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AUTHOR Turner, Jeannine
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ABSTRACT

The City of Austin (Texas) provided funds for a supplementary educational activity to involve at-risk minority high school students in water quality issues. The program encourages at-risk students to remain in school by providing an interesting and authentic activity to use in the development of academic skills. Program activities included testing water quality and tutoring of at-risk students by student mentors. Both mentors and at-risk trainees were paid for the time spent testing the water and in tutoring sessions. In addition to the 22 1993-94 student trainees that continued in the program, the 1994-95 Austin Youth River Watch program recruited and trained 26 minority, at-risk students in river water monitoring. All participants agreed that they would encourage others to participate and that they planned to continue their participation. Seven of the 1994-95 participants obtained their high school diplomas, and traditional school program population members of the River Watch achieved a higher grade point average than the mean grade point average of all district high school students. One program participant left school before completing the year, but none of the program participants were potential grade retainees at the end of the school year. In addition to benefits to students, the program provided a water quality database for the Colorado River and its tributaries. Recommendations are made for program continuation and expansion. (SLD)

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"1978 IS LIKE A RIVER" AUSTIN YOUTH RIVER WATCH 1994-95 FINAL REPORT

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AUSTIN INDEPENDENT SCHOOL DISTRICT
DEPARTMENT OF PERFORMANCE AUDIT AND EVALUATION

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“Life is like a river. Sometimes it moves swiftly, sometimes it moves slowly. Sometimes there are obstacles in the path. Sometimes it pools and becomes stagnant—that's a time to reflect and see where you are.”

—Andrew Rivera

Member, Austin Youth River Watch, 1993 - 1995
Crockett High School Graduate, 1995

"Life is Like a River": The Austin Youth River Watch Final Report 1994-95

Executive Summary

Austin Independent School District
Department of Performance Audit and Evaluation

Author: Jeannine Turner

<u>Program Description</u>	<u>Major Findings</u>	<u>Budget Implications</u>
<p>The City of Austin provided funds for a supplementary educational activity to involve at-risk minority high school students in water quality issues. The program's intent is to encourage at-risk students to remain in school by providing an interesting, authentic activity to use in the development of academic skills. Throughout program activities, at-risk students interact with positive role models for social and academic support. Principal program activities were testing river water for pollutants and the tutoring of at-risk students by their student mentors. Both student mentors and at-risk student trainees were paid for their time spent testing river water and in tutoring sessions. From September 1994 through August 1995, the Austin Youth River Watch Program received \$80,880 from the City of Austin for program implementation. The Lower Colorado River Authority also assisted by providing training and expertise.</p> <p>The City of Austin funds provided:</p> <ul style="list-style-type: none"> • Water testing equipment and supplies, • Office rental, supplies, and equipment, • Stipends for student involvement, • A 3/4-time program coordinator, and • A part-time consultant to evaluate the program. 	<ol style="list-style-type: none"> 1. In addition to the 22 1993-94 student trainees that continued on in the program, the 1994-95 Austin Youth River Watch program recruited and trained 26 minority, at-risk students in river water monitoring. 2. One of the program students left school before completing the year; however, none of the program students were potential retainees at the end of the 1994-95 school year. 3. Traditional program population members of the Austin Youth River Watch achieved a higher grade point average (GPA), than the mean GPA of all AISD high school students. 4. Seven (7) of the 1994-95 Austin Youth River Watch participants obtained their high school diplomas. 5. All Austin Youth River Watch program students agreed that they would encourage others to participate in the program, and that they planned to continue their participation. Many or most of the students agreed that participation had helped them know more about environmental issues (96%), be more interested (72%), and do better (62%), in their school work. 6. Through the students' participation in the Austin Youth River Watch program, the water quality data base of the Colorado River and its tributaries has been improved. 	<p>Mandate: External funding agency Funding Amount: \$80,880 Funding Source: City of Austin</p> <p>Implications: The Austin Youth River Watch program provided funding to involve minority high school students in water quality issues and to reduce the dropout rate through positive role model interaction with academically successful students. The program addresses the District's first strategic objective of having every student function at his/her optimal level of achievement and of having every student progress successfully through the AISD educational system. The program also addresses the District's third strategic objective of having one hundred percent of all students who enter AISD graduate. Funded activities address the District's value of developing and coordinating a network of student support services and of acquiring public and private funds for developing effective partnerships in the community.</p> <p>Recommendations</p> <p>Based on the present evaluation findings, the following recommendations are offered:</p> <ol style="list-style-type: none"> 1. The Austin Youth River Watch program should continue to recruit and train minority at-risk students for river water monitoring and interaction with successful and experienced river water monitoring student role models. The program should be expanded to include more public and private high school students. 2. The Austin Youth River Watch program should continue to tutor at-risk student trainees and to expose these students to activities that include water quality and/or environmental themes. 3. The Austin Youth River Watch program should continue its river water monitoring service for the City of Austin and continue to add to the water quality data base of the Lower Colorado River Authority.

A copy of the full report for which this is the Executive Summary is available as Publication Number 94.15 from:
Austin Independent School District
Department of Performance Audit & Evaluation
1111 West 6th Street
Austin, Texas 78703-5399
(512) 414-1724

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CONCLUSION

Overall, City of Austin funds were used effectively to improve minority student interest and involvement in both water quality issues and their education. The Austin Youth River Watch program is providing program students with hands-on experience for learning and practicing mathematics, science, English, and environmental studies. *Student involvement in the Austin Youth River Watch program had a positive effect on their attending classes, remaining in school, and achieving greater academic success.* Students also performed a valuable service to the community. Because of their river water monitoring, the water quality data base at the Lower Colorado River Authority has been enhanced and expanded.

EVALUATION OVERVIEW

Data for the evaluation of the Austin Youth River Watch program were obtained from the following sources:

- Interviews with the program coordinator and the program director provided information on program funding, program implementation, and program activities.
- Program descriptions contributed by the City of Austin provided program information and recruitment criteria of the City's Strategic Intervention for High Risk Youth (SIHRY) program.
- Interviews with the graduating students provided information on their perceptions of the importance of the Austin Youth River Watch program to their lives.
- Student rosters provided by the program coordinator were used to access AISD student information.
- Questionnaires, designed by AISD's Office of Research and Evaluation (ORE), provided student perceptions of program benefits and of the effect of their participation.
- AISD student data files supplied information concerning student characteristics, grades, and grade point averages.
- ORE's GENESYS (GENeric Evaluation SYStem) provided analysis and comparisons of Austin Youth River Watch program students with AISD students districtwide.

INTRODUCTION

The Colorado River Watch Foundation (CRWF) is a nonprofit 501 (c) (3) organization dedicated to the scientific study, preservation, and conservation of the Colorado River. In the fall of 1991, the CRWF approached the City of Austin with a proposal for involving at-risk minority students in river monitoring activities. The overall intent of the proposal was to reduce the dropout potential of at-risk minority students through positive role model interaction and to encourage them in pursuing science/ environmental careers. Funding (\$80,880) for the 1994-95 school year has been drawn from City water and wastewater utility rates, electric utility rates, drainage fees administered by the environment and conservation services department, and the Strategic Intervention for High Risk Youth program. The Lower Colorado River Authority (LCRA) also assisted by providing training and expertise. For a detailed account of the program's creation and initial implementation, see the Austin Youth River Watch program 1992-93 Final Report (ORE Publication No. 92.33).

The Austin Youth River Watch program, which grew out of a combined concern for water quality protection and a desire to assist at-risk minority students, has three major goals:

1. To improve the water quality of the Colorado River and its tributaries through ecological understanding and systems analysis,
2. To reduce the dropout rate of students in Austin area secondary schools through positive role model interaction, and
3. To increase the participation of minority students in critical environmental issues and in technical careers that require understanding of science and mathematics.

The fundamental principle behind the Austin Youth River Watch program is to engage at-risk students in learning about mathematics, science, and English by involving them in real-world applications that use these subjects. Embedding learning within authentic activities is a process described as "situated cognition" (Brown, Collins, & Duguid, 1989). The students benefit from using learned knowledge in the situations that require that knowledge because they are able to make direct connections in their understanding of information and its use. Austin Youth River Watch students must use mathematics calculations and measurements to conduct water quality tests. They also use chemicals in their tests so they must learn about chemical properties in order to understand the results of their tests. Additionally, students write in personal journals, contribute articles and poems to the Austin Youth River Watch program's newsletter, and write up reports that are sent to LCRA. In sum, the Austin Youth River Watch program is providing a situated cognition experience in which at-risk students are learning and practicing mathematics, science, English, and environmental studies.

PROGRAM DESCRIPTION

Program Design

To meet program goals, the program design stipulates that eleventh- and twelfth-grade student "mentors" who are experienced in river water monitoring are hired to work with ninth- and tenth-grade at-risk student "trainees." The mentors are required to conduct weekly chemical and biological monitoring with the trainees at a designated monitoring station located on one of the 22 creeks within the City of Austin that feed into the Colorado River. Mentors are also paid to tutor the trainees in mathematics and/or science for at least two hours per week. At-risk students are paid for both their river water monitoring and tutorial involvement.

During the 1994-95 school year, Austin Youth River Watch participants conducted water quality tests on Barton (two sites), Blunn, Shoal, Boggy, Waller, Walnut, and Williamson Creeks, as well as two sites on the Colorado River. Each week, measurements and tests were conducted for eight water quality parameters. The parameters, described in Figure 1, are dissolved oxygen (DO), temperature, conductivity, total dissolved solids (TDS), pH, secchi depth, fecal coliform bacteria, ortho-phosphorus, and nitrate/nitrite nitrogen (NO₃/NO₂). The results of each water quality testing session were sent to the Lower Colorado River Authority (LCRA) and added to the data base of water quality testing done throughout the LCRA district.

**FIGURE 1
WATER QUALITY PARAMETERS
TESTED BY AUSTIN YOUTH RIVER WATCH PARTICIPANTS**

Dissolved oxygen (DO) is measured in milligrams per liter (mg/l) and shows the amount of oxygen available to fish and other aquatic organisms.

Temperature is measured in degrees fahrenheit (°F). The temperature of the water determines how much DO the water can hold.

Conductivity and total dissolved solids (TDS) are closely related and give an indication of the salinity of the water. Conductivity is measured as micromhos per centimeter and TDS is reported as milligrams per liter.

pH is a measurement of acidity that ranges from 0-14 standard units, with 7 being neutral. The lower the number the more acid the water.

Secchi disk depth is measured in feet and gives an indication of water clarity. The clearer the water the greater the secchi depth.

Fecal coliform bacteria is measured as the number of colonies per 100 milliliters of water. It is a parameter that may indicate the presence of harmful bacteria.

Ortho-phosphorus and nitrate/nitrite nitrogen are measured as milligrams per liter (mg/l) and are nutrients that can promote excessive aquatic plant growth. Both are products of the natural decomposition of organic material, but they may become elevated downstream of wastewater treatment plants.

Program Change

Building on the previous two years' foundation (see ORE Publication No. 92.33 for information on initial implementation, and ORE Publication No. 93.15 for the second year's implementation), one program change was initiated on a trial basis. The Austin Youth River Watch program made arrangements with the City of Austin's Strategic Intervention for High Risk Youth (SIHRY) for recruitment and financial assistance. SIHRY provides academic, health, and mental health assistance to middle school youth who live in the 78702 zip code of Austin. Youth living in the 78702 zip code area have been targeted for special assistance because the area has been afflicted by crime and poverty. The City reports that 83% (SIHRY program description) of all city juvenile arrests occurred in this zip code area. Additionally, 20% of reported gang-related offenses occurred in this area.

The SIHRY project works extensively with targeted youth up through the middle school years. However, program participation ends when SIHRY students enter high school (ninth grade). Because the Austin Youth River Watch program recruits 9th and 10th graders for the trainee program, students who had been involved with the City's SIHRY program, and who were entering the 9th grade, were invited to participate in the Austin Youth River Watch program.

In addition to assisting with the Austin Youth River Watch program's recruiting efforts, SIHRY contributed \$2,203.00 to the Austin Youth River Watch program.

PROGRAM ACTIVITIES

Special Activities

Special activities were scheduled approximately once a month to provide students with the opportunity to get to know each other. The events promoted the students' feelings of group cohesiveness and always included water quality as the central theme. These activities included:

- A tour of the Walnut Creek Wastewater Treatment Plant,
- Picnics at Barton Springs,
- A Colorado River Watch Network workshop at Lake Buchanan,
- Overnight camping trips at Lake Buchanan,
- Participating in the Town Lake cleanup, and
- Participating in the Annual Diurnal Study.

The Flying Fish Review

The "Flying Fish Review" is the newsletter of the Austin Youth River Watch program. Under the direction of the project coordinator, the "Flying Fish Review" is composed of articles, poems, thoughts, essays, drawings, and book reviews written by Austin Youth River Watch members. The newsletter is printed approximately four times a year and is distributed to Austin Youth River Watch participants and people who are interested in the program.

Meeting with U. S. Vice President

Austin Youth River Watch participants were invited to attend a speech given by United States Vice President Al Gore on June 23, 1995 on Town Lake at the Hyatt Regency boat dock. Students in canoes and paddle boats greeted the Vice President in the middle of Town Lake as he was cruising from the north bank to the south bank. There the Vice President met the students and shook hands with each of them. The students then escorted the Vice President to the Hyatt Regency boat dock where he gave a speech to the waiting crowd. After his speech, the Vice President tested the oxygen content of the Colorado River with guidance from three participants of the Austin Youth River Watch program. The program coordinator described the event as being "significant for Austin Youth River Watch students because it teaches them that their knowledge is valuable and inspires them to fill leadership roles." It also provided an excellent opportunity for favorable media exposure of the program, thus reinforcing a positive self-image in the students.

Russian Exchange Program

During the 1995 summer, four members of the Austin Youth River Watch program, along with six student members of the Colorado River Watch Network and three adult representatives of the Lower Colorado River Authority, participated in the second half of a Russian/American Exchange Program sponsored by the U.S. Information Agency. In this half of the exchange program, 10 Russian students and three adult representatives traveled to Austin to conduct a joint water quality study on the Colorado River with members of the Austin Youth River Watch and student members of the Colorado River Watch Network. Austin Youth River Watch members who previously went to Russia in the first half of the exchange program were given priority to participate in the Russian visit. For information concerning the Austin Youth River Watch's participation in the first half of the Russian/American Exchange Program, see ORE Publication 93.15.

The Russian students and adults arrived in Austin on June 30, 1995. For nearly three weeks, the two groups camped along, and canoed, the Colorado River where they tested the water quality at various points. The culmination of the water monitoring portion of the exchange was a jointly written report of their mutual study of the Russian Protva River and the American Colorado River.

In addition to the camping and canoeing trip down the Colorado River, Russian and American students also participated in local cultural activities such as a walking tour of downtown Austin, visiting museums, spending a day at the Fiesta Texas and Schlitterbaun amusement parks, and attending local music concerts. Students also participated in additional water-related activities such as visiting the Corpus Christi Aquarium, touring a waste water treatment plant, walking through the Barton Creek Watershed, and participating in a diurnal study (testing of water quality at the same site, every hour, for 24 hours) on a site at Town Lake.

STUDENT CHARACTERISTICS

By the end of the 1994-95 school year, a total of 55 students (seven student mentors and 48 student trainees) were involved in the Austin Youth River Watch program. In compliance with grant objectives, members of the Austin Youth River Watch program were predominantly at-risk students who were recruited from a diverse population of Austin area schools and included a wide range of ages, grade levels, and ethnicities.

Twenty-two (22) 1993-94 students chose to continue their participation in the 1994-95 Austin Youth River Watch program. Twenty-six (26) additional students were recruited to join the Austin Youth River Watch program during the 1994-95 school year. *By the end of the 1994-95 school year, a total of 55 students (seven student mentors and 48 student trainees) were involved in the Austin Youth River Watch program.*

Grade Levels

Complying with grant objectives, members of the Austin Youth River Watch program were recruited from a diverse population of Austin area schools and included a wide range of ages and grade levels. The experimental venture from the 1993-94 school year that allowed middle school students, who were relatives and/or friends of existing program members, to participate in the Austin Youth River Watch program was continued. The middle school students who continued with the program had previously been identified as being at-risk of dropping out of school. Twelve (12) of this year's (1994-95) participants were middle school students (see Figure 2 for the breakdown of participants by grade level).

**FIGURE 2
GRADE LEVEL AND STATUS OF 1994-95
AUSTIN YOUTH RIVER WATCH STUDENTS**

GRADE LEVEL	# OF TRAINEES	# OF MENTORS
7th Grade	9	
8th Grade	3	
9th Grade	18	
10th Grade	11	
11th Grade	5	1
12th Grade	2	6
TOTAL (N = 55)	48	7

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At-Risk Status

As stipulated in the original grant, the 1994-95 recruiting efforts focused on 9th- and 10th-grade, minority, at-risk students. Students considered academically at risk of dropping out of school have a greater probability of leaving school before completing the twelfth grade than students not classified as being at risk. At-risk students attending Austin public schools were identified by ORE in September 1994, and a list was given to the program coordinator for the recruitment of river water monitoring trainees for the Austin Youth River Watch program. The definitions used by the Texas Education Agency, and AISD, for at-risk identification of secondary (middle and high school) students are as follows:

- Two or more years older than expected for the grade level,
- Two or more years below grade level in reading or mathematics as measured by a norm-referenced achievement test,
- Two or more F's in a semester,
- Failed at least one of the Mathematics, Reading, or Writing tests on the most recent administration of the Texas Assessment of Academic Skills (TAAS).

For more information concerning AISD at-risk students, see ORE Publication No. 91.41.

Of the 26 new students who were admitted into the program as trainees, 10 of the newcomers were recruited from the City of Austin's Strategic Intervention for High Risk Youth (SIHRY) program. Students involved with the SIHRY program are identified as being "extremely at-risk" by meeting any one of the following three criteria (City of Austin, Opportunities for Youth documentation):

- **School Risk:** Defined by any three school problems, one of which had to reflect a school behavior problem including: special education, grade retention, poor academic performance, truancy, tardiness, out-of-school suspension, or disruptive behavior in school;
- **Family Risk:** Defined by a known history of family violence, child neglect or abuse, family member convicted of a crime in the past five years, gang membership, known or suspected drug use or sales; and
- **Personal Risk:** Defined by a history of known or suspected drug use or sales, past arrest or involvement in delinquency, mental illness, gang membership, victim of abuse or neglect, and pregnancy or parenthood.

Schools and Grade Levels

Participants of the Austin Youth River Watch attended a number of Austin public schools. Although most (71%) participants attended high schools, several students (25%) attended middle schools, and a few (4%) students attended an alternative learning center. The schools that mentors and trainees attended are listed in Figure 3.

FIGURE 3
SCHOOLS ATTENDED BY 1994-95 AUSTIN YOUTH RIVER WATCH STUDENTS

SCHOOL	# OF TRAINEES	# OF MENTORS	% OF STUDENTS
Austin High School	9	3	21%
Crockett High School	5	2	13%
Johnston High School	6		11%
LBJ High School	8	1	16%
Travis High School	6	1	13%
Bedichek Middle School	1		2%
Mendez Middle School	9		16%
O. Henry Middle School	2		4%
Creative Rapid Learning Center	2		4%
TOTAL (N = 55)	48	7	100%

Age and Grade Level

Students considered academically at risk of dropping out of school have a greater probability of leaving school before completing the 12th grade than students not classified as being at risk. Being overage is considered a major contributing factor to the potential for dropping out of school (Frazer, 1991). *Nine (9) of the AISD students (16%) were identified as being overage for their grade level.* Seventh-grade students who are over the age of 13, 8th-grade students who are over the age of 14, 9th-grade students who are over the age of 15, 10th-grade students who are over the age of 16, 11th-grade students who are over the age of 17, and 12th-grade students over the age of 18 are considered overage for their grade levels. Figure 4 displays the ages and grade levels of Austin Youth River Watch participants. The shaded areas in the table call attention to those students considered overage for their grade level.

FIGURE 4
AGE AND GRADE LEVEL OF 1994-95 AUSTIN YOUTH RIVER WATCH STUDENTS

GRADE LEVEL	AGE 13	AGE 14	AGE 15	AGE 16	AGE 17	AGE 18	AGE 19
7th Grade	9						
8th Grade	1	2					
9th Grade		1	10	5		2	
10th Grade			1	9	1		
11th Grade				5	1		
12th Grade					1	6	1
TOTAL (N = 55)	10	3	11	19	3	8	1

Sex

In general, female participation in advanced mathematics and science courses and careers has traditionally been below that of males. One goal of the program is to influence the participation of female students in environmental issues and career paths. As Figure 5 illustrates, *the number of female participants in the Austin Youth River Watch program is higher than that of males.* However, the ratio of male and female mentors is almost an even split.

**FIGURE 5
SEX OF 1994-95
AUSTIN YOUTH RIVER WATCH STUDENTS**

SEX	# (%) OF TRAINEES	# (%) OF MENTORS	# (%) OF TOTAL STUDENTS
Male	16 (33%)	3(43%)	19 (35%)
Female	32 (67%)	4 (57%)	36 (65%)
TOTAL	48 (100%)	7 (100%)	55 (100%)

Ethnicity

One major goal of the Austin Youth River Watch program is to increase the participation of minority students in environmental issues and to encourage them to pursue technical careers in science and mathematics. Additionally, a greater proportion of Hispanic and African American students are more likely to be classified as being at risk of dropping out of school than White/Other (see ORE Pub. No. 91.41). As Figure 6 displays, *87% of the trainees are minority students and 71% of the mentors are minority students.* Present trainees may become future mentors in the program, thereby promoting minority leadership and mentorship. The ethnic composition of the trainees and mentors of the Austin Youth River Watch program is shown in Figure 6.

**FIGURE 6
ETHNICITY OF 1994-95
AUSTIN YOUTH RIVER WATCH STUDENTS**

ETHNICITY	# (%) OF TRAINEES	# (%) OF MENTORS	# (%) OF STUDENTS
Hispanic	28 (58%)	3 (43%)	13 (56%)
African American	14 (29%)	1 (14%)	15 (27%)
Asian	0 (0%)	1 (14%)	1 (2%)
White	6 (13%)	2 (29%)	8 (15%)
TOTAL	48 (100%)	7 (100%)	55(100%)

PROGRAM OUTCOMES

None of the program students left school and only one of the program students was at risk of being retained at his/her 1993-94 grade level. Additionally, Austin Youth River Watch trainees and at-risk mentors, as a group, achieved a higher grade point average (GPA) than the mean GPA of all AISD high school students.

One of the major goals of the Austin Youth River Watch program is to reduce the dropout rate of students in Austin high schools. To assess this program goal, ORE's GENERIC Evaluation SYSTEM (GENESYS) was used to compare Austin Youth River Watch program dropout and retainee statuses with that of the overall District. GENESYS is a method of streamlining data collection and evaluation through use of computer technology and is used to evaluate the effectiveness of dropout prevention programs. GENESYS gathers and reports on specified groups of student outcome information on student characteristics, achievement, attendance, discipline, grades/credits, school-year dropout status ("school leavers"), retention status (potential retainees), and at-risk status. For more information regarding GENESYS, see *GENESYS 1990-91: Selected Program Evaluations* (ORE Publication No. 90.39).

Although all students recruited for the Austin Youth River Watch program are considered to be at risk of leaving school, the students recruited from the Strategic Intervention for High Risk Youth (SIHRY) program are considered to be extremely at risk. Because of the additional criteria involved in their original selection (e.g., history of family abuse/neglect, drug/gang-related involvement, or known criminal activity) students recruited from the Strategic Intervention for High Risk Youth (SIHRY) program may possess different characteristics from those students who have historically been recruited into the Austin Youth River Watch program. *Because the SIHRY students may represent a different subpopulation, they are treated as an experimental subgroup within the Austin Youth River Watch program for purposes of program outcome analysis.*

To assess program effectiveness, GENESYS analyses were performed on two groups of students:

1. All participants (N=41), i.e., all current Austin Youth River Watch high school students, including both the traditionally recruited participants (students identified by AISD as being at risk of dropping out of school) and the SIHRY-recruited participants (students identified by the SIHRY program as being at high risk of dropping out of school and/or being at personal risk of being involved in gangs, crime, or illegal drugs); and
2. Traditional population (N=31), i.e., students who had been recruited (new recruits and continuing students) through traditional program recruitment strategies.

The first analysis was conducted to assess overall program effectiveness. The second analysis was performed to gauge the effectiveness of the program on the population for whom the program was originally designed, excluding the students recruited from the SIHRY program, who appear to represent a distinct subpopulation among the program participants.

Attendance

One measure of program effectiveness is students' attendance at school. Students have lower achievement results when they do not attend classes. Low attendance can also lead to leaving school before completing the school year. For the Austin Youth River Watch program, this measure may give an indication that the mentor has an effect as being a role model for attending school. GENESYS

analysis indicated that compared to the total attendance rate of all AISD high school students (fall 90.2%, spring 88.6%), all participants of the Austin Youth River Watch program had a slightly lower attendance rate (fall 88.8%, spring 86.1%), while the traditional population group had a slightly higher attendance rate (fall 91.7%, spring 92.2%). Figure 7 illustrates the 1994-95 attendance rates for AISD high school students and Austin Youth River Watch participants.

FIGURE 7
1994-95 ATTENDANCE RATES FOR AISD HIGH SCHOOL STUDENTS
AND AUSTIN YOUTH RIVER WATCH PARTICIPANTS

	AISD High School Students	All Program Participants (N=41)	Traditional Program Population (N=31)
FALL 1994	90.2%	88.8%	91.7%
SPRING 1995	88.6	86.1%	92.2%

Potential Retainees

Many AISD students become overage for their grade as a result of being held back from advancing to the next grade level (see ORE Publication No. 91.41). Being retained is, in turn, a major contributing factor to the potential for dropping out of school. In 1994-95, 4.2% of AISD high school students were potential retainees at the end of the 1994-95 school year; i.e., they were in jeopardy of being retained at their 1994-95 grade level. None of the students participating in the Austin Youth River Watch program was a potential retainee. Therefore, *the potential retainee rate for Austin Youth River Watch program students was far lower than the potential retainee rate experienced by the District.*

School Leavers

Of the 41 Austin Youth River Watch participants who were AISD high school students, three (8.6%) were predicted to leave school without completing their education during the 1994-95 school year. Although 68.3% of the program's high school students were classified as being at risk, the State definition of at risk is quite broad, and some students who are identified by the State criteria actually have a low probability of leaving school before the end of the year. Only the students who were at risk for reasons which, historically, have been associated with a high probability of leaving school were included in the prediction. See ORE Publication No. 91.41 for a detailed explanation. Only one (2.4%) of the Austin Youth River Watch program's high school students left school. Using data from the traditional population (N=31), results indicated that none of the traditionally recruited students left school during the 1994-95 school year. Results from both analyses indicate that *the program had a positive effect on lowering the school leaver rate of the 1994-95 program participants.* Additionally, the Austin Youth River Watch school leaver rate for the final six-weeks reporting period of the 1994-95 school year was far lower (2.4% total population, 0% traditional population) than the overall AISD high school leaver rate (7.9%) for the same time period. This comparison means that *the Austin Youth River Watch program's high school students did better (i.e., more stayed in school) than District high school students overall.*

Grade Point Average (GPA)

Most of the trainees (which includes both high school and middle school students) have been identified by AISD as being at risk of dropping out of school. One of the main indications of being at risk is low academic achievement. The student mentors, as well as the program coordinator, tutor student trainees to help raise the academic achievement level of these students.

GENESYS analysis indicated that in comparison to all AISD high school students, the GPAs of all high school participants in the Austin Youth River Watch program were slightly lower, but average GPAs were higher for the traditional population group, at the end of fall 1994 and spring 1995. Figure 8 illustrates the average GPAs for all AISD high school students and the Austin Youth River Watch at-risk students for fall 1994 and spring 1995.

**FIGURE 8
1994-95 AVERAGE GPA FOR AISD HIGH SCHOOL STUDENTS
AND AUSTIN YOUTH RIVER WATCH PARTICIPANTS**

	AISD High School Students	All Program Participants (N=41)	Traditional Program Population (N=31)
FALL 1994	78.9	77.0	79.2
SPRING 1995	78.8	77.4	79.1

1994-95 High School Graduates

The ultimate goal of the program is to have program participants graduate from high school. This year seven (7) of the 1994-95 Austin Youth River Watch participants (six mentors, one trainee) obtained their high school diplomas. Three of the participants graduated from Austin High School, three other participants graduated from Crockett High School, and one participant graduated from LBJ High School. These seven graduates indicate that the program is having an effect on students remaining in school and completing the requirements for graduation.

STUDENT SURVEY

Students indicated that participation in the Austin Youth River Watch program had helped them to become more interested, and to perform better, in science and mathematics courses. They also indicated that they were able to make new friends, enjoyed the activities, and learned the importance of water quality. Students would encourage others to participate in the Austin Youth River Watch program, and they planned to continue their participation in the program.

At the end of the 1994-95 school year, Austin Youth River Watch participants were asked to complete an ORE-designed questionnaire. Most of the items were rated on a 5-point Likert scale ranging from "strongly agree" to "strongly disagree" (two were yes-no items). There were also five (5) open-ended questions to allow students to give unconstrained answers. Twenty-six (22 trainees, 4 mentors) of the 55 participants returned their questionnaires (a 47% response rate). *Because the response rate was only 47%, these findings may or may not represent the opinions of the majority of participants.*

The focus of the questionnaire was on the trainees' perception of program benefits and experiences (see Figure 9). *All of the respondents agreed (responded "yes") that they would encourage others to participate in the Austin Youth River Watch program. With the exception of one student who indicated that he/she was moving out of state, all respondents agreed (responded "yes") that they planned to continue their participation in the program. Additionally, most of the participants strongly agreed or agreed that participation had helped them to:*

- Know more about environmental issues (96%),
- Know more about science (84%),
- Know more about mathematics (56%), and
- Know more about water issues (100%).

Many students also responded that they were more interested in environmental issues, science, mathematics, and water pollution issues because of their participation in the Austin Youth River Watch program. Most of the participants strongly agreed or agreed that participation had helped them to become more interested in:

- Environmental issues (88%),
- Science (80%),
- Mathematics (63%), and
- Water issues (92%).

Because of the tutoring they received in the Austin Youth River Watch program, many students strongly agreed or agreed that they were:

- Learning more about mathematics/science (68%),
- More interested in school work (72%),

- Doing better in their school work (62%), and
- More interested in going to school (50%).

Participants offered the following comments to the question, "How did you use the knowledge of math, science, environmental issues and/or English in testing the river water?"

- We have to use math to find out the levels of pollution, and we have learned a lot of scientific vocabulary.
- Measuring the chemicals, knowing what the chemicals were, and when and how to mix them.
- I use the new knowledge of science and water quality to support arguments for water quality and to observe the quality of creeks, lakes, and tributaries.
- We use math to calculate the amount of chemicals [in the water], science for the chemicals we use and the wild life we see, and we use English when we write in our journals.
- I used various skills when testing the river water. I had to use some of my science skills to try to comprehend what each chemical consisted of, what type of reaction each chemical would have, what the purpose was to use them, and which chemicals were harmful and which were safe. I also used my knowledge of environmental issues often to understand which chemicals would be harmful to the water.
- For our phosphates test we have to use division and in expressing our data we use math in calculations for our charts. When learning and running the tests, we use concepts of chemistry and biology. The results from our base-line data and our data from individual dates led us through foundations of environmental issues and led us to speak out about our findings. Sometimes I write in my notebook and my journal about the beauty of the river.

Participants responding to the question, "What is the most important thing you have learned about river water through the Austin Youth River Watch program?" made the following comments:

- Well, the creeks that I witnessed and monitored were fairly safe. There was a lot of algae in some locations, which if in abundance would be harmful to the fish. I learned quite a lot through the Austin Youth River Watch program. It is hard for me to list just one that I feel is most important.
- That the stuff that we thought would not hurt [our environment] really does. Also, with team work anything can be done.
- That there are many levels and many varieties of river pollution.
- I have learned that water quality is essential to the survival of all species, including humans because we need drinking water for survival.
- River water is an ecosystem in itself with many aspects of plant and animal life—microscopic and large.
- I've learned about water pollution, how to test water, and [that] the water is never how it appears. I also learned how to work well with people.

In responding to the question, "What did you most enjoy about your participation in the Austin Youth River Watch program?" participants made these comments:

- Testing water and [working with] the internet.
- I enjoyed all the activities such as camping trips, monitoring the creeks and working with other students.
- I most enjoyed testing the water and seeing the results.
- Meeting new people and helping to find leaks and clean up [the environment].
- Learning about the types of insects that live in [the rivers] and going to different places.
- I liked mixing up the chemicals.
- I liked our teleconference between here and El Paso when we talked about our ability to affect government, and all the times we have gotten to talk to public officials. My favorite aspect is the people here because they are very understanding.
- I enjoyed watching the kids that I mentor get better grades, feel confident about themselves, and start to take an interest in environmental issues.

In answering the question, "How has participating in the Austin Youth River Watch program affected you?" trainees offered:

- It's enhanced my knowledge and also given me a new group of friends.
- It's helped me see that I can help.
- I can communicate with many more diverse types of people.
- It helped me stay in school.
- It made me look forward to coming every week and made me care more about the environment.
- It has helped me be more comfortable around a variety of races and cultures.
- Now if I see anyone throwing things in the water I tell them not to. [I also] clean up by getting trash out of the water .
- I feel better about the environment and I like to do my [home] work more now than before. I feel good about myself and know I can do it. Another thing—my grades have gone up.
- My participation in the River Watch has helped me decide on my future and has interested me in the environment. The River Watch has affected me by showing me the importance of environmental issues and education.

**FIGURE 9
AUSTIN YOUTH RIVER WATCH 1994-95
SURVEY RESULTS**

Total # participants 55
 Total # respondents 26
 Response rate 47%

	Strongly Agree			Strongly Disagree	
	A	B	C	D	E
Participating in the Austin Youth River Watch program has helped me to:					
Know more about environmental issues	73%	23%	4%	0	0
Know more about science	52%	32%	12%	0	4%
Know more about mathematics	28%	28%	36%	4%	4%
Know more about water issues	77%	23%	0	0	0
Because of participating in the Austin Youth River Watch program, I am more interested in:					
Environmental issues	65%	23%	8%	0	4%
Science	68%	12%	16%	0	4%
Mathematics	38%	25%	29%	4%	4%
Water pollution issues	68%	24%	8%	0	0
Because of the tutoring I have received in the Austin Youth River Watch program:					
I am learning more about math/science.	42%	26%	26%	4%	0
I am learning more about English.	11%	16%	58%	5%	10%
I am more interested in my school work.	28%	44%	28%	0	0
I feel I am doing better in my school work.	38%	31%	31%	0	0
I enjoy going to school more than I did before.	11%	39%	33%	0	0
My participation in the AYRW has been very important to me.	68%	32%	0	0	0
	YES	NO			
Would you encourage others to participate in the AYRW?	100%	0			
Do you plan to continue your participation?	96%	4%			

SERVICE TO THE COMMUNITY

In addition to encouraging at-risk students to improve their mathematics and science skills, enhance their interest and knowledge about environmental issues, and remain in school, the Austin Youth River Watch mentors and trainees have performed a valuable service to the City of Austin. During the past year, results of each water quality testing session were sent to the Lower Colorado River Authority (LCRA) and added to the data base of water quality testing done throughout the LCRA district. *Through the students' participation in the Austin Youth River Watch program, the water quality data base of the Colorado River and its tributaries has been enhanced and expanded.*

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Austin Independent School District

Department of Performance Audit and Evaluation

Interim Director

Rick Bartel

Systemwide Evaluation

L. David Wilkinson, Senior Evaluator

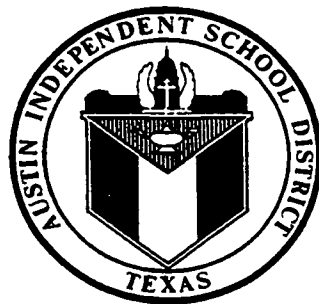
Author:

Jeannine Turner, Evaluation Contractor

Contributing Staff:

Ruth Fairchild, Secretary

Julia Griffith, Evaluation Associate



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