

Post Oak Savannah Groundwater Conservation District



2005 - 2006 Program Summary Report

**Post Oak Savannah
Groundwater Conservation District
WaterWise™ Program**

Sponsored by:

**Post Oak Savannah
Groundwater Conservation District**

**Program Summary Report
School Year 2005-2006**

Submitted By:

Resource Action Programs®



August 2006

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Executive Summary

This report summarizes the results of the Post Oak Savannah Groundwater Conservation District WaterWise™ Resource Action Program funded by Post Oak Savannah Groundwater Conservation District and implemented during the 2005-2006 school year. Six hundred twenty-seven households participated in the program.

The WaterWise™ Resource Action Program combines a turnkey set of classroom activities with hands-on home projects to install efficiency devices and introduce resource conscious behavior to students and their families. The program facilitates installation of resource efficient technologies in homes, builds knowledge of environmental issues and provides an effective community program for sponsors.

The WaterWise™ Resource Action Program yields a variety of measurable water and energy savings results. An overview of the results from this program appears below, with greater detail in the attached report.

Knowledge Gained: Identical surveys (tests) were taken by students prior to the program, and again upon its completion to measure knowledge gained. Scores and subject knowledge improved from 65% to 73%.

Measures Installed: Students completed retrofit activities as part of the program, and reported the measures they installed in their own homes.

Participant Satisfaction: Teachers reported the student participation and enthusiasm was excellent. 100% agreed that the materials were attractive and easy to use. Additionally, 100% of participating teachers indicated that they would like to participate in the program again, and that they would recommend it to their colleagues.



As part of the program, children take a pre-program and post-program test to measure knowledge gained.

Participant Feedback

"Thank-you for the supplies to help save water. I've installed everything in the package and save water every chance I get. I will save water and help the world be a better place, because I can make a difference!"

~ Jakizan Lavan, Student, Milano Elementary

"In my opinion, the thing the students liked best about the program was the video. It was very good and the contents of the kits were fantastic."

~ Beverly Garrison, Teacher, Gause Elementary

"Thank-you! We can see a difference in the amount of water we save already. What a great program! My daughter was really excited when she brought home the kit."

~ Bobby E Morrison, Parent, Thorndale Elementary



Audit Information Obtained: Household audits (customer surveys) were performed by students and their families as part of the program activities. Important customer information was collected to better understand trends and usage. Some highlights include:

- 79% reported they worked with their family on the program.
- 74% reported their family changed the way they use water.
- 56% reported they installed the new high efficiency showerhead.

Resource Savings Results: As a part of the program and working with parents or guardians, students installed resource efficient technologies in their homes while gathering information as provided above. They also measured the pre-existing equipment to calculate the savings generated. Savings from these activities will continue for many years to come. The table below shows the projected savings from the program, based upon information gathered by the students.

Projected Lifetime Savings

59,845,583	gallons of water saved
170,990	therms of gas saved
3,389,397	kWh electricity saved
59,845,583	gallons wastewater saved

Projected Lifetime Savings per Household

95,448	gallons of water saved
273	therms of gas saved
5,406	kWh electricity saved
95,448	gallons wastewater saved

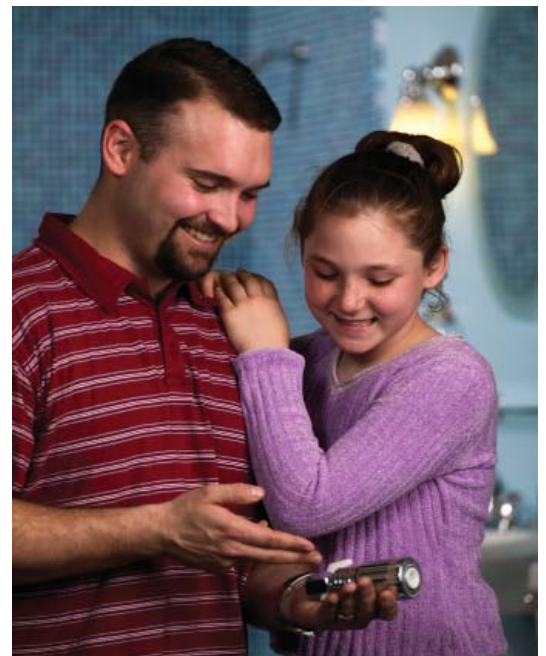


Program Overview

WaterWise™ is a fully implemented program, designed to generate immediate and long-term savings. The program uses a school-based method that builds student knowledge, provides high efficiency devices to families, and serves as an effective community outreach program.

The program staff identifies and enrolls students and teachers within the designated service territory. Enrolled participants receive educational materials designed to build participant knowledge and demonstrate simple ways to save, by not only changing habits, but also changing devices. Materials meet state and national educational standards, which allow the program to easily fit into teachers' existing schedules and requirements.

As part of the program, children take home a Resource Action Kit that contains high efficiency devices. With the help of their parents, they install the devices in their home and complete a home audit report. The WaterWise™ staff tabulates all responses, including home audits, teacher responses, student input, and generates a Program Summary Report.



As part of the program, participants take home a Resource Action Kit™. With the help of their parents they install the devices in their home.



Each participant receives a Resource Action Kit containing efficiency technologies for their homes and materials to perform the hands-on activities. Program materials include:

Each teacher/classroom receives:

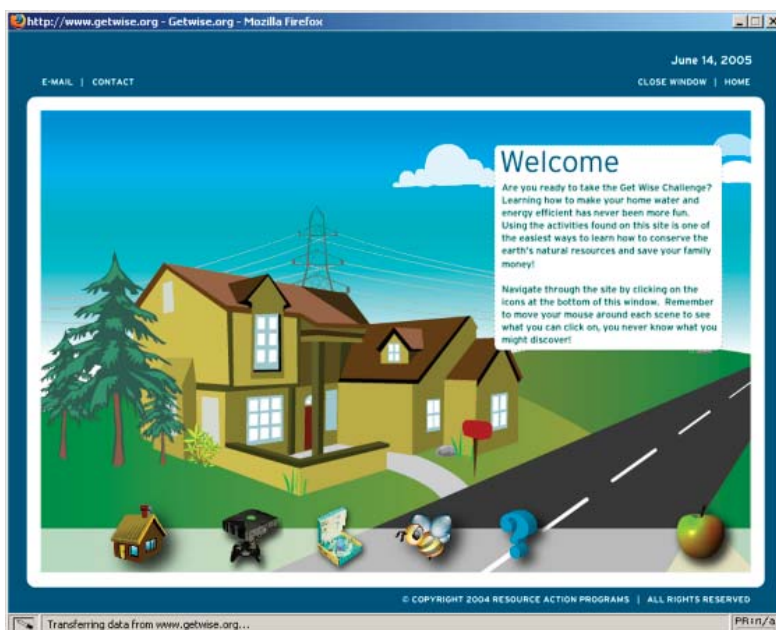
Program Introduction Video
Lesson Plans/Curriculum Correlation
Supplementary Activities
Spanish Language Support Materials
Implementation Checklist
Comprehensive Teacher Packet
24 Hour Web-based Support
Toll-Free Telephone Support
Classroom Posters

Each student/teacher receives:

Student Activity Booklet
Parent Introduction Letter
Resource Action Kit containing:

- Oxygenics® Showerhead
- Kitchen Aerator
- Bathroom Aerator
- Flow Rate Test Bag
- Toilet Leak Detector Tablets
- Mini Tape Measure
- Rain / Drip Gauge
- Water Temp Check Card
- Resource Fact Wheel
- CD-ROM Game

Certificate of Achievement
Pre & Post Surveys
Home Audit Form
Parent Comment Card
Interactive Program Website
Toll-Free Telephone Support



The Interactive Program Website mirrors program content in a fun, exciting way that helps make learning easy and helps instill lasting resource efficient behaviors.



Program Implementation

The WaterWise™ program offers a full range of implementation services as listed below. Participating teachers may implement the program to coincide with their lesson plans.

1. Teacher / School Identification
2. Program introduction to teachers
3. Teacher enrollment in program
4. Program Kit / Material Delivery
5. Delivery confirmation
6. Implementation dates scheduled with teachers
7. Periodic contact to ensure implementation and teacher satisfaction
8. Results collection
9. Data analysis
10. Program Summary Report
11. Thank-you cards sent to participating teachers

Participating teachers may implement the program to coincide with their lesson plans. The table below shows a comprehensive list of fifth grade classrooms that participated during the 2005-2006 school year.

School	Contact	Teachers	Students
Buckholts Elementary	Melissa Cobb	1	9
Caldwell Intermediate	Mrs. Hahn	1	75
Caldwell Intermediate	Joslyn Conwell	1	75
Cameron Elementary	Jesse Edmonds	1	131
Gause Elementary	Ms. Garrison	1	15
Milano Elementary	Sandra Love	1	17
Milano Elementary	Jennifer Hanusein	1	17
Rockdale Elementary	Joe Clark	3	150
Snook Elementary	Sarah Collins	1	30
Somerville Elementary	Mrs. Macik	1	48
Thorndale Elementary	Connie Oliphint	1	21
Thorndale Elementary	Marlene White	1	25

Totals	14	613
Total Participants		627





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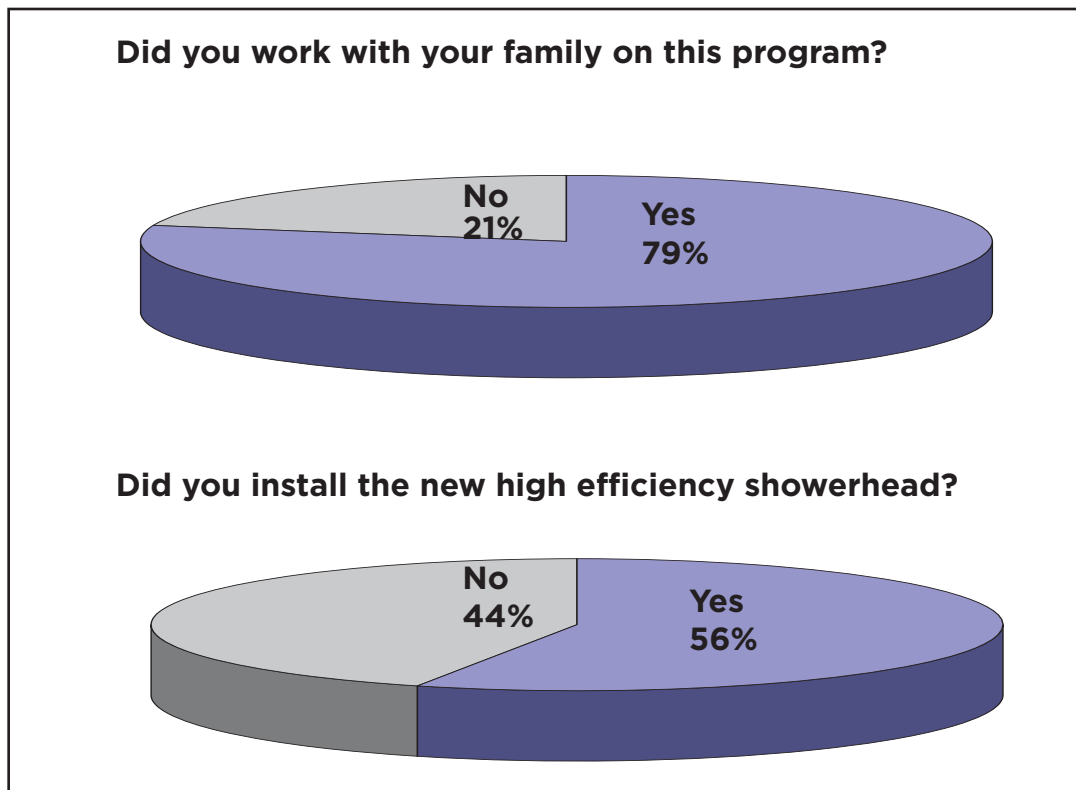
Program Impact

The Post Oak Savannah Groundwater Conservation District WaterWise™ Resource Action Program has had a significant impact within the community. As illustrated below, the program successfully educated a portion of the community about water and energy efficiency while installing resource efficient technologies in homes and collecting data to better understand future trends and usage. The following results were compiled from actual student and family reports:

A. Water Adventure Report

Upon completion of the program, participating families are asked to complete a Water Adventure Report (WAR) to assess their resource use, verify product installation and measure participation rates. A few samples are below while a complete summary of all responses is included in the appendices.

Did you work with your family on this program?	Yes - 79%
Have you and your family changed the way you use water?	Yes - 74%
Did you install the new high efficiency showerhead?	Yes - 56%

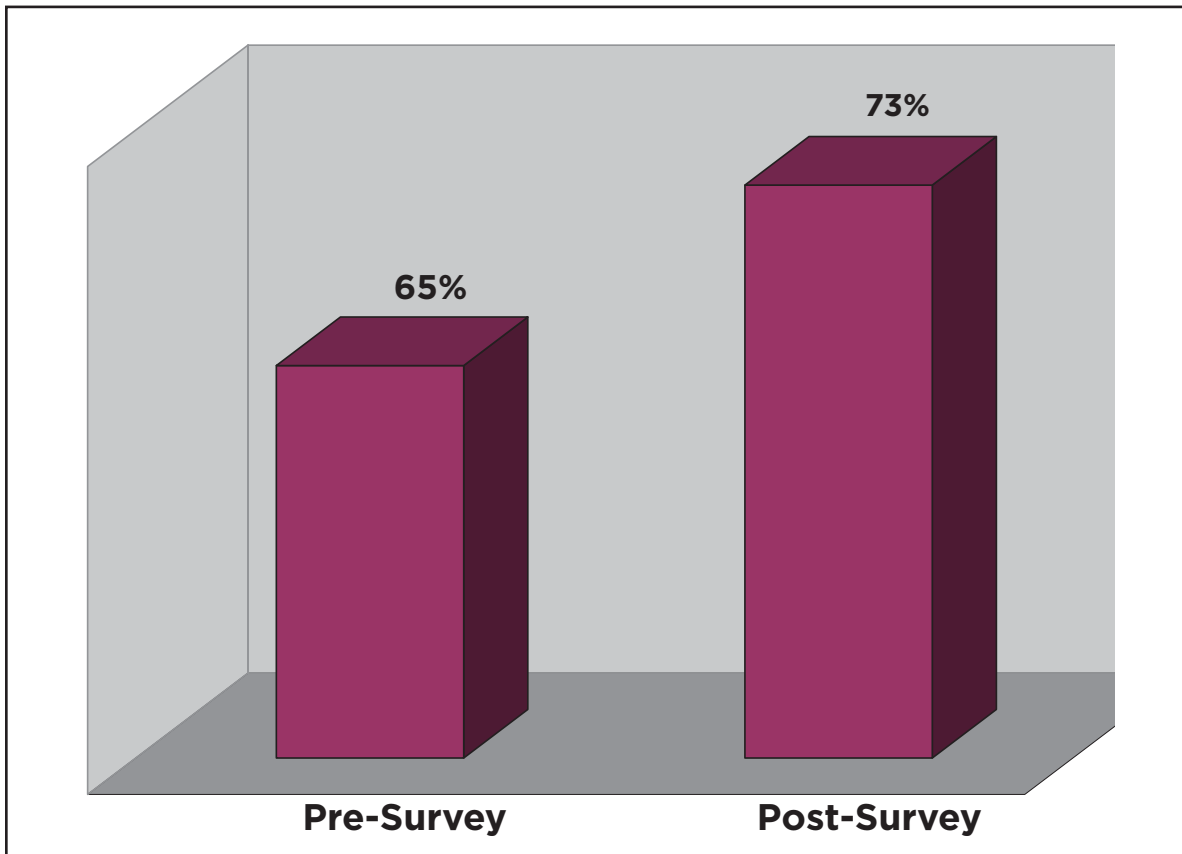




B. Pre/Post Survey

Students were asked to complete a 10 question survey before the program was introduced and then again after it was completed to determine the learning impact and the knowledge gained through the program. The average student answered 6.5 questions correctly prior to being involved in the program and then improved to answer 7.3 questions correctly following participation.

Scores improved from 65% to 73%





Program Impact

C. Resource Savings Summary

Using the family habits collected from the customer survey information as the basis for this calculation, six hundred twenty-seven Post Oak Savannah Groundwater Conservation District WaterWise™ Resource Action Program households are expected to save the following resource totals. A list of assumptions and formulas used for these calculations can be found in Appendix A.

Projected Resource Savings

Total Number of Participants:	627	
	<u>Annual</u>	<u>Lifetime</u>
Reduction from showerhead retrofit: Product Life: 10 years	5,126,352 14,647 290,335	51,263,520 gallons 146,470 therms 2,903,345 kWh
Reduction from kitchen aerator retrofit: Product Life: 5 years	886,813 2,534 50,225	4,434,066 gallons 12,669 therms 251,126 kWh
Reduction from bathroom aerator retrofit: Product Life: 5 years	829,599 2,370 46,985	4,147,997 gallons 11,852 therms 234,925 kWh
TOTAL PROGRAM SAVINGS:	6,842,765 19,551 387,545	59,845,583 gallons 170,990 therms 3,389,397 kWh
TOTAL PROGRAM SAVINGS PER HOUSEHOLD:	10,914 31 618	95,448 gallons 273 therms 5,406 kWh





D. Teacher Response

Program improvements are based on the feedback from teachers. Each response is reviewed for pertinent information to both the program and the program sponsor. The following is a sample of the feedback collected from teacher evaluation forms.

Teacher Feedback

- 100% of teachers agreed or strongly agreed that the materials and activities were well received by students.
- 100% would conduct the program again, given the opportunity.
- 100% would recommend the program to other colleagues.

“In my opinion, the things students liked best about the program were...”

“The video was very good and the contents of the student kits were fantastic. The students really enjoy the program!”

~ M. Garrison, Gause Elementary

“The students were anxious to receive the conservation materials. They loved the parent student interaction of installing the equipment!”

~ Sandra Love, Milano Elementary

“The students really enjoyed the free kits!”

~ Joe Clark, Rockdale Elementary



Program Enhancements

E. Program Enhancements

In addition to increasing resource awareness and efficiency, Resource Action Programs strengthen bonds between sponsors and their communities. The program has been designed from start to finish with this in mind.

Some of the steps taken to insure our sponsors receive the greatest possible exposure are as follows:

Kit Branding: Each Resource Action Kit™ was labeled with all sponsor logos.

Press Releases: Press releases were offered highlighting program accomplishments.

Parent Feedback: Included in the program materials are parent comment cards. The table below contains select information from those cards.

Parent Feedback

What comments would you like to express to your child's WaterWise™ Program sponsor?

"Thank you! We can see a difference already. What a great program! My daughter was really excited when she brought home the kit."

~ **Bobby E Morrison, Thorndale Elementary**

"I think it was a great way for the kids to get involved and see the results."

~ **Pam Harmon, Thorndale Elementary**



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Appendix A

Resource Savings Estimates

Savings from Showerhead Retrofit

Average household size: 2.50 people³
 Average length of use: 8.00 minutes⁴
 Product life: 10.00 years¹

Average showerhead has a flow rate of: 4.00 gallons per minute⁴
 Oxygenics showerhead has flow rate of: 2.00 gallons per minute
 Flow reduction: 2.00 gallons per minute

Water:

Average showerhead requires: 80.00 gallons
 Retrofit showerhead requires: 40.00 gallons
 Showerhead produces an **annual** reduction of: 14,600.00 gallons
 Showerhead produces a **lifetime** reduction of: 146,000 gallons

Gas:

Average showerhead requires: 0.47 therms
 Retrofit showerhead requires: 0.23 therms
 % of water heated by gas: 49%
 Showerhead produces an **annual** reduction of: 42 therms
 Showerhead produces a **lifetime** reduction of: 417 therms

Electricity:

Average showerhead requires: 8.88 kWh
 Retrofit showerhead requires: 4.44 kWh
 % of water heated by electricity: 51%
 Showerhead produces an **annual** reduction of: 827 kWh
 Showerhead produces a **lifetime** reduction of: 8,269 kWh

Number of participants: 627
 Installation / participation rate of: 56%

Total reduction from showerhead retrofit:

Annual: 5,126,352 gallons
 14,647 therms
 290,335 kWh

Lifetime: 51,263,520 gallons
 146,470 therms
 2,903,345 kWh

1 - Product life taken from manufacturer.

3 - U.S. Census Bureau, 2003. Population Division, Fertility and Family Statistics Branch

4 - Ridge & Associates, 2001. Southern California Edison: Evaluation of 2000-2001 School Programs.





Savings from Kitchen Aerator Retrofit

Average household size:	2.50 people ³
Average length of use:	2.50 minutes ⁴
Product life:	5.00 years ¹
Average kitchen aerator has a flow rate of:	2.50 gallons per minute ⁴
Retrofit kitchen aerator has flow rate of:	1.50 gallons per minute ⁴
Flow reduction:	1.00 gallons per minute

Water:

Average kitchen aerator requires:	15.63 gallons
Retrofit kitchen aerator requires:	9.38 gallons
Retrofit kitchen aerator produces an annual reduction of:	2,281 gallons
Retrofit kitchen aerator produces a lifetime reduction of:	11,406 gallons

Gas:

Average kitchen aerator requires:	0.09 therms
Retrofit kitchen aerator requires:	0.05 therms
% of water heated by gas:	49%
Retrofit kitchen aerator produces an annual reduction of:	7 therms
Retrofit kitchen aerator produces a lifetime reduction of:	33 therms

Electricity:

Average kitchen aerator requires:	1.74 kWh
Retrofit kitchen aerator requires:	1.04 kWh
% of water heated by electricity:	51%
Retrofit kitchen aerator produces an annual reduction of:	129 kWh
Retrofit kitchen aerator produces a lifetime reduction of:	646 kWh

Number of participants:	627
Installation / participation rate of:	62%

Total reduction from kitchen aerator retrofit:

Annual:	886,813 gallons
	2,534 therms
	50,225 kWh
Lifetime:	4,434,066 gallons
	12,669 therms
	251,126 kWh

1 - Product life taken from manufacturer.

3 - U.S. Census Bureau, 2003. Population Division, Fertility and Family Statistics Branch

4 - Ridge & Associates, 2001. Southern California Edison: Evaluation of 2000-2001 School Programs.



Appendix A

Savings from Bathroom Aerator Retrofit

Average household size:	2.50 people ³
Average length of use:	2.50 minutes ⁴
Product life:	5.00 years ¹

Average bathroom aerator has a flow rate of:	2.00 gallons per minute ⁴
Retrofit bathroom aerator has flow rate of:	1.00 gallons per minute ⁴
Flow reduction:	1.00 gallons per minute

Water:

Average bathroom aerator requires:	12.50 gallons
Retrofit bathroom aerator requires:	6.25 gallons
Retrofit bathroom aerator produces an annual reduction of:	2,281 gallons
Retrofit bathroom aerator produces a lifetime reduction of:	11,406 gallons

Gas:

Average bathroom aerator requires:	0.07 therms
Retrofit bathroom aerator requires:	0.04 therms
% of water heated by gas:	49%
Retrofit bathroom aerator produces an annual reduction of:	7 therms
Retrofit bathroom aerator produces a lifetime reduction of:	33 therms

Electricity:

Average bathroom aerator requires:	1.39 kWh
Retrofit bathroom aerator requires:	0.69 kWh
% of water heated by electricity:	51%
Retrofit bathroom aerator produces an annual reduction of:	129 kWh
Retrofit bathroom aerator produces a lifetime reduction of:	646 kWh

Number of participants:	627
Installation / participation rate of:	58%

Total reduction from bathroom aerator retrofit:

Annual:	829,599 gallons
	2,370 therms
	46,985 kWh
Lifetime:	4,147,997 gallons
	11,852 therms
	234,925 kWh

1 - Product life taken from manufacturer.

3 - U.S. Census Bureau, 2003. Population Division, Fertility and Family Statistics Branch

4 - Ridge & Associates, 2001. Southern California Edison: Evaluation of 2000-2001 School Programs.





Water Adventure Report Data

Question	Answer	%	
1	Did you install the new high efficiency showerhead?		
	1 Yes	56%	
	2 No	44%	
2	What is the flow rate of your old showerhead?		
	1 0-1.0	3%	
	2 1.0-1.5	15%	
	3 1.5-2.0	23%	
	4 2.0-2.5	24%	
	5 2.5-3.0	21%	
3	What is the flow rate of your new showerhead?		
	1 0-1.0	33%	
	2 1.0-1.5	32%	
	3 1.5-2.0	35%	
	4	Number of bathrooms in residence?	
		1 1	30%
2 2		50%	
	3 3+	20%	
5	Number of half bathrooms in residence?		
	1 0	72%	
	2 1	22%	
	3 2	4%	
	4 3+	2%	



Appendix B

6	How many toilets are in your home?		
	1	1	31%
	2	2	43%
	3	3	19%
	4	4+	7%
7	How many toilets did you check for leaks?		
	1	0	23%
	2	1	44%
	3	2	30%
	4	3+	3%
8	How many toilets are leaking?		
	1	0	79%
	2	1	17%
	3	2	3%
	4	3+	0%
9	Did you install the bathroom aerator?		
	1	Yes	58%
	2	No	42%
10	Did you install the kitchen aerator?		
	1	Yes	62%
	2	No	38%
11	How many faucets did you check for leaks?		
	1	0	45%
	2	1	16%
	3	2	20%
	4	3+	19%



12	How many faucets are leaking?		
	1	0	80%
	2	1	16%
	3	2	3%
	4	3+	1%
13	How is your water heated?		
	1	Gas	49%
	2	Electric	51%
14	How often is your lawn watered per week?		
	1	0	27%
	2	1	12%
	3	2	12%
	4	3+	13%
	5	Don't know	37%
15	Was your home built before 1992?		
	1	Yes	64%
	2	No	36%
16	Type of residence?		
	1	Single family home	78%
	2	Multi-family (2-4 units)	16%
	3	Multi-family (5-20 units)	6%
17	Is your residence rented or owned?		
	1	Rented	25%
	2	Owned	75%



Appendix B

18	Number of children (age 0-17)?		
	1	1	13%
	2	2	39%
	3	3	24%
	4	4+	23%
19	Number of adults (age 18+)?		
	1	1	9%
	2	2	71%
	3	3	11%
	4	4+	8%
20	Do you have a dishwasher?		
	1	Yes	60%
	2	No	40%
21	Did you work with your family on this program?		
	1	Yes	79%
	2	No	21%
22	Have you and your family changed the way you use water?		
	1	Yes	74%
	2	No	26%
23	Did you like the program?		
	1	Yes	94%
	2	No	6%



Teacher Evaluation Data

Question	Answer	%
1. The materials were attractive and easy to use.		
1	Strongly Agree	57%
2	Agree	43%
3	Neutral	0%
4	Disagree	0%
5	Strongly Disagree	0%
2. The materials and activities were well received by students.		
1	Strongly Agree	29%
2	Agree	43%
3	Neutral	28%
4	Disagree	0%
5	Strongly Disagree	0%
3. The materials were clearly written and well organized.		
1	Strongly Agree	29%
2	Agree	43%
3	Neutral	28%
4	Disagree	0%
5	Strongly Disagree	0%
4. The conservation technologies were easy for students to use.		
1	Strongly Agree	43%
2	Agree	0%
3	Neutral	57%
4	Disagree	0%
5	Strongly Disagree	0%



Appendix C

5. Students indicated their parents supported the program.

1	Strongly Agree	29%
2	Agree	43%
3	Neutral	28%
4	Disagree	0%
5	Strongly Disagree	0%

6. If you had the opportunity, would you conduct this program again?

1	Yes	100%
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7. Would you recommend this program to other colleagues?

1	Yes	100%
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