Texas StreamTeam *Caring for Our Waters*

Headwaters

River Systems Institute Texas State University-San Marcos EPA Region 6 TCEQ *Fall 2008*

Monitors Honored for Outstanding Service

by Julie Tuason, Texas Stream Team

The River Systems Institute welcomed more than 150 Texas Stream Team and Aquarena Center volunteers and guests at the Volunteer Recognition Event held on July 19, 2008, along the shores of Spring Lake in San Marcos, Texas. The event was hosted by the Texas State University's River Systems Institute with additional support provided by Hays Energy and other San Marcos area businesses.

The Volunteer Recognition Event featured a full day of outdoor activities as well as an awards ceremony and catered barbecue lunch. Volunteers from as far away as Texarkana enjoyed free glass bottom boat rides, a guided canoe exploration of Spring Lake, a

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Inside This Issue...

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Prevention Techniques for Sediment Pollution

by Jack Higginbotham, Texas Stream Team

[Editor's note: This article is the second of a two-part series on sediment pollution. For the first article, "The Problem of Sediment," by Heidi Moltz, see the Winter/Spring 2008 issue of Headwaters.*]*

Sediment pollution is estimated to cause $16 billion in environmental damage annually in the United States. The U.S. Environmental Protection Agency lists sediment as the most common pollutant in streams, rivers, lakes, and reservoirs. About 70 percent of sediment is from accelerated erosion due to human activities; the remaining 30 percent is caused by natural erosion. Many Texas Stream Team monitors are keenly aware of the increasing sediment problem in Texas, but where does this pollutant come from and how can we prevent it?

Sediment is a product of erosion. Erosion is caused by the movement of water, wind, and ice. As these elements move across the earth, they wear away the rocks and soil, suspending the materials and transporting them away from their source. There are three steps to the sedimentation process. The first step is the detachment of materials from the earth's surface. The second step is the transport of these particles by water, wind, gravity, or other forces. Lastly, the sediment is deposited when the velocity of the water decreases and cannot support the sediment in suspension any longer. Sediments are a primary pollutant of concern due to their effects on water quality, economic uses of water, and ecosystem health. Further exacerbating the problem, sediments also carry other pollutants with them, such as toxic substances, waterborne bacteria, and nutrients.

The major contributors of sediment pollu-

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Controlling Sediment Pollution

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tion in Texas and the United States are farming, ranching, and urbanization. There are various prevention techniques that can be used to minimize sediment pollution from these types of runoff. The common goal of erosion reduction techniques is to slow surface runoff and hold loose soil in place.

Prevention Techniques for Farming

Many erosion prevention techniques are employed by conscientious farmers around the country. Contouring and mulching are common in-field techniques. Vegetated waterways are a common in-field and stream-side option to prevent erosion.

Contour farming is the planting of crops in rows that are perpendicular to the slope of the land. When it rains, water runs downhill perpendicular to the contours. The rows create small dams that slow the flow of water and increase infiltration, hence reducing erosion. Contour farming can reduce soil erosion by as much as 50% in comparison to other types of row patterns. Additionally, mulching between contours can provide a significant amount of protection from erosion. Materials such as straw, compost, wood chips, and saw dust make effective mulches. Application of mulching materials helps to protect the soil from heavy rainfall and high winds.

Vegetated waterways protect soil against wind and surface runoff and stream bank erosion by covering the soil with dense vegetation. The denser the vegetation, the more energy it can absorb from the flow of water, settling out sediment that is suspended in the water and protecting soil from being transported away. Vegetated waterways can be employed in-field or in riparian areas, preventing eroded soil from entering the waterways. Vegetated waterways should not be grazed by livestock or driven over by vehicles, which can reduce their capacity to absorb the destructive energy from water flows.

Prevention Techniques for Ranching

Ranching is popular in Texas, especially cattle ranching. According to the U.S. Department of Agriculture's latest Cattle Inventory Report, there are approximately 14 million head of cattle in Texas. The majority of cattle ranchers in Texas manage small herds of cattle, ranging from 30 to 100 head. However, even with a small number of cattle, ranchers can still impact local water quality and cause environmental degradation by heightening the risk of nonpoint source pollution. In particular, cattle can contribute to sediment pollution by destroying vegetation through grazing and trampling.

Steve Figley, a professor of soil and crop sciences at Texas A&M University recommends some basic techniques to prevent sediment pollution for small or large herds. These include: (1) fencing off any stream so that cattle cannot lounge in it and

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Texas Stream Team
Headwaters
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The mission of Texas Stream Team is to facilitate environmental stewardship by empowering a statewide network of concerned volunteers, partners, and institutions in a collaborative effort to promote a healthy and safe environment through environmental education, data collection, and community action.

Headwaters disseminates information about nonpoint source pollution and facilitates the exchange of ideas and monitoring data between environmental monitors and supporting partners throughout the state of Texas.

The newsletter is published three times a year. For a free subscription, call toll free at (877)506-1401 or email your request to Julie Tuason, Editor, at *jt07@txstate.edu.*

Contributions to the newsletter are welcomed and encouraged. Please send any articles, letters, or questions to Texas Stream Team at the postal address listed on the back page or submit them via email to the editor.

Volunteer Spotlight –

Ray Kamps and the Spring Lake Climate Station

by Kelley Coker, Texas Stream Team

The Spring Lake Climate Station is a joint project between Texas Stream Team, the Rivers Systems Institute, and the Edwards Aquifer Research and Data Center, with major equipment donations from In-Situ and CC Lynch. The project was introduced in May 2007 with the installation of the meteorological tower, and the program was extended in June 2008 to include a continuous water quality monitoring site. The Climate Station is located on the grounds of Aquarena Center in San Marcos and aims to study climate and water quality relationships at Spring Lake, determine how the lake's microclimate is related to regional climate, and provide educational opportunities to almost 100,000 people who visit Aquarena Center each year.

Upon initiating the project, staff members at Texas Stream Team were in need of some expertise to install the instruments and begin collecting data. For assistance with the meteorological tower, they called on Ray Kamps, a research associate in the Department of Soil and Crop Science at Texas A&M University. Ray currently operates three meteorological towers located at Freeman Ranch in San Marcos, Texas, which are used for research purposes at Texas A&M University. He also operates a fourth tower at Freeman Ranch owned by the University of Texas-Austin, and volunteers frequently with the Texas Stream Team's meteorological tower. In addition to his meteorological work, Ray also performs aquatic research on Goodenough Spring, near Del Rio, Texas. He plans to begin his doctoral work at Texas A&M University in the spring of 2009.

Ray has been involved with the Texas Stream Team's meteorological tower since the inception of the project. He first volunteered his time by assisting with the assembly of the tower. Since then, he has offered to help with various tasks, including calibrating the tower's sensors, creating computer programs for the data logger, and troubleshooting problems that have come up along the way. When asked why he chooses to volunteer his time with Texas Stream Team, he stated, "I enjoy doing something worthwhile for the sake of doing something worthwhile. I generally like the people who will join in such an effort."

Initially, Ray's goal for the tower was simply to obtain usable data. He felt that the project was an excellent demonstration for schools and could provide background information for research projects. In the future, he hopes to see the meteorological tower "go into a regional, state, or national database where it can be found by other researchers."

To date, the meteorological tower has collected over 1.4 million data points. The tower currently collects data every fifteen minutes, measuring wind speed and direction, air and water temperature, relative humidity, net radiation, soil moisture, and precipitation. All data is available for public viewing on the Texas Stream Team website at *www.txstreamteam.rivers.txstate.edu,* under the Data Forum. The web page also contains information on how to get involved with the Spring Lake Climate Station Program as a volunteer, a researcher, or someone who just wants to learn more about our climate.

Texas Stream Team would like to take this opportunity to thank Ray Kamps and all of the Spring Lake Climate Station's dedicated volunteers for donating their time to establish a valuable scientific and educational resource. ●

To view monthly Volunteer Spotlights online, go to txstreamteam.rivers.txstate.edu/Volunteer-Spotlight.html

Monitors Honored for Service

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guided nature hike, aquarium and wetlands boardwalk tours, and canoeing and tubing on the San Marcos River.

Nearly 100 volunteers were individually recognized with certificates of appreciation to honor their service as water quality monitors or scientific divers. After the event, certificates were also sent to many additional volunteers and partners for dedicated service to Texas Stream Team and Aquarena Center. Speakers during the awards ceremony included Mike Bira from the U.S. Environmental Protection Agency, Laurie Curra from the Texas Commission on Environmental Quality, and Dianne Wassenich from the San Marcos River Foundation.

Pat Stroka, a volunteer water quality monitor, attended the event with his wife. He said, "Folks really made us feel welcome and appreciated. It was really nice to get a chance to meet and talk with other monitors. It gave me the feeling that I am a part of the bigger picture."

Andrew Sansom, executive director of the River Systems Institute, acknowledged the contributions of all Texas Stream Team and Aquarena Center volunteers. "Both here at Spring Lake and in the rivers and streams throughout the state, volunteers are the essential ingredient in protecting and managing Texas's precious water resources," said Sansom. "We simply could not do our job without them, and no amount of recognition will ever be enough." ●

These photos and many more are available for viewing and downloading at our photo sharing website: www.flickr.com/txstreamteam

Aquarena Offers Service Learning for Students

by Sonja Mlenar, Aquarena Center

Aquarena Center offers service-learning experiences for tour groups ranging from middle school students through adults who wish to become better stewards of the San Marcos River. Participants learn about exotic species and their negative effects on the habitat, and then help to remove them

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For example, water hyacinth is an exotic aquatic plant that reproduces rapidly due to lack of control from native predators. As part of a group tour, students can remove this floating plant by hand while in canoes.

By participating in these service-learning activities, students gain self-esteem and a sense of pride by helping to care for their environment. Hundreds of students have participated in river cleanups and exotic species removal from Spring Lake over the last year.

To add a stewardship activity to your next Aquarena tour, call the group tour office at (512) 245-7540. ●

Initiative for Watershed Excellence

by Eric Mendelman, Texas Stream Team

Degradation of water quality, in the form of water pollution, can significantly interfere with beneficial human water uses as well as have serious negative impacts on life-supporting aquatic ecosystems. Water pollution also represents a form of water scarcity. Without expensive and time-consuming pretreatment, the range of possible human water uses decreases with increasing pollution, thereby making less water available for activities requiring high-quality water. Because adequate supplies of safe, clean water are also a prerequisite for economic development, water quality degradation can have serious economic consequences for human wellbeing and livelihoods.

Water quality degradation occurs mainly as a result of human activities on land, with increasing population growth and industrialization continuing to exacerbate this major environmental problem. Recognizing the need to accelerate progress toward addressing degraded water quality in impaired, threatened, or at-risk watersheds in the U.S. Environmental Protection Agency's (EPA) Region 6 (which includes Texas, New Mexico, Oklahoma, Arkansas, and Louisiana), the River Systems Institute (RSI) has developed the Initiative for Watershed Excellence. The proposed initiative guides the efforts of RSI and its partner, the Oklahoma Water Resources Research Institute (OWRRI), in two important areas relevant to this goal; namely, (1) adaptive watershed management, and (2) capacity building to facilitate application of this management approach.

In view of its water-sensitive location, its expertise in water resource issues, and its interdisciplinary perspective, Texas State University-San Marcos (where the River Systems Institute is based) is uniquely positioned to undertake this important water quality initiative, and to ensure the full participation of its collaborating partners.

The Initiative for Watershed Excellence extends and enhances existing projects that target impaired watersheds, provide capacity-building support with stakeholder training, and engage students and faculty in maximizing the effectiveness of stakeholder participation in watershed management. The Red River watershed above Lake Texoma, located on the border between Texas and Oklahoma, is the focus of a new project under the initiative that is funded by the EPA. By optimizing the benefits of capacity-building activities through adaptive management strategies that focus on local actions, the initiative facilitates an innovative, integrated approach that will propel RSI, OWRRI, EPA Region 6, and other key regional collaborators to the national forefront in facilitating effective watershed management, particularly for improving water quality conditions.

In recent years, significant attention and resources have been directed toward watershed planning and program implementation for impaired, threatened, and at-risk watersheds, but with mixed results. A recent EPA report, "The Best Watershed-Based Plans in the Nation," examined watershed plans on a national basis, including assessing satisfaction levels related to each Watershed Planning Element in these plans. The results were disappointing, with a majority of the elements receiving relatively low satisfaction scores, between 44% and 59%, with only two elements receiving scores of 67% and 70%. These low scores may be attributable to incomplete or inadequate plans for achieving water quality improvements at a pace satisfactory to the EPA.

The Initiative for Watershed Excellence addresses these shortcomings by facilitating coordinated, region-wide collaboration among water resource institutions. Major efforts are directed specifically toward strengthening stakeholder education and involvement, gathering and assimilating relevant water quality data for targeted watersheds, and facilitating effective assessment, planning, and implementation activities.

Achieving measurable water quality improvements requires that stakeholders have the necessary resources (staffing, knowledge, skills, technology, funding) and guidance to develop complete, effective, achievable plans consistent with their organizational and individual mis-

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Texas Stream Team

Volunteers of the Month

Summer 2008

July
Kathy Matthews
San Marcos River
San Marcos River Rangers

August
Sally Evans
Rowlett Creek
Richardson Environmental Center

September
John Siemssen and David Boylan
Guadalupe River
Lindheimer Master Naturalists

To nominate a volunteer for recognition, contact Heidi Moltz at hm1079@txstate.edu or call (512) 245-3461 (toll free 1-877-506-1401). To read about current and past Volunteers of the Month, go to txstreamteam.rivers.txstate.edu/Volunteer-Spotlight.html

Texas Stream Team By The Numbers

Volunteers trained since 1991: 4,595
Cumulative number of sites monitored since 1991: 1,290
Cumulative number of monitoring events since 1991: 26,474
Number of new monitors in 2008: 269
Number of sites monitored in 2008: 246
Number of monitoring events in 2008: 1,826
Number of volunteer hours spent monitoring in 2008: 3,635
Estimated dollar value of volunteer monitor time* in 2008: $66,157

***Based on the 2008 Environmental Protection Agency calculation figure of $18.20 per hour.**

Data Summary Report –

Taylor Lake in Harris County

by Josh Oyer, Texas Stream Team

[Editor's note: This article summarizes water quality data collected from Taylor Lake in Harris County, from December 30, 2006, to February 29, 2008.]

Taylor Lake is located between the Bayport Channel and Clear Lake, both of which flow into Galveston Bay in Harris County, Texas. Taylor Lake flows into Clear Lake from the north, and Clear Lake then flows directly into Galveston Bay from the west. The two monitoring sites are located at the two roads that cross over Taylor Lake: Red Bluff Road and Nasa Parkway. Both roads cross Taylor Lake in an east-west orientation. Red Bluff Road is upstream of Nasa Parkway by almost 2 miles. Nasa Parkway crosses Taylor Lake at its confluence with Clear Lake.

Taylor Lake is mainly used for recreational purposes such as boating, water skiing, and fishing. Between the two sites, the shores of the lake are densely lined with houses. The data presented in this summary was collected by Texas Stream Team volunteer water quality monitors Thomas Soloman and Victor Madamba of the Galveston Bay Area Master Naturalists in partnership with the Houston-Galveston Area Council.

Looking at the data for both sites together, there were 24 monitoring events occurring at times of day that ranged from 7:50 a.m. to 1:00 p.m., with the average sampling time occurring at 10:20 a.m. Dissolved oxygen values ranged from 4.3 to 11.3 mg/L with an average value of 7.9 mg/L. pH values ranged from 5 to 9.5 su with an average value of 7.9 su. Water temperature values ranged from 9°C to 30° with an average value of 20.4°. Secchi depth values ranged from 0.17 to 1 m with an average value of 0.44 m. Since total depth values ranged from 1 to 2.8 m with an average value of 2.1 m, the indication is for low water transparency.

When dissolved oxygen levels drop below 3.0 mg/L, they are considered in exceedance of the acceptable level for this water body. Out of the 24 monitoring events on Taylor Lake, this happened 0 times, giving the water body an excellent 0% exceedance rate. The lowest dissolved oxygen levels were observed in the summer months of June, July, and August of 2007. This does not come as a surprise, as dissolved oxygen and water temperature very often exhibit an inverse relationship. In the summer months, when water temperature is at the highest of the year, depressed dissolved oxygen levels can be expected in many water bodies around the state. The graph titled "Water Temperature and Dissolved Oxygen" displays this relationship for the Nasa Parkway site.

Monitoring at Red Bluff Road is conducted by volunteer Thomas Soloman off of what is left of an old bridge adjacent to the current Red Bluff Road bridge. The remnants of the older bridge extend approximately 30 yards toward the middle of the lake, making it a very effective place to monitor water quality.

Volunteer Victor Madamba conducts the water quality monitoring at Nasa Parkway. He has noted the consistency of water quality conditions at the site until July 2008, when he noticed an influx of small jellyfish. This came as a concern, for the small jellyfish are the type that sting, and for a recreational water body such as Taylor Lake, this can impair recreational activities.

While the data at Taylor Lake only extends back two years, the monitoring conducted on the water body is very consistent and a good beginning to an extensive database. Once a well established baseline for expected data levels exists, trends can become recognized, and threats to the water quality in Taylor Lake will be more easily identifiable. ●

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Taylor Lake at Red Bluff Road

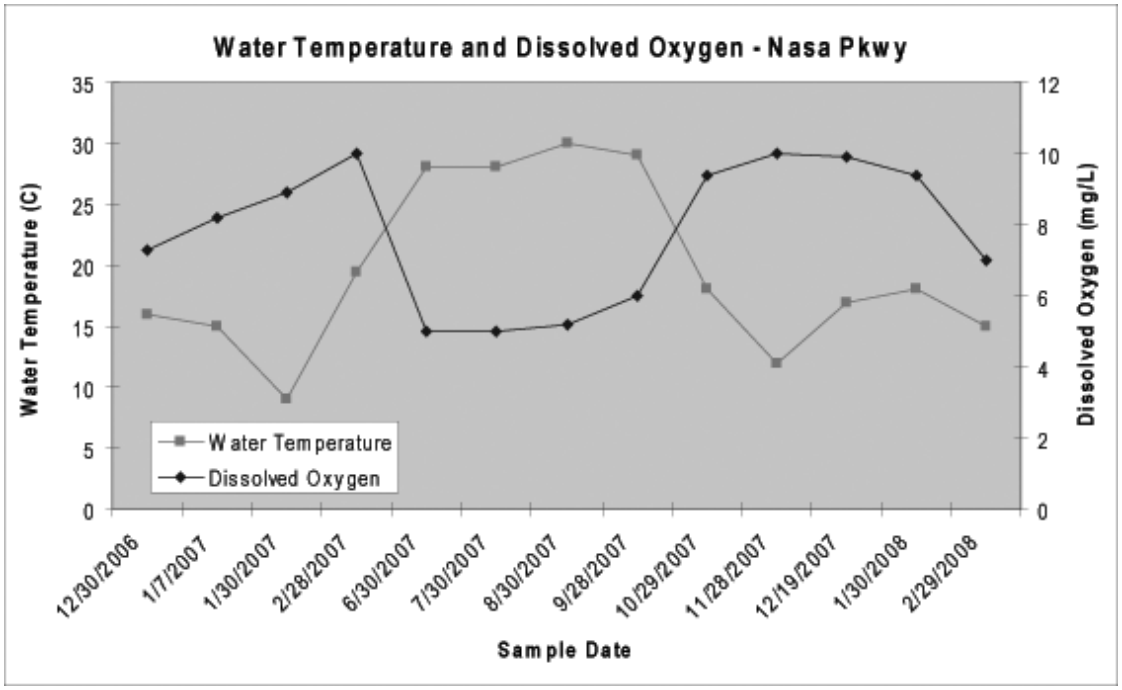
Parameter	N	% complete	Min	Mean	Max	Std. Dev.
Sample Time	11	100	8:00	10:27	12:15	1:13
Total Depth (m)	11	100	1.8	2.4	2.8	0.3
Secchi Depth (m)	11	100	0.4	0.5	1	0.2
SC (µS/cm)	0	0				
Air Temp (C)	11	100	12.5	23.7	33.5	6.8
Water Temp (C)	11	100	12	21.3	30	6.8
DO (mg/L)	11	100	4.3	8	11.3	2.4
pH (su)	11	100	7.5	8.4	9	0.5

DO exceedance [< 3.0 mg/L]: 0 of 11 (0%)

Taylor Lake at Nasa Parkway

Parameter	N	% complete	Min	Mean	Max	Std. Dev.
Sample Time	12	92	7:50	10:15	13:00	1:26
Total Depth (m)	13	100	1	1.9	2.4	0.4
Secchi Depth (m)	13	100	0.17	0.37	0.97	0.24
SC (µS/cm)	0	0				
Air Temp (C)	13	100	12.5	21	32	6.5
Water Temp (C)	13	100	9	19.6	30	6.9
DO (mg/L)	13	100	5	7.8	10	2
pH (su)	13	100	5	7.4	9.5	1.1

DO exceedance [< 3.0 mg/L]: 0 of 13 (0%)



Initiative for Watershed Excellence

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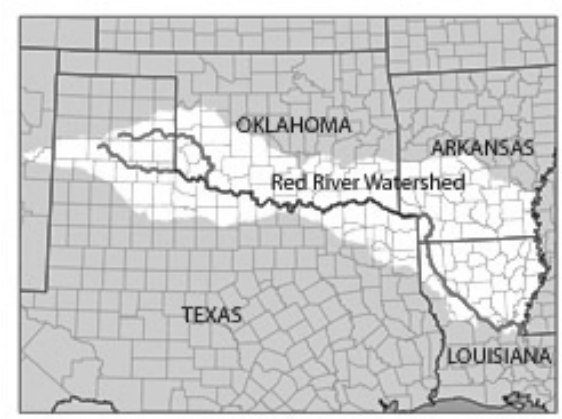
sions and activities. There is a wide range of knowledge and experience among individuals and stakeholder institutions, a diversity of complex watershed issues identified in the targeted areas, and myriad local pressures competing with water resource protection efforts. Recognizing these factors, the Initiative for Watershed Excellence establishes a comprehensive and integrated five-part program to be implemented over the long term in collaboration with multiple institutions throughout EPA Region 6.



These five program components are watershed assessment, education and outreach, facilitation and planning, monitoring, and technology development and deployment.

This program will strengthen watershed planning efforts in several ways. First, it is an institutionally driven program, in contrast to a grant-driven program, thereby strengthening the continuity between planning and implementation. Second, it requires collaboration of multiple institutions in addressing the same targeted watershed(s), thereby focusing a wider range of personnel, technical, and program resources on these watersheds. And third, it emphasizes in-depth scientific and technical watershed analyses directed toward facilitating stakeholder involvement. This ensures an efficient, transparent, and rational planning process that will sustain stakeholder participation.

The next issue of *Headwaters* will provide an in-depth look at the programs and strategies supported by the Initiative for Watershed Excellence. The latest information about the initiative will appear in the project's web site located at: *www.rivers.txstate.edu/projects/iwe.html*

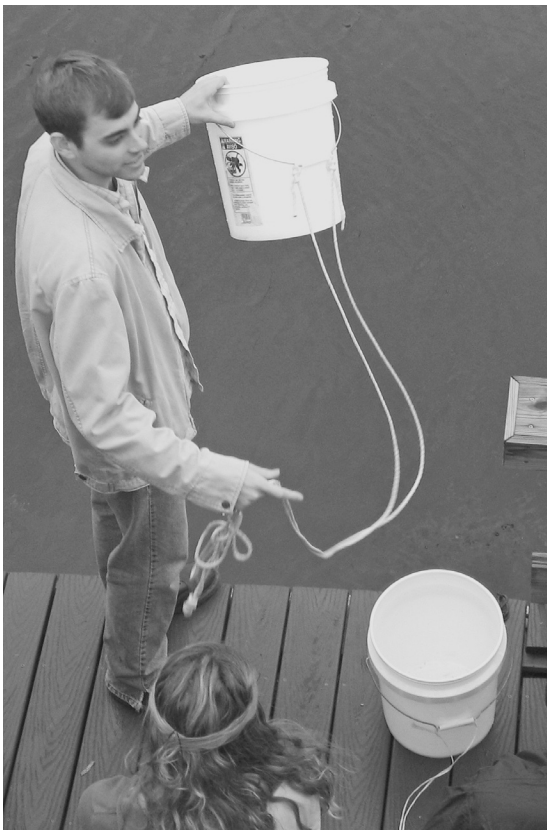
Contact: Eric Mendelman, project director, *em20@txstate.edu* or (512) 245-1409. ●

Texas Stream Team Welcomes Josh Oyer

Texas Stream Team welcomed Josh Oyer as a new addition to the team this past June. After working as an intern at Texas Stream Team during the spring 2008 semester, Josh graduated from Texas State University-San Marcos with a B.S. in Geography, concentrating on urban and regional planning.

Josh's focus of work for Texas Stream Team will mainly center on data analysis for a project on the Rio Grande, as well as assisting in leading volunteer water quality monitoring trainings.

Josh was inspired to work in the environmental field by a personal conviction to protect our planet's pristine beauty and delicate resources. He also credits the Texas State Department of Geography with empowering him with the necessary knowledge to do so. When not at work, he can frequently be spotted on the banks (or in the water) of the San Marcos River. ●



Sediment Pollution

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leave manure; (2) setting aside a specific area for watering and feeding, with a 30- to 50-foot buffer away from the stream; (3) ensuring that the buffer area is always well vegetated, preventing streambank erosion; and (4) practicing good grazing management – for example, by rotating the locations of water troughs and hay bales so that the cattle are not always in the same location. These methods can dramatically prevent sediment pollution from rangelands.

Prevention Techniques for Urban Runoff

Urban runoff controls are needed to prevent polluted runoff from roads, residential areas, and construction sites. Runoff control measures can be used before, during, and after construction to prevent the contribution of sediment into local water bodies. Some general best management practices (BMPs) for construction sites include fabrics and sediment basins.

Erosion-prevention fabrics can be used either to hold down the soil or to slow down surface water runoff and allow time for suspended particles to settle out. Two types of fabrics are silt fences and filter fabrics. Silt fences are fences of fine-meshed fabric (which filters out silt-sized soil particles) that are stretched across runoff channels and attached to support poles. This allows sediment-free water to pass through the fabric. Filter fabrics are used to retain larger sediment particles and allow water to pass though. These fabrics are used in erosion control mats. The erosion control mats protect soil and seed from erosion and can be designed to allow vegetation to grow through them.

Sediment basins are created by the construction of a dam or barrier downstream of a construction site. Their purpose is to slow runoff to allow sediment to settle out during construction. Sediment basins have been proven effective at reducing up to 95% of construction runoff. After construction is complete, sediment basins can be used as permanent detention ponds or wetlands.

Conclusion

Sediment prevention techniques for cropland, rangeland, and urban runoff can significantly reduce the amount of sediment reaching surface water bodies. However, they must be practiced consistently in order to reduce pollution in surface waters. Many citizens, municipalities, farmers, ranchers, volunteer organizations, and companies set excellent examples for reducing sediment in our waters. Education and awareness are the key for continued success. For more information, visit the Texas Stream Team website at *txstreamteam.rivers.txstate.edu* ●

References

Core 4 Conservation. 2003. "Contour Farming." Conservation Technology Information Center, Purdue University. *http://www2.ctic.purdue.edu/Core4/CT/Choices/Choice15.html*

Digiuseppe, Gary. May 2008. "Cattle and Clean Water." *The Cattleman.*

National Soil Erosion Research Laboratory. 2008. "Water Erosion Control Practices." Purdue University. *http://topsoil.nserl.purdue.edu/nserlweb/weppmain/overview/practices.html*

Robertson, L. S., and Pierce, F. J. 1988. "Understanding Sediments: Problems and Solutions." Department of Crop and Soil Sciences, Michigan State University. *http://web1.msue.msu.edu/waterqual/docs/wq08p1.html*

U.S. Environmental Protection Agency. 2008a. "Erosion, Sediment and Runoff Control for Roads and Highways." *http://www.epa.gov/owow/nps/education/runoff.html*

U.S. Environmental Protection Agency. 2008b. "What is Sediment Pollution?" *http://www.epa.gov/nps/toolbox/other/ksmo_sediment.pdf*

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Adelaide Bodnar
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