

Santa Fe
Children's Water Festival
2005
Project Report



April 25, 2005

By Susan Gorman
Project Manager

Santa Fe Children's Water Festival 2005

Project Report

The third Santa Fe Children's Water Festival was held on Wednesday and Thursday, February 9 & 10, 2005 at the Sweeney Convention Center where students and teachers gathered to celebrate water.

Goals and Performance Targets

Educating students and teachers about water and its relationship to human and other natural resources in a fun and interactive atmosphere is the primary goal of the Children's Water Festival. The Water Festival activities are designed to help students understand that water is an essential and limited resource and what each of us can do to protect and conserve our precious water. Water related facts, concepts and values are presented through fun, hands-on learning activities.

We have set specific performance targets for the Water Festival:

- ◆ Students demonstrate that they can answer these questions:
 - Why is water so important to life?
 - How much water do we use and how much is there?
 - What is the water cycle and why is it important?
 - What is a watershed and how does it function?
 - How are trees, plants, animals, people, soils, and water interdependent?
 - How do our actions affect water and all nature?
- ◆ Students take action to conserve water and protect water quality.
- ◆ Students urge their family and friends to take action to conserve water and protect water quality.
- ◆ Teachers continue water education in the classroom using the concepts learned at the Festival and the resources obtained at the Teacher Workshop.
- ◆ Teachers take action to conserve water and protect water quality.

Santa Fe Children's Water Festival 2005 provided effective community education about water by teaching children and enabling them to educate their friends, parents and other family members. Through the Teacher Workshop, teachers received resources and activity ideas to use themselves and to share with colleagues. The organizations that participated benefit from greater recognition and community awareness of the work that they do.

Work Products

The Water Festival Project delivered the following specific work products:

- ◆ The Santa Fe Children's Water Festival 2005 event which was attended by 601 4th grade students, 32 teachers and 75 parents from 13 public and private schools in Santa Fe.
- ◆ A Teacher Workshop which provided concepts that enabled the teachers to prepare their students before the Water Festival and continue with water education after the Water Festival.
- ◆ A Water Resource Kit for each teacher to provide water education materials and ideas for use in each classroom.
- ◆ A Water Festival Toolkit on CD.
- ◆ Communication with local media to build awareness of the Water Festival.
- ◆ Outreach to other New Mexico communities to encourage them to hold Water Festivals.

Water Festival Event

The Festival was held on February 9 & 10, 2005 at the Sweeney Convention Center. The students were accompanied by their teachers and dozens of parents. Each group of students attended the Water Festival for one full day and participated in five 25 minute activities. Assistance was provided by 27 volunteers and members of the Steering Committee.

A group of 5th grade students from Reach the Children School were Masters of Ceremony for Water Jeopardy, a friendly competition between two classes of 4th graders searching for the questions for water answers - like the TV show. Educators from Santa Fe National Forest helped students understand the perils and challenges in the life of a Rio Grande Cutthroat Trout, while other folks from New Mexico Game and Fish Department provided microscopes and magnifying glasses so students could Meet Water Bugs from the icy waters of the Pecos River. City of Santa Fe Water Conservation officers led The Long Haul to help students really appreciate how much water a gallon of water is as they haul enough to flush the toilet or brush their teeth. Santa Fe County educators showed the students how native vegetation along The River's Edge keeps the water cleaner.

Other organizations that presented activities include the Army Corps of Engineers, Amigos Bravos, Agriculture in the Classroom, National Weather Service, Bandelier National Monument, New Mexico State Land Office, New Mexico Environment Department Surface Water Quality Bureau, and Audubon New Mexico with able assistance from Office of the State Engineer Water Conservation Office. (See Program - Attachments)

Teacher Workshop

The Teacher Workshop was held January 20 at Kaune Elementary Library. A total of 21 teachers participated. The Workshop program included: Introductions, Why a Water Festival and Partnerships, Logistics, Bringing the Festival to the Classroom (a discussion by teachers), What's in the Box ? (the Water Resource Kit), and an Activity Sampler (short versions of 2 activities). Each teacher left with a Water Resource Kit filled with water education materials to use in the classroom.

Resource Kit

This kit contained the following teaching resources:

- Coloring Book - Aquatic Life of New Mexico
- Teacher Guide - NM Land of Little Water Teacher Guide
- Poster - Santa Fe's Water Cycle
- Poster - Rainwater Harvesting
- Activity Guide - Be a Water Detective (1 per student)
- Shower Timers (1 per student)
- Water Wise Magnets (1 per student)
- Reduce Your Use stickers (1 per student)
- Calendar - Saving Water is Always in Season
- Get Bugged about Water Quality key and magnifier (1 per student)
- Booklet - Farm Facts
- CD and Teacher Guide - Rio Grande Cutthroat Trout Life Cycle Game
- Activity Book - Conserve Water (1 per student)
- Handout: - Big Water Questions
- Activity Guide - Make Your Own Aquifer
- Water Festival Tote Bag
- Make a Splash bags (1 per student)

Rainwater Harvesting Poster

The City of Santa Fe has encouraged residents to harvest rainwater but what can you do with the harvested water? A poster concept was developed by Lisa Ayers, owner of Arid Solutions Inc. to provide some ideas. The concept was turned into a final design by Kenesson Design and posters were printed by the City of Santa Fe Water Utility. These posters were distributed to each teacher who attended the Water Festival and will be distributed to other teachers and educators in the Santa Fe area. (See exhibit)

Outreach and the Children's Water Festival Toolkit

The interactive multimedia Water Festival Toolkit on CD has been completed and distributed to people in other communities to assist them with planning a Water Festival. This Toolkit includes information about the importance of water education and the Water Festival as a powerful delivery method. It also includes Festival planning aids, document templates and activity descriptions and instructions. The Toolkit is made available through the website, www.pioneerwest.net, and copies have been sent to many people in New Mexico and other places, too. We are aware of Water Festivals occurring in Gallup, Socorro, Silver City, Carlsbad and Artesia this spring.

Media Communication

VIP invitations were mailed to 74 people including members of the NM Senate and House from Santa Fe districts. Several VIP visitors, including Mayor Delgado, toured the Water Festival. Stories about the event appeared in the newsletters of several water and environmental education organizations.

Process

The work of designing, planning and implementing the Festival was done by a Steering Committee, a Festival Manager, 2 Festival Coordinators and a Volunteer Coordinator. The Steering Committee includes representatives from City of Santa Fe Water Conservation Office, Santa Fe County Water Conservation and Facilities Management Departments, NMED Surface Water Quality Bureau, NM Game and Fish Department, the State Engineer Office Water Conservation educator, the State Land Office Educator, and others who are interested in water education. (List Attached)

Project management services were provided by Susan Gorman, owner of PioneerWest, a local project management consulting firm.

Fiscal sponsor services were provided by New Mexico Water Conservation Alliance, a nonprofit organization of municipal and industrial water conservation professionals dedicated to water conservation education and networking.

The project plan, schedule and work tasks were developed based on the experience derived from Middle Rio Grande Water Festivals held annually since 1999 and the two Santa Fe Water Festival held in 2003 and 2004. Work Groups were formed to work on Teacher Outreach and Communication, Teacher Workshop, Program Development, Media Communication, Logistics, and Financial Management. The Steering Committee met monthly and the Work Groups met as necessary. E-mail was used for meeting notices and progress reports. Information on the Water Festival Program is published on PioneerWest's website, www.pioneerwest.net.

Support

In addition to planning and implementing the project, it was necessary to raise the funds needed for implementation. We developed a budget and wrote proposals to potential sponsors. The fund raising initiative resulted in grants, in-kind donations and contracts for

service from many organizations. In addition, other organizations contributed through the work of their representatives on the Steering Committee and by volunteering and presenting activities at the Festival. (List Attached)

The major donors, contributors and presenters were recognized through press releases, T-shirts, large signs and logos displayed at the Festival and lists in teacher packets.

Results

The Festival activities covered a wide range of core curriculum areas including language arts, math, science, social studies, visual arts, and health & wellness. Presenters endeavored to present water related facts, concepts and values through hands-on learning activities.

The Festival stimulated the development of water education activities by the presenting organizations. In many cases, organizations were motivated to develop activities for 4th grade students because of the opportunity offered by the Festival. For example, 5th grade students from Reach the Children School worked hard to learn more about water than the 4th graders so that they could present Water Jeopardy. They were especially effective presenters!

The Festival brought together 32 dedicated teachers who are committed to giving their students an excellent education. These teachers have the motivation and resources to continue water education that was started at the Festival in their classrooms.

The Festival offered an opportunity for a wide range of organizations to participate. A total of 33 organizations provided support through donations of time, resources and money. The list of organizations that were major donors, contributors and presenters includes businesses, state and federal agencies, local governments, community organizations and schools. (List Attached)

How do we verify that the performance targets were reached? Three methods were used:

Evaluations - Teachers, students, volunteers and presenters were asked to complete evaluation surveys. In addition each activity was observed at least once per day by an Activity Evaluator, but most activities were observed more than once on a single day.

Classroom Visits - We made visits to 7 classrooms, to ask what everyone learned at the Water Festival and discuss the Big Water Questions. We used the Enviroscape to demonstrate how water pollution happens and what we can do about it.

Water Conservation Before and After - We developed questions about water use at home and asked teachers to ask their students to complete these questions and return the questionnaires to us. After the Festival, we asked the same teachers to ask their students to complete another set of questions to see if their water use at home has changed.

The highlights of the results of all three verification methods are reported here. The full report will be published and made available in print and on the website.

Most evaluators rated the experience as 6 (Wonderful) or 5 (Really Good) on a scale of 1 to 6.

Evaluations

We asked presenters:

What did you enjoy most about the Water Festival?

Presenters most often cited that they enjoyed the direct involvement with the kids and adults, but there were a few other comments.

"It's a chance to contact students in a positive and energetic setting."

“Hands-on activity.”

“Opportunity for my students to work as a team; use leadership skills; see other students; student getting to attend some of festival.”

We asked teachers:

What are you doing that is different, concerning water, that you did not do before the Children’s Water Festival?

“We’ve been doing a fair amount on water already; that said, I learned some great activities.”

“Measuring water use at home and how to conserve.”

“I’ll probably extend conservation into units about tools and machine, more on ecology, and more on health and nutrition.”

“Time my showers.”

“Encouraging my own family’s conserving of water.”

We asked students:

What did you learn at the Festival that you did not know before?

There were numerous answers from each class that were grouped into themes. By far, the most common answer was specifically about daily water use.

“Each person uses 119 gallons per day.”

Other somewhat common answers related to otters, fish, insects and water safety.

“That an adult can be swept off his feet in 6 inches of water.”

“What a water bug looks like.”

“About the state fish.”

Why do you think learning about water is important?

The overriding reason students think learning about water is important is to know how to conserve water:

“Because we live in a dry place where water is like at treasure.”

“So you don’t waste water.”

“I think learning about water is important because it is really valuable to every living thing.”

Another reason was to know about water safety.

“I think learning about water is important because sometimes in floods people don’t know what to do.”

What are you doing that is different, concerning water, that you did not do before the Children’s Water Festival?

Almost every student has changed at least one habit. Of the 231 respondents to this question, only 16 students (6.9%) answered “Nothing.” The three changes most often cited were shorter showers (39.8%), saving more water (19.5%), and turning off the water when brushing the teeth (15.6%).

Classroom Visits

Classroom visits were conducted to determine the level of learning long-term, with special focus on the Big Water Questions. Most students demonstrated a solid grasp of the above ground components of the water cycle, evaporation, condensation and precipitation. Fewer understood the below ground components of percolation and the nature of the aquifer. Transpiration was an illusive concept for many.

Only a few students could explain the concept of a watershed. This may be partly because the concept is difficult to grasp and because all students did not attend an activity that focused on watersheds.

Many students demonstrated good understanding of animal, plant, tree, human, soil and water interdependency, some actions that cause water pollution, ways to conserve water and commitment to personal and familiar behavioral change to conserve water.

“Before” and “After” Water Use Surveys

The results of the “Before” and “After” Water Use Surveys are being analyzed.

Financial Analysis

A careful accounting of the cost components was carried out to ensure that each funder was provided with the necessary documentation and also to provide a more accurate budget that could be used to plan future Festivals.

The major cost components are shown below:

Expenses		
Equipment	\$	327
Supplies		1,325
Contractual		5,284
Travel		1,064
Personnel		7,546
Total	\$	15,546
Value of in-kind time and resources		\$11,680

It is important to note that the Water Festival would not have been possible without the hundreds of hours of volunteer work that were donated by teachers, parents, presenters, volunteers and members of the Steering Committee.

Next Steps

The continuing work that has evolved from the Festival includes:

- ◆ Continuing water education for the teachers & students who attended the Water Festival - Teachers will be offered additional opportunities to continue water education. The website, www.pioneerwest.net, provides contact information for the Festival presenters.
- ◆ Outreach to New Mexico Communities - The “Water Festival Stuff” including Santa Fe’s Water Cycle poster, the Rainwater Harvesting poster and the Children’s Water Festival Toolkit on CD are available on request from the website, www.pioneerwest.net.
- ◆ Planning for the future - Work has already begun to plan and organize Santa Fe Water Festival 2006.

Attachments

Santa Fe Children's Water Festival 2005

Activities

Lower Level

1. The Rolling River

Exhibit Hall

How does the river work? Students will see a model river and watch the effects of water as it flows down stream.

NM State Land Office & NM Environment Dept., Surface Water Quality Bureau
Nina Wells & Dana Strang, Phone 505-827-5096, E-mail dvackar@slo.state.nm.us

2. Dams, Reservoirs and our Watershed

Exhibit Hall New!

Students learn that dams and reservoirs in our watershed help us manage our water through wet and dry times. They will 'Walk the Watershed' from the Rio Grande headwaters in CO and participate in the 'Great Water Grab' to learn about sharing, pollution and misuse of water.

US Army Corps of Engineers

Kathleen Bennett, Bev Noel, Phil Martinez, Alfred Chavez, Phone 505-342-3273
E-mail Kathleen.D.Bennett@SPA02.usace.army.mil

3. Down by the River's Edge

Exhibit Hall

Students learn how native vegetation like cottonwoods and willows along the rivers edge prevents erosion.

Santa Fe County

Ron Sandoval, Phone 505-490-2269, E-mail rsandoval@co.santa-fe.nm.us

4. The Long Haul

Exhibit Hall

Students learn to really appreciate how much water a gallon of water is as they haul enough to flush the toilet or brush their teeth. They experience the difference between conserving and wasting uses.

City of Santa Fe, Water Division

Danielle Smith, Phone 505-955-4223, E-mail ddsmith@ci.santa-fe.nm.us

5. Water Jeopardy

Room 5

Students compete to give questions for the water answers (like the TV show).

Reach the Children School

Nancy Woodward & Students, Phone 505-989-8424, E-mail NancyW@cybermesa.com

Upper Level

6. Swimmin' in the Rio Grande

Room 1-A

Students play a game to learn about the perils and challenges in the life of a Rio Grande Cutthroat Trout, New Mexico's state fish and a native.

US Forest Service, Santa Fe National Forest

Kimberly Kelly, Phone 505-829-3535, E-mail: kakelly@fs.fed.us

7. Weather or Not

Room 1-B

Students analyze meteorological and hydrological data to determine if a flash flood might occur, issue warnings and monitor the flood event.

National Weather Service

Deirdre Kann, Phone 505-243-0702, E-mail deirdre.kann@noaa.gov

8. Meet Water Bugs Up Close**Room 2-A**

Students observe and identify live macroinvertebrates commonly found in local ponds and rivers and learn how biologists determine the purity of the water by which critters live there.
New Mexico Game & Fish Department
Colleen Welch and Jamie Brytowski , Phone 505-476-8119, E-mail cewelch@state.nm.us

9. From Water to Watermelon**Room 2-B *New!***

Students learn how farmers get the water needed to grow our food - from acequias to reservoirs, past and present.
New Mexico Ag in the Classroom
Dalene Hodnett, Phone 505-532-4704, E-mail dhodnett@zianet.com

10. Stories need Water, too!**Room 3-A**

Students learn that sometimes water plays a big part in old stories and legends.
National Park Service, Bandelier National Monument
Chris Judson, Phone 505-672-3861, E-mail chris_judson@nps.gov

11. There Otter be Otters!**Room 3-B**

Once upon a time otters swam in the rivers of New Mexico. Students will learn about the river otters' history and the efforts to bring them back.
Amigos Bravos
Joanne Forman, Phone 505-751-1102, E-mail jofo@laplaza.org and Rachel Conn, Phone 505-758-3874, E-mail rconn@amigosbravos.org

12. Incredible Journey**Room 4-A *New!***

Students become water drops and travel through the Water Cycle.
NM Environment Dept., Surface Water Quality Bureau
Michele Mykris and Julie Arvidson, Phone 505-827-0418, E-mail michele_mykris@nmenv.state.nm.us

13. Waterfowl & Shorebirds of NM Waterways**Room 4-B**

Students learn how New Mexico's ducks and shore birds are adapted to their special environment. They will also learn what makes a bird a bird and the perils water birds face here.
Audubon New Mexico
Eileen Everett, Phone 505-983-4609, E-mail eeverett@audubon.org

14. Water Wizard who knows all there is to know about H₂O

Wednesday - City of Santa Fe, Water Division, Joe Abeyta, Phone 505-955-6121, E-mail jmabeyta@ci.santa-fe.nm.us

Thursday - Energy Consultant, Jean Arya, Phone 505-203-3724, E-mail jeanarya@yahoo.com

**Santa Fe
Children's Water Festival 2005**

Thanks to these organizations for their generous support!

Lead Donors

New Mexico Environment Department, Surface Water Quality Bureau
US Environmental Protection Agency, Region 6, Clean Water Act Grant
US Bureau of Reclamation
City of Santa Fe
Sierra Club, Rio Grande Chapter

Contributors

AWWA - Rocky Mountain Chapter
Business Water Task Force
CH2M Hill
Coca Cola
Environmental Education Association of New Mexico
First National Bank of Santa Fe
Greetings Etc., Inc.
Home Builders Association of Central New Mexico
New Mexico Game & Fish Department
New Mexico State Engineer / Water Conservation Office
New Mexico State Land Office
PNM
Rancho Viejo de Santa Fe
Santa Ana Pueblo
Science Applications International Corporation
The Rain Well
Trader Joe's
US Army Corps of Engineers
US Forest Service, Santa Fe National Forest
WaterBank

Fiscal Agent

New Mexico Water Conservation Alliance

**Santa Fe
Children's Water Festival 2005**

Thanks to these organizations for their creative activities!

Presenters

Amigos Bravos
Audubon New Mexico
City of Santa Fe, Water Division
National Park Service, Bandelier National Monument
National Weather Service
New Mexico Agriculture in the Classroom
New Mexico Environment Department, Surface Water Quality Bureau
New Mexico Game & Fish Department
New Mexico State Land Office
Reach the Children School
Santa Fe County
US Army Corps of Engineers
US Forest Service, Santa Fe National Forest

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Steering Committee

Danielle Smith	City of Santa Fe, Water Division
Abraham Franklin	NMED, Surface Water Quality Bureau
Colleen Welch	NM Game & Fish
Cheri Vogel	NM Office of State Engineer
Dana Strang	NM State Land Office
Ron Sandoval	Santa Fe County

