



## Arizona Project WET Water Investigations Program (WIP) Information Packet

Arizona Project WET (APW) is excited to announce a new partnership with The Nature Conservancy. We are launching the **Water Investigations Program (WIP)**, a new *learning experience* that integrates *inquiry-driven, STEM education* into relevant instruction. The WIP will focus on **middle school students and teachers** throughout the Phoenix Valley, with special focus on the Chandler, Gilbert and Glendale communities, as well as the Balsz and Pendergast Elementary School Districts.

The WIP covers three thematic units. **Water Use Inquiry** first engages students in a **water audit of their school and homes** that teaches good scientific practice and fundamental inquiry questioning. The second thematic unit, the **Water Resources & Supply Inquiry** focuses on building connections between **urban water use** and water in Arizona's **riparian areas** taking a critical look at the interconnection of all water resources. The WIP concludes with **Riparian Inquiry** that culminates in a **field study to a Nature Conservancy Preserve or local riparian area** where students are challenged to design and conduct their own investigations and then present their findings at a student symposium.

**Teacher benefits** for completing all the requirements include a \$500 stipend, a paid substitute for the school-day workshop, a field trip for your students participating in the WIP and in-classroom assistance for program implementation from our APW staff based in Phoenix. All of this in addition to the critical thinking skills and water resources content you will help your students master over the school year!

We are accepting 20 teachers to participate in a year-long, paid professional development Teacher Cohort over the 2011-2012 school year. Attendance is required at a three-day summer workshop, two Saturday workshops and one workshop during the school week.

### **Workshop Dates**

**July 12, 13 & 14, 2011 (Tuesday, Wednesday, Thursday)**

*Thematic Unit #1: Water Use Inquiry*

The first day of three will start us at the end: the site where students will conduct their own investigations at a riparian area, the Hassayampa River Preserve near Wickenburg. The next two days we will immerse ourselves in the Inquiry Process, as we work with the School Water Audit curriculum. You will collect data using good scientific procedure and will work with your peers to devise manageable ways for your students to conduct investigations of their own design. After this workshop, you will have the knowledge to facilitate a school water audit with your students and this should be completed before the October workshop. We will arrange for community volunteers to come help with the school water audit.



### **October 1, 2011 (Saturday)**

#### *Thematic Unit #2: Water Resources & Supply Inquiry*

As the outdoors cool off for the winter, we'll have a chance to explore the interconnected water resources of Arizona and the southwest. The amazing properties of water enable it to move and change form in the earth's water cycle. You will explore the rich lessons at APW's disposal to engage students in discovering Arizona's water resources, the uniqueness of Arizona's riparian areas and ecosystems and the connection between water use, the environment and the health of riparian areas. The context for student inquiries is developed here.

### **January 11, 2012 (Wednesday)**

#### *Thematic Unit #3: Riparian Inquiry*

This workshop will take us back to the Hassayampa River Preserve to prepare for the field studies where students will conduct their own investigations. We will spend the day learning about the natural systems and the connections between plant life, animal life and water in a riparian area. Student-driven inquiry will be the emphasis for this day, so our activities will focus on how to engage students in asking questions about these natural areas based on their knowledge gained from Thematic Unit #2. After this workshop you will have the knowledge to facilitate student-driven development of riparian investigation questions and our staff will be available to assist you in helping students develop these questions. All collaborative learning groups should have their testable questions developed by the March workshop.

### **March 10, 2012 (Saturday)**

This final workshop will bring us all together with our students' investigation questions to plan and coordinate our one-day field trips to the riparian areas. In addition to validating the students' investigation questions, we will develop strategies for bridging the knowledge learned at the beginning of the year about urban water use with the knowledge the students will be gaining in the next month about Arizona's riparian areas. Ultimately, students will demonstrate their understanding of the connection between water use and the environment through this year-long journey focused on water.

### **March & April 2012**

#### **Field Trips scheduled during school week**

We will work with groups of teachers to arrange field investigation days at the Hassayampa River Preserve or other riparian areas in the Phoenix area. These field trips will be arranged first for teachers that attend all the workshops and meet the deadlines for preparing their students. These are all-expenses paid school day trips and we will arrange to have community volunteers on site to facilitate the collaborative learning groups' investigations.



**April or May 2012**

**Student Research Symposium during school week**

Students, teachers, administrators and community members involved with the WIP will be invited to a college campus to participate in an all-expenses paid, one-day Student Symposium where all students will have an opportunity to present their research findings to their peers. This unique experience will allow students to share the significance of their work and develop their science communication skills, while creating excitement about higher education opportunities.



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### Thematic Unit 1 Water Use Inquiry

**Overarching Questions:**

How much water do we use at school and at home?  
How can we use it more efficiently?  
How can technology help us save water?

**Content:**

Quantification of water use  
Water Conservation through technological and behavioral means  
Scientific practice and Structured Inquiry  
Design and Conduct Student Driven Inquiry

**Volunteers:**

6 per class, 2-3 days per school

### Thematic Unit 2 Water Resources & Supply Inquiry

**Overarching Questions:**

Where does our water come from?  
What are the water resources that are available to us?  
How are our water resources interconnected?

**Content:**

Physical & chemical properties of water  
Hydrologic Cycle  
Water in the earth system  
Water quantity and quality  
Water's connection to life  
The connection between water use and riparian health

**Volunteers:**

Riparian Scientists as Guest Speakers

### Thematic Unit 3 Riparian Inquiry

**Overarching Questions:**

How do we know if a riparian system is healthy or not?  
What difference would saving water at school make if we could put that water back into a riparian environment?

**Content:**

Measuring living systems: indicators of ecosystem health  
Design and Conduct Student Driven Inquiries  
Form data driven conclusion and recommendations  
Communicate the results of the scientific investigations

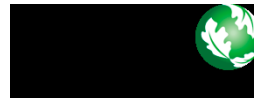
**Volunteers:**

6 per class, one field investigation day per class, many classes same field day

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### Rubric Criteria for Teacher Selection into the WIP Teacher Cohort

CRITERIA	LEVELS OF QUALITY		
	3: Outstanding	2: Satisfactory	1: Limited
<b>Completed Application</b>	Careful attention to detail is evident throughout.	Application is complete but several areas need clarification.	Application lacks clarity or provides insufficient information.
<b>Participation from Teachers in Partner Communities or School Districts</b>	Teacher is from a school in Chandler, Gilbert, Glendale or Balsz or Pendergast Districts.	Teacher is from a school in the Phoenix Valley served by SRP.	Not in Phoenix Valley.
<b>Potential to Integrate WIP into Classroom Plan</b>	Teacher has experience with similar programs and demonstrates potential and opportunity to implement WIP content and skills into instruction.	Teacher has minimal experience with similar programs, but demonstrates potential to implement WIP content and skills into instruction.	Teacher has minimal experience and no expressed desire to implement WIP content and skills into instruction.
<b>Potential to Implement the Inquiry Process</b>	Teacher has great potential to develop and implement inquiry process learning for his/her students.	Teacher has potential to develop and implement inquiry process learning for his/her students.	Teacher has less than desired potential to develop and implement inquiry process learning for his/her students.
<b>Potential to Utilize Collaborative Learning Groups</b>	Teacher has experience with collaborative learning groups and demonstrates great potential to utilize them for WIP-related activities, instruction and inquiry.	Teacher has minimal experience with collaborative learning groups, but demonstrates potential to utilize them for WIP-related activities, instruction and inquiry.	Teacher has minimal experience with collaborative learning groups and no expressed desire to utilize them for WIP-related activities, instruction and inquiry.
<b>Potential for support from Administration</b>	Teacher has informed administration of WIP and administration has offered full support for teacher to actively participate in the Teacher Cohort including classroom implementation, a school water audit and a riparian area field trip.		Teacher has not informed administration about WIP and/or does not have administrative support.

Total: \_\_\_\_\_/18