



New Mexico
Environment Department

CLEARING THE WATERS

Published by the Watershed Protection Section
of the Surface Water Quality Bureau

Vol. 7 No. 3

Fall 2002

*Group Study
Exchange on Water
Issues between New
and Old Mexico*
page 2

*"OUTCOME FRAME-
WORK" HELPS THE
WATERSHED PRO-
TECTION SECTION
FOCUS ON RESULTS*
page 3

*THE
PROBLEM
WITH
SALT CE-
DAR*

*Additional BMP
Incorporated as New
Condition in CWA
Section 401 New Mexico
Water Quality
Certification*
Page 6



The New Mexico team of the Group Study Exchange in Chihuahua, Mexico are welcomed (with a banner from another meeting of high New Mexican officials that same day) at the Palacio del Gobierno. Left to Right: Bobby Rankin, Gray Lowrey, Daniel Guevara, Laura Hagan, and Sam Fernald. See story on page 2. Photo by Sam Fernald.

Group Study Exchange on Water Issues between New and Old Mexico

By Daniel Guevara

In May 2002, I traveled south of the border to Chihuahua, Mexico to discuss water issues between Mexico and the United States. I was part of a five-member team, called the Group Study Exchange (GSE) program, whose goal was to solve water resource problems facing the states of Chihuahua Mexico, New Mexico, and West Texas. We set out to learn about the problems and find ways in which Rotary Club International (Rotary), the sponsor of the trip, could create and fund projects that would assist in solving the water problems.



The confluence of the Rio Grande and the Rio Conchos in Ojinaga, Mexico. Photo by Sam Fernald.

Rotary is an international service organization whose members hold weekly meetings at clubs worldwide. Through GSE, Rotary has been building cross-cultural understanding by sending teams of young professionals to other countries to meet the people and experience the culture. The trip to Mexico was the first time that a

GSE team was also charged with the mission of investigating a scientific issue and developing proposals for projects.

In the spirit of international exchange, two teams crossed the border in opposite directions: New Mexicans headed south while Mexicans came north. The Mexican team spent most of their time in southern New Mexico and west Texas looking at agricultural water uses. They also were informed about the conflict between the El Paso/Juarez urban area water demand and agricultural needs in the surrounding area.

The New Mexican team consisted of professionals from southern and northern New Mexico. Bobby Rankin and Sam Fernald represented New Mexico State University; Gray Lowery represented Sandia National Laboratory; Laura Hagan represented John Shoemaker & Associates; and Dan Guevara represented the New Mexico Environment Department, Surface Water Quality Bureau.

To be eligible for the team, each member needed to be able to speak Spanish and have a background in water issues. Only the leader of the team (Rankin) can be a member of Rotary, while it is encouraged that the rest of the team remain impartial.

We set out to identify what were the most pressing water problems, and perhaps more importantly, what were the specific areas that had the most potential for funding through various grant programs of Rotary Clubs. Crammed in and out of Suburbans, vans, buses, and even small cars, we traveled extensively within the state of Chihuahua meeting with local officials, local Rotary Clubs, University Professors, graduate students, and local people. Host families, who were members of local Rotary Clubs, provided lodging. Far from being on a vacation, we spent many hours in meetings, lectures, and formal Rotary functions, all conducted in Spanish. Many more hours were spent driving from place to place.

The team visited Juarez, Nuevo Casas Grandes, Chihuahua, Ojinaga, and the Sierra Tarahumara. At each location we gained knowledge of water resource issues and an appreciation of the lack

continued on page 7

“Outcome Framework” Helps the Watershed Protection Section Focus on Results

By Julie Arvidson

The Watershed Protection Section (WPS) of the NMED Surface Water Quality Bureau recently adopted a new way of evaluating watershed restoration proposals they receive. Watersheds are land areas that drain rain and snowmelt into surface water bodies. Section 319(h) of the Federal Clean Water Act delegates funding to the Environmental Protection Agency (EPA) to protect watersheds. The EPA, along with State agencies, administers the funding to private and public organizations. The WPS is the state administrator for New Mexico. Each year WPS issues Request for Proposals (RFP) to the public for these projects. This year the RFPs have the same objectives but with a new, focused approach to achieve those objectives. The RFPs are more specific and clear about what WPS seeks to achieve to encourage formation of projects that contribute to WPS objectives. This new approach is called “outcome framework” and was created by The Rensselaerville Institute, a nationally recognized leader in the field of outcomes.

The WPS began working with The Rensselaerville Institute in November 2001 when they attended an outcome management workshop given by EPA, Region 6. With encouragement from EPA, and enthusiasm from WPS staff that attended the workshop, development and use of an outcome framework in New Mexico’s 319(h) RFPs began.

Historically, grant administrators evaluated and selected proposals based on activities done during the project. In an outcome framework, administrators evaluate proposals based on projected results to be achieved by the project. Some of the core assumptions of outcome framework are:

- New thinking suggests new concepts and words to express them.
- People, not plans or even money, get things done.
- Planning and doing are inseparable.
- A partnership of investor and implementer greatly enables success.
- Success means result achievement.
- Outcome thinking encourages innovation and learning.

The new concepts derived from outcome framework suggest new words like “investor” (instead of “funder”) and “milestones.” The word “investor” in the RFP communicates that WPS seeks and expects a clear return from selected projects and links the individual project outcome to WPS’s overall goals. “Milestones” are changes projects need to accomplish to get closer to the desired outcome of the project.

A key concept found in the 319(h) RFPs is that results matter. The Rensselaerville Institute believes that people, not plans or money, are a critical element in the achievement of the project’s results. These people are referred to as “sparkplug” individuals, or individuals with skills, commitment, and energy brought towards the project. Other people that can influence the outcome of a project are what The Rensselaerville Institute calls “customers”, or those whose behavior or condition has to change to be in line with the project’s desired outcome.

The final new concept in the RFPs is the idea of a “performance target.” This is what the project manager projects will be the outcome and in what timeframe it will be achieved. It is a target that identifies what will be specifically different after the project is complete. The RFPs list some WPS target areas in order to assist the requestor with aligning their proposal to appropriate targets.

continued on page 4

Outcome continued from page 3 These core assumptions are what drive outcome framework and what drives the 319(h) grant selection for 2003. Currently, the WPS is in the process of training the proposal evaluators to an outcome framework approach so that they will select proposals with a focus towards outcomes.

The Rensselaerville Institute's core know-how, based on almost 40 years of experience, is understanding how to change the behavior of communities, organizations and their investors to ensure that outcomes materialize. The Institute has been described as a "think tank with muddy boots" because of its reputation as thoughtful doers. Visit The Institute at <www.Rinstitute.org>.

To learn more about the NMED Surface Water Quality Bureau RFPs [for 'outreach/education' and 'on-the-ground' Clean Water Act Section 319(h)], log onto <<http://www.nmenv.state.nm.us/swqb/swqb.html>>, or call Julie Arvidson at (505) 476-3069.

THE PROBLEM WITH SALT CEDAR

by Julie Arvidson

Tamarix ramosissima, also known as salt cedar, has been blamed for water quantity and quality problems in recent years. The problems range from low water tables, salinity in soil, fire frequency, and native species degradation in and around riparian areas. There are arguments for and against salt cedar removal. The main disagreement stems from failure to replace salt cedar with

native riparian species in locations where salt cedar is removed.

The sources of this disagreement are why so many ecologists have problems with this invasive tree. Salt cedar originated in parts of Eurasia and China. It was first imported to the United States in the 1800s and was then introduced to the southwestern United States for its attractiveness, to stabilize eroding streambanks, and as a wind break.

In the semi-arid climate of New Mexico, the roots of salt cedar are said to "stretch" out in order to find water and therefore dry up many aquifers, lowering



SALT CEDAR LEAVES

photo by Joseph M. DiTomaso

is one way in which salt cedar can out-compete native tree species, which leads to their decline.

water tables. During a drought year, this can be considered especially harmful. The evapotranspiration rates of salt cedar are 2.3 to 2.5 feet of water per year compared to native species' (cottonwood, willow, and arrowweed) rates of 1.2 to 2.3 feet of water per year. (Anderson, 1998). This means that salt cedar needs more water than native species because it transpires more water.

Salt cedar increases salinity levels in soil as well. Salinity in soil is usually washed away with small floods. However, when salt glands and leaves of salt cedar fall onto the soil, there are few riparian area floods to wash the salt away because salt cedar lowers the water table and therefore, the water very rarely reaches the floodplain (Hart, 1999). Native tree species are unable to grow in the levels of salinity that salt cedar produces. This

Salt cedar can produce a lot of ground scrap that can serve as fuel for a fire. Flooding in riparian areas usually contributes to ground scrap removal. A lower water table, partially caused by thirsty salt cedar, diminishes the occurrence of riparian floods and, therefore, the ground scrap remains and fire intensity increases around the riparian areas.

Opponents of salt cedar removal believe lack of floods, a lower water table, and high salinity levels found in soils in the southwest are the result of dams (Anderson, 1998). These three conditions can lead to change in habitat and riparian species, and can increase fire intensity as well. However, the fact remains that dam removal is not very feasible, as many cities and land workers depend on this water for drinking and irrigation. Therefore, finding an alternative to removing dams that dry up the southwest is what salt cedar removal is all about.

continued on page 5

Salt Cedar continued from page 4

In the past, removing salt cedar has proved difficult. Salt cedar removal must include the root, or the tree will grow back because of its ability to grow under harsh conditions (Hart, 1999). Different methods have been used to control salt cedar, but few have been very successful. One method that is being supported by many is biological control, instead of chemicals or fires, to rid riparian areas of salt cedar. Using animals, such as goats to pull the whole root of the tree out has worked, but they do not like only salt cedar. They browse on cottonwood and willow trees as well, removing them along with salt cedar.



Another biological method is to use *Diorhabda elongata*, or the Chinese leaf beetle. These beetles have a particular liking for salt cedar and only infest this species (Aniskoff and Bogart, 2001). The beetle weakens the tree, and at a certain point a local leafhopper then kills the tree. The drawback of using this beetle stems from a different reproduction period in their native habitat than was allowed for in the United States. The beetle could not develop uteri correctly and were not reproducing at the expected rate (Aniskoff and Bogart, 2001). The same reproduction period can be found in southern China, from where more beetles will be brought to the United States for research. They also did not feed during winter months, allowing salt cedar to redevelop (Aniskoff and Bogart, 2001).

Even more difficult than removing salt cedar is replacing it with native vegetation, as soil with high salinity and low water tables are not conducive to native riparian trees. A study was done in 2002 at the University of New Mexico showing that by simulating historical flood conditions by using a plastic pipe and filling it with about six inches of water, cottonwood can out-compete salt cedar once it has been removed (*Environmental News Service*, 2000; Sher, et al., 2000). The study also found cottonwood to be invaded by adult salt cedar if present. Therefore salt cedar must be removed from the area if cottonwood is to grow using flood simulation (*Environmental News Service*, 2000).

References

- Anderson, B. W. 1995. Salt Cedar, Revegetation and Riparian Ecosystems in the Southwest. California Exotic Pest Plant Council, 1995 Symposium Proceedings. Source: <<http://www.caleppc.org/symposia/95symposium/anderson.pdf>>. August 6, 2002.
- Anderson, B. 1998. The Debate Over Tamarisk: The Case for Salt Cedar. *Restoration and Management Notes*. 16:2 Winter 1998.
- Aniskoff, L. and Bogart, J. 2001. Biological Control of Invasive Salt Cedar. Source: <<http://www.wmrs.edu/interns-2001/lara/project.htm>>. August 6, 2002.
- Hart, J. 1999. Invasive Species in the Southwest: *Tamarix* sp. (Salt Cedar). Source: <<http://www.earlham.edu/~biol/desert/invasive.htm>>. August 6, 2002.
- Jewell, K. and Gerst, K. 2000. Biocontrol of Salt Cedar. Source: <<http://www.wmrs.edu/interns-2000/Kelly/indexkelkat.htm>>. August 6, 2002.
- Sher, A., Marshall, D., and Gilbert, S., 2000. Abstract: Competition between Native *Populus deltoides* and Invasive *Tamarix ramosissima* and the Implications for Reestablishing Flooding Disturbance. *Conservation Biology*. 14(6): 1744-1754.
- Environmental News Service*, 2000. Study Casts New Light on Invasive Saltcedar Trees. Source: <http://www.rioweb.org/Archive/ens_salt_cedar112800.html>. August 6, 2002.

Additional BMP Incorporated as New Condition in CWA Section 401 New Mexico Water Quality Certification

By David Menzie

Under Section 401 of the Clean Water Act (CWA), New Mexico's Water Quality Certification program certifies federal CWA Section 404 Dredge and Fill permits with respect to State of New Mexico *Standards for Interstate and Intrastate Surface Waters*. New Mexico can conditionally certify, unconditionally certify, or deny certification for many construction activities within jurisdictional waters. A certification provides information regarding the standards specific to the individual project reach and general standards that apply to all waters of New Mexico. A certification also states the conditions required of the project to assure that state standards are not violated. Conditions developed for project certifications

consist of Best Management Practices (BMPs) designed to eliminate sources of pollutants that may impact water quality and violate standards. BMPs are engineering and administrative controls designed to prevent and/or mitigate water quality impacts from a variety of potential pollutants commonly associated with construction activities within jurisdictional waters.

One of the most recent BMPs incorporated as a condition for Section 401 certification in New Mexico is the requirement that projects involving heavy equipment have on-site spill containment and cleanup materials for hydrocarbons, such as diesel fuel and hydraulic fluids. Spill containment and cleanup materials for hydrocarbons include some type of absorbent material, like oil booms, to absorb fluids or fuels. Oil booms were put to the test recently on a project to replace two old pipelines crossing the Pecos River near the New



Looking downstream at the Pecos River near the New Mexico-Texas border. Black floating silt fence appears immediately downstream of the pipelines, and two closely-spaced white absorbent booms are deployed downstream of the silt fence. Photo by Mary Jo Rugwell, U.S. Bureau of Land Management

Mexico-Texas border.

Metric Corporation, acting on behalf of Conoco, Inc., was issued a State Water Quality Certification to replace two existing natural gas pipelines crossing the Pecos River. The new pipeline crossings were installed using directional borehole methods to avoid any water quality impacts. However, the removal of the existing pipelines necessitated the use of heavy equipment and development of BMPs to prevent and/or mitigate water quality impacts. In consultation with Metric Corporation, two special conditions were developed for this project. One condition required on-site spill cleanup/containment materials and another condition required the use of a floating silt fence. Implementation of the floating silt fence was to address turbidity and was only feasible because of very low stream velocities in this reach of the Pecos River.

Site preparation commenced on August 6, 2001. On August 8th, a rupture occurred in one of the pipelines causing a release of about three barrels of liquid. Two floating absorbent oil booms were deployed downstream of the project area. An additional boom was deployed upstream of the project because the low stream velocity was allowing wind to push the hydrocarbons up the river. The use of absorbent booms contained the spill material to the immediate area and allowed for a more rapid and thorough cleanup. Development of effective site-specific BMPs and proper implementation of BMPs are critical components of New Mexico's Water Quality Certification program.

Call David Menzie at (505) 388-0599 in Silver City, or Dan Guevara at (505) 476-3069 in Santa Fe for more information about CWA section 401 Water Quality Certification.

Mexico continued from page 2

of water as this already dry region has been subject to ten years of drought. The limited water supplies are diminished further by problems of water quality. A common theme as we traveled between communities was an increasing reliance on dwindling groundwater sources. Many of the communities first response to drought was to drill additional wells, but as groundwater levels have declined the local government agencies have turned to water conservation programs. These programs were found in the streets through the many billboards and many public announcements that focused on the importance of saving water. We determined that Rotary could assist with this program through funding.

As we moved from the urban areas up into the mountains, new challenges arose. In the Sierra Tarahumara, a mountain range populated by the indigenous Tarahumara tribe, inadequate water supplies contaminated by inadequate sanitation were the most evident problems. Some of the problems seemed easy to solve, such as constructing a wellhead with a pump on a well that was just an open hole at ground level, being contaminated by runoff from a residential area. While we were discussing this at the well, a woman came to fetch water with a bucket on a rope. We asked her about the water and she said that everyone drinks it without any treatment such as boiling. Other problems were more difficult and embroiled in local politics.

Some of the projects proposed for this area include solar stills developed by Sandia National Laboratory, rooftop water collection systems, ceramic water filters, development of mountain springs, and well head protection.



A Tarahumanan stops the water flow from the village's water system. Photo by Sam Fernald.

Perhaps the most interesting part of the trip was spent with Jim Hogge in the mountain Tarahumara village of Sal Machique, which is named for a rock formation with a spring. Jim, a United States citizen living with the Tarahumara, has been working to provide clean water sources for the local villages. He has lived there over ten years and has been accepted into the local culture. He took us to a Tarahumara ceremony where we were invited to participate in the dancing and share the Tesguino, which is a ceremonial corn brew drunk from gourds. Participating in this ceremony was the highlight of my cross-cultural experience.

The final phase of the trip was to reunite with the Mexican team at the Rotary Conference in Taos, New Mexico. After our presentation to the Conference we were sequestered in Angel Fire to compile our findings and write the proposals. Although the issues varied from town to town, the general situation was a lack of water sources exacerbated by ten years of drought and contamination from industry and sewage. The New Mexican team mainly focused on municipal and domestic water uses, not agricultural and industrial uses. We concluded that there was a lack of basic water quality data, especially in the

Sierra Tarahumara. One of the projects we proposed was a mobile water quality van that would visit villages periodically to sample the water supply and assist with plumbing maintenance. The Mexican team developed proposals relating to agricultural uses. It was challenging to work across language and cultural boundaries to complete our work, but we managed to spell out a set of project proposals to be funded by Rotary. Once the proposals were complete, the final event for both teams was a Sunday rafting trip on the Rio Grande. As we returned to our regular jobs, we could visualize faces and places, instead of just numbers, regarding border water issues, hopeful that our efforts would help satisfy a thirsty region.



Historical aqueduct in Chihuahua City, Mexico built in the late 1700s and in use until 1982 for city water. Photo by Sam Fernald.

FUTURE EVENTS

SEPTEMBER

The 10th National Nonpoint Source Monitoring Workshop will occur September 8–12, 2002 to address the theme “Monitoring and Modeling from the Peaks to Prairie.” The workshop will focus on technical issues associated with quantifying the effectiveness of activities benefiting water quality, including the challenges of nonpoint source management, study design, monitoring approaches, and data analysis. The workshop will be held September 8-12 at the Beaver Run Resort in Breckenridge, CA. For more information, visit <<http://www.ctic.purdue.edu/NPSWorkshop/NPSWorkshop.html>>.

OCTOBER

The AwwaRF and East Valley Water District is holding the 2002 Perchlorate Conference on October 16-18, 2002 in Ontario, CA. The 2-1/2 day conference will offer two tracks, technical and non-technical, focusing on the newest research and development on Perchlorate and a general framework of the issues concerning Perchlorate contamination at both the state and federal levels. For more information, visit <<http://www.eastvalley.org/>>.

NOVEMBER

The Water Environment Federation and the Association of State and Interstate Water Pollution Control Administrators are co-chairing the National TMDL Science and Policy Conference in Phoenix, Arizona on November 13-16, 2002. The Conference will focus on scientific and regulatory issues surrounding the TMDL process. For more information, visit <<http://www.wef.org/Conferences/TMDL2002/opening.jhtml>>.

**NM Environment Department
Surface Water Quality Bureau
Watershed Protection Section
P.O. Box 26110, Runnels Bldg.
Santa Fe, New Mexico 87502**

Postage Required

Clearing the Waters is a publication of the Watershed Protection Section. Any comments, article submissions, or mailing list changes can be made through the Editor, Julie Arvidson, at the newsletter return address, by calling (505) 476-3069, or by email at <julie_arvidson@nmenv.state.nm.us>.