will make a donation to a water-related, nonprofit organization of the individual's choosing.



The following criteria will apply.

- Outstanding contribution or achievement in the water resources field (broadly defined) in the State of Washington.
- Leadership, so that others are enabled, inspired or organized to advance the understanding, management or wise use of water resources.
- Degree of innovation.
- Interdisciplinary or bridge-building qualities.

Current State Chapter members are encouraged to send in a nominating letter for themselves or another candidate. In addition to identifying a nominee, the letter must contain an explanation of how the candidate specifically meets the criteria listed above. An individual need not satisfy all of the criteria to win the award, and other appropriate factors brought up in the nomination letter may be considered.

Any person may be nominated for this award, but only current State Chapter members may submit a nomination. ***The nomination letter must be received by September 10, 2006.***

Submit all letters of nomination to:

Peter Sturtevant
Nominations Subcommittee
c/o CH2M HILL
PO Box 91500
Bellevue, WA 98009-2050

There are lots of people out there working hard to protect and enhance Washington's water resources. This a chance to bring some much-deserved recognition. ~~~

Pacific coast: Most anglers fishing out of Ilwaco are catching their daily limit of salmon although the odds of landing a Chinook are better farther north. Fishing in all ocean areas will be open seven days per week starting Aug. 11.

Columbia River: Salmon fishing remains slow at Buoy 10, although catch rates for hatchery steelhead are improving both above and below Bonneville Dam. The fall Chinook fishery in the Hanford Reach near the Tri-Cities opens Aug. 16.

Puget Sound: One in two anglers have been taking home good-sized salmon from marine areas 10 and 11 in central Puget Sound. A 32-pound Chinook recently took first prize in the Tacoma Salmon Derby.

(From: <http://wdfw.wa.gov/do/weekendr/weekendr.htm>).

Washington Section American Water Resources Association 2006-07 Fellowship Announcement

The Washington State Section of the American Water Resources Association (AWRA) is seeking nominations for its 2006–07 Fellowship Award. For the 2006–07 academic year, two fellowships of \$1,500 each will be awarded.

One award will be to a member of a Washington Section affiliated Student Chapter. The other award will go to a student enrolled in a graduate program at a college or university in Washington State. Both fellowships are for a full-time graduate student completing an advanced degree in an interdisciplinary water resources subject.

In addition to \$1,500 in cash, the award includes a one-year membership in both the State and National AWRA, a one-year subscription to the Journal of the American Water Resources Association, and admission to the Washington State Section Annual Conference.

Each department with qualified applicants may submit one nomination for the award. The application packet, limited to five pages, should include the following:

1. A brief letter of nomination from the department head;
2. Completed Application Form;
3. Statement of goals and objectives for graduate work;
4. Detailed description of research interest.

Qualified students need to fill out the application form and prepare the additional information requested above and mail it to the Fellowship Committee Chair, Stan Miller. The letter of nomination may be mailed under separate cover by the department head or included with the applicant's package.

Items two through four constitute the application package and must be prepared by the applicant. Nominations will be evaluated on:

1. The interdisciplinary nature of the course of study and research;

2. The effectiveness of the response in communicating research objectives;
3. The potential for application of the work to the current needs in water resources management; and,
4. The reviewers overall impression of the applicants qualifications and presentation.

Nominations will be accepted at any time between the date of this posting and **September 30, 2006**. Students not attending summer school, for which a September deadline would create a time crunch, are encouraged to submit applications in the spring or early summer.

In early October the Fellowship Committee will evaluate all applications received and will recommend recipients for the Open and Student Section winners to the Washington Section Board of Directors. The Board approves the selections at the October 2006 Board meeting.

The winners will be notified as soon as the board approves the award. Special recognition will be given to the fellowship recipients at the State Section's annual conference in November.

The recipients will prepare an article describing their research for the Section newsletter.

For additional information contact Stan Miller by email at samillerh2o@comcast.net or by phone at (509) 455-9988.

Send the completed Application Packet to the email address above (.PDF or MS Word format preferred) or mail to:

Stan Miller, Fellowship Committee Chair
AWRA Washington State Section
1329 S. Ferris Court
Spokane, WA 99202

For additional information, please see our website at: www.wa-awra.org ☺

Article submissions are always welcome. Please let the editor, Chris Pitre (cpitre@golder.com), know if you would like to contribute an article for the next newsletter.

WA-AWRA Seeking New Members for the 2007 Board of Directors

The AWRA Washington State Chapter Board is seeking new board members to serve for the 2007 term which runs for 12 months starting in November, 2006. This is your chance to work with a diverse group of dynamic, influential members of the water resource community. The Board meets monthly and directs the activities of the chapter. You will work with committees that direct such interesting activities as publishing a bi-monthly newsletter, organizing an annual state conference, organizing a series of dinner meetings and student chapter activities or running an awards program. If you are interested, please e-mail the Nominations Committee Chair, Pete Sturtevant at psturtev@ch2m.com, prior to September 13, 2006. Include a brief summary of your background in water resources and any AWRA-related activity (if any) you have participated in within the past year.

NEW MEMBERS

Membership dues are a revenue source for the Washington Section of the American Water Resources Association (WA-AWRA). The most important use of this revenue is to fund the annual student scholarship awards which have grown from one scholarship per year worth \$1,000, to two scholarships worth \$1,500 each. We are also building a self-sustaining trust fund to expand the student scholarship program. Welcome to our newest members:

Steve Aslanian, Tatoosh Water Company
Bill Beck, Golder Associates Inc.
Alan Black, HNTB Corporation
Samuel Casne, Landau Associates
Tim Flynn, Aspect Consulting, LLC
Matthew Gray, HDR Engineering, Inc.
Joanne Greenberg, HydroLogic Services Company
Rex Harder
Jonathon Houghton, Hart Crowser, Inc. - Pentec Environmental
Jennifer Jerabek, Master Builders of King & Snohomish Counties
Terry Kakida, Seattle Public Utilities
Anthony Katsaros, Landau Associates
Cindy Lantry
Allison MacEwan, HDR Engineering, Inc.
Robert McKusick, Entrix, Inc.
Adam Merrill, Adolfson Associates, Inc.
Allan Morgan, Reid Middleton
Beth Peterson, HDR Engineering, Inc.
Betty Renkor, Department of Ecology
Jim Rybock, GeoEngineers, Inc.
Art Schick, Suquamish Tribe
Francis Solomon, King County Dept. of Natural Resources/Parks
Heather Trim, People for Puget Sound
Nat Trumbull, University of Washington
Julie Villeneuve, Teax A&M University
Cynthia Walcker, King County
Ian Young, Golder Associates Inc.

AWRA-WA BOARD MEMBERS

President: **Mona Thomason**
(206) 764-3600
mona.jean@comast.net

Vice President: **Scott Bender**
(425) 828-7545
scott@benderllc.com

Treasurer: **Cleve Steward**
(360) 862-1255
csteward@stewardandassociates.com

Secretary: **Jacqueline Klug**
(425) 649-7124
jkl461@ecy.wa.gov

Editor: **Chris Pitre**
(425) 883-0777
cpitre@golder.com

Past-President: **Tom Martin**
(360) 681-4590
tommartin@wavecable.com

Director: **Tony Dubin**
(206) 749-2266
tdubin@brwncald.com

Director: **Carl Einberger**
(206) 342-1776
ceinberger@geomatrix.com

Director: **Steve Foster**
(425) 450-6316
sfoster@hdrinc.com

Director: **Kenneth Gish**
(206) 623-7580
kennethg@prestongates.com

Director: **David Hawkins**
(360) 854-7016
dhawkins@upperkagit.com

Director: **Chris Konrad**
(253) 428-3600
cpkonrad@usgs.gov

Director : **Jamie Morin**
(206) 493-2323
morin@mentorlaw.com

Director: **Stan Miller**
(509) 477-6024
samillerh2o@comcast.net

Director: **Tom Ring**
(509) 865-4946
ringt@yakama.com

Director: **Pete Sturtevant**
(425) 453-5000
psturtev@ch2m.com

UW Student Rep: **Arden Thomas**
ardent@u.washington.edu

Faculty Advisor: **Anne Steinemann**
(206) 616-2661
acstein@u.washington.edu

2006 Membership / Change of Address Form

(⌂ please circle, as appropriate ↗)

Annual membership in the state chapter costs \$25.

Name _____ Position _____ Affiliation _____

Street Address _____ City _____ State _____ Zip _____

Phone(_____) _____ Fax(_____) _____ E-mail _____ @ _____

Please indicate if you prefer to receive your newsletter electronically.

Check if you would like to be actively involved on a committee.
You will be contacted by one of the board members.

2006 Membership Dues: \$25.00. **Checks only.** Please make check payable to
AWRA Washington Section.

Mail to: American Water Resources Assoc. WA. Section
P.O. Box 2102
Seattle, WA 98111-2102

The American Water Resources Association is a scientific and educational non-profit organization established to encourage and foster interdisciplinary communication among persons of diverse backgrounds working on any aspect of water resources disciplines. Individuals interested in water resources are encouraged to participate in the activities of the Washington Section.

Special Thanks to Golder Associates Inc.

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American Water Resources Association, Washington Section
P.O. Box 2102
Seattle, WA 98111-2102

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