

## Shuudag: 'O'odham Weather, and Sources and Uses of Water

*Harry J. Winters, Jr., PhD*

**I**n the 'O'odham language, 'O'odham ñi'ok, water is shuudag. No resource was more important to life in the desert of the Tohono 'O'odham than reliable sources of water. The Tohono 'O'odham have a rich vocabulary describing clouds, rain, springs, and other sources of water, surface water runoff, and irrigation of fields.

Before we talk about this, let's go back 200 years and see what kind of drinks there were other than shuudag itself. Of course, there were no sodas, coffee, or beer, and milk would only have been available to families that had begun acquiring livestock, originally brought to Tohono 'O'odham country by Father Kino around 1700. Also, before we start, note that all places mentioned in this essay are in Arizona unless I specifically state otherwise.

Saguaro fruit is harvested by picking it off the cactus and by picking it up off the ground if it has already fallen and lain there for a short period of time, see Figure 1 (page 4). The fruit is called haashañ bahidag when still on the cactus and juñ when lying on the ground. The latter is sweeter than the former. The fruit is used to make bahidag sitol or just sitol, a thick syrup. The syrup can be used to make an intoxicating drink called navait. The pulp of the fruit may also be mixed with water to make a delicious drink called haashañ bahidag vaaga or juñ vaaga, depending on how the fruit was harvested.

(See "Shuudag" on page 4)

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## Publication Review

### The Long View of Arizona History

Guest-edited by Michael M. Brescia

*The Smoke Signal* No. 110/111 (April 2022)

Tucson Corral of the Westerners, Tucson

Review by Monica Z. Young

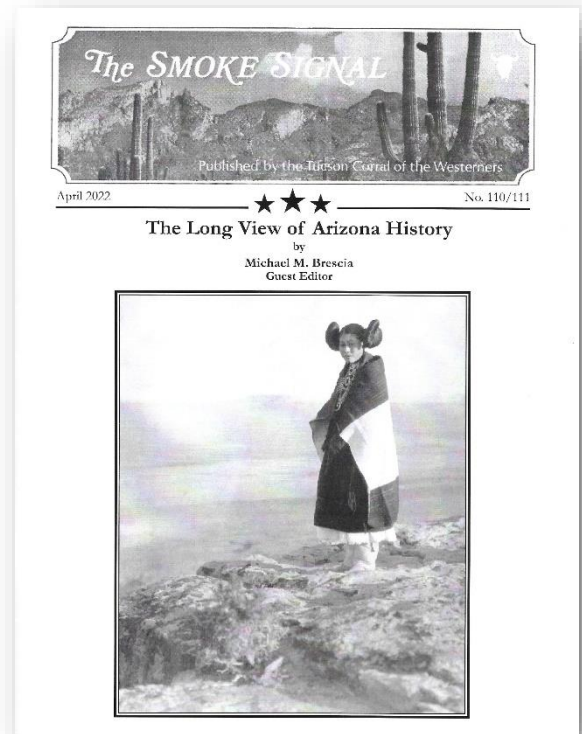
President, Old Pueblo Archaeology Center

Congratulations to Dr. Michael M. Brescia for featuring as Guest Editor of *The Smoke Signal*'s "The Long View of Arizona History"! This special issue is the first time in its 62-year history that *The Smoke Signal* has had a Guest Editor responsible for compiling the entire issue from beginning to end. Contributors to this anthology of essays are a diverse group of established scholars who "interpret a well-known period of Arizona's history from the vantage of their respective disciplines, while displaying a conceptual sensitivity to other approaches" (p. 11).

Much has been written concerning Arizona's history, but as Brescia notes, events, personalities, and issues are often isolated without regard to the connectedness of long-term and extended processes – the *longue durée* (the 'long view'). It is the long-term patterns of connectedness that the contributors bring to this special issue beginning with archaeologists Suzanne K. Fish and Paul R. Fish's article "A History of Indigenous Irrigation in Arizona before Spanish Conquest." This is followed by "Water and Livestock in the Desert: Thinking about Ecology in Spanish Colonial Arizona," by Nicole M. Mathwich; "One Territory, Many Peoples: Racial and Ethnic Groups and the Development of Arizona, 1848-1912," by Mark E. DeGiovanni Miller; "Between Two Headlines: Chronicling Arizona, 1900-2020," by Kim Engel-Pearson; "Tucked Away at UA: The Doris Duke American Indian Oral History Program Turns 50," by Molly Stothert-Maurer; and finishing with Aresta Tsosie-Paddock's "An Arizona Legacy: Modern Day Relocation of Diné People."

Brescia provides a synopsis of each essay and how these essays "tease out for the reader its various shades of meaning," but more importantly, shows "us what the past meant (or could have meant) to the people who lived through it, who made it, and who were shaped by it" (p. 12).

Brescia also reflects on the "surreal context" (p. 5) the contributors found themselves in during their research and writing for this issue – referring specifically to the world-wide COVID-19 pandemic and U.S. social unrest. As most are well aware, the pandemic hit Arizona particularly hard, most notably on the Navajo Nation. The skewed proportion of COVID-19 cases in Arizona is "much like it has been throughout history" (p. 5), notes Brescia. Case in point, the arrival of diseases from other continents to New Spain's northern frontier, which had devastating effects on the Indigenous population, "prompting a social and cultural reorganization for some communities – and, in some instances, even physical relocation" (p. 5). As Brescia poignantly states, "persistence and malleability stand alongside reaction and change" (p. 6) – the *longue durée*.



Cover of *The Smoke Signal* April 2022 issue  
(Photo of young Hopi woman by Forman Hanna:  
Arizona State Museum, University of Arizona)





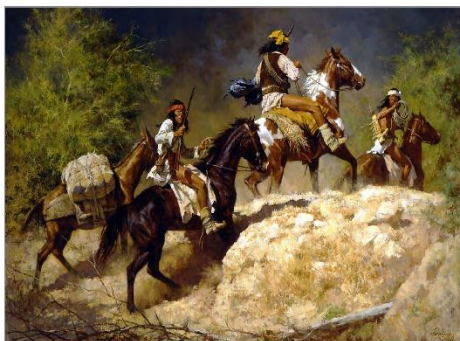
## Publication Review



JULY 2022 ★ ★ ★ No. 112/113

Rare Images from Apachería: A Pictorial Essay (1865-1935)

By Bernd Brand, Danny Koskuba, Frank W. Puncer, and Lynda A. Sánchez



"Raiding Crook's Command" by Howard Terpning

Cover of *The Smoke Signal*  
July 2022 issue

### Rare Images from Apachería: A Pictorial Essay (1865-1935)

By Bernd Brand, Danny Koskuba,  
Frank W. Puncer, and Lynda A. Sánchez  
*The Smoke Signal* No. 112/113 (July 2022)  
Tucson Corral of the Westerners, Tucson

Review by Rebecca Orozco

Faculty Emeritus, Cochise College, Sierra Vista, Arizona

For any scholar or person fascinated by Apache history this issue will be a valuable addition to their library. The collection of images covers a wide range of time, topic and place in Apachería.

The first section on women and basketry, "Baskets are an Apache Woman's Poetry," pages 5-9, is especially noteworthy for telling the story of women and children captives of the Victorio Massacre. The ambush and annihilation of the Victorio band comes into greater context with the images of the imprisoned women and children and the story of their fate. The section on traditional housing adds to the understanding of household economy. The photos of artifacts from Fort Stanton add to that.

When one hears the word Apache, the image of Geronimo is most often what comes to mind. The collection of the series of images of this iconic figure deepens the image of the man. Throughout the issue, the photos of the actual sites in the Apache historical narrative by Bernd Brand are especially valuable. The photo from near Janos where Geronimo's family died touches the heart of his life trajectory.

How we have envisioned the Apache from the stories told in popular media by famous artists and writers like Edgar Rice Burroughs and Frederic Remington still shape the dialogue about the place of Native Americans in this country. The sections on the time those artists spent in Apachería gives a greater depth to that image.

Most histories of the Chiricahua Apache end with the surrender and imprisonment of Geronimo and his people in 1886. The story of their continued existence in the Sierra Madre and the conflict that marked the region for decades more is one people often do not recognize. The images of those survivors and the landscapes where they held out well into the twentieth century are fascinating.

The most valuable part of the issue for me was the section on the Apache Scouts. I have been working to preserve Camp Naco, a Buffalo Soldier outpost in Naco, Arizona, that was utilized from 1910-1923 to keep the Mexican Revolution from spilling across the border. The soldiers of the 9th and 10th Cavalry stationed there rotated out of Fort Huachuca and were a major component of the Punitive Expedition with General John "Black Jack" Pershing into Mexico chasing Pancho Villa in 1916-1917. The photo of the Apache Scouts (p. 38) is a great addition to the history we are gathering for the site.

For information about *The Smoke Signal* issues reviewed here as well as others you can contact James B. Klein, M.D., current Sheriff of the Tucson Corral and Editor of *The Smoke Signal*, at 520-795-9484 or [rjgrj@aol.com](mailto:rjgrj@aol.com).



## Shuudag

*Continued from page 1*

The word *vaaga* refers to a mixture of something with water. Flour made from mesquite bean pods, *kui vihog*, is mixed with water to make *vihog vaaga*. *Vađagi* is juice and may be the juice of saguaro fruit, other plants, or meat. We see that there were a number of things, other than straight water, to drink. A modern use of *vađagi* is the term for vodka, *baabas vađagi*, potato juice. Once in a café there was a bottle of Karo corn syrup on our table. Some wit said, “*Bañ ash ’elid mo wuđ baabas vađagi kunt o chum ’ii*. (I thought it was vodka and was going to drink it.)”

Water was used for preparation of medicinal drinks. This is still the case today, although not to the extent it was even 20 or 30 years ago. Drinks are made from *shegi* (Creosote Bush, *Larrea tridentata*), the roots of *’edho* (White Ratany, *Krameria grayi*), *kuupag* (Mormon Tea, *Ephedra aspera* Engelm), and other plants by boiling.

### Water by Any Other Name

Water is called *shuudag* no matter whether one finds it in rivers, washes, springs, tinajas, ponds, or wells. There is a plural form, *shuushdag*. It appears in *Shuushdagk*, the name of an ancient watering

### Orthography in this Article

*Harry J. Winters, Jr.*

In this paper all *’O’odham* words are written in an alphabet that comes as close as possible to what someone who has learned to read English in American schools would expect. Differences are (1) all glottal stops are included and are written as apostrophes, (2) the English vowel “e” is used for the *’O’odham* vowel that sounds like the “oo” in English book, (3) the *’O’odham* consonant that sounds like the Spanish “d” in *donde* is written as “đ” and (4) the *’O’odham* consonant that sounds like the “ny” in English canyon is written as “ñ.” This is the alphabet used in *Winters (2012:xxxix-xlii)* and *Winters (2020:xlv-xlviii)*. See either of those references for details.

As in my other works, I always write the glottal stop as an apostrophe when it is the first consonant in an *’O’odham* word, including in the word *’O’odham*. This is to help readers who are not speakers of the *’O’odham* language pronounce the words accurately. Other authors do not write the glottal stop when it is the first consonant of a word, presumably because it is not written in English words.



GATHERING HASEN - QAHATIKA

Figure 1. “*Gathering hasen (Qahatika)*”  
(Photograph by Edward F. Curtis, 1907, National Archives)  
*Koahad* women picking saguaro fruit (*haashañ bahidag*)  
Curtis’s “*Qahatika*” is *’O’odham Koahadk*. It is spelled *Kohatk* on USGS maps.

place in northern Sonora near the international border. There are several pools of water there (see *Winters 2020:690-691*).

Water that has been put into an olla, jar, or bucket is called *va’igi*. We say, “*Nt o ho va’i g shuudag*. (I will get some water and put it in a container).” Also, “*Nt o va’igam*. (I am going to go get water).” Today, since we put gasoline, a liquid, in a container, we also say, “*Nt o va’i heg gas*.”

Now let’s get more specific! Water that is dipped out of a source, or today maybe out of a barrel, is called *vasib*. My drink obtained by dipping is “*ñ vasib*.” We say, “*Mapt o ’i ñ vasib!* (Dip out a drink for me!).” Today some folks say *vasib* for a bottle of soda when they are in a humorous frame of mind.

A very general word for a drink is *’i’idag*. For example, “*Shaachu ’up ’ii’e?* (What do you drink (water, soda, coffee)?” My answer, “*Diet Coke wuđ si ñ ’i’idag!* (Diet Coke is my drink!).”





Figure 2. Cloudburst over Avra Valley; Kitt Peak telescopes on the right skyline, viewed from the Tucson Mountains, southern Arizona (Photograph by Peter L. Kresan) Cumulonimbus cloud is chevag in 'O'odham. S-kavkam juuk. It's raining hard.

## Clouds, Fog, and Haze

The sky is daam kaachim, meaning it lies above us. The most general word for cloud is chevag. In particular, chevag refers to summer thunderstorm clouds. A cloud that looks like it will drop rain is called s-namkig chevag, a valuable cloud (Figure 2). The old-timers said, “Sham o va 'i t juksh mat heg 'an o sha'i wuush hab maas chevag, 'oiva hekaj hab 'a'aga s-namkig chevag. (They say it's sure going to rain on us when a cloud like that comes out, so for that reason they call it a valuable cloud.)” If a cloud looks like it might make rain but doesn't, we say, “Vash kia si t nankogid. (It's still just teasing us.)”

In the old days when the people were still farming with floodwater, in the summer around mid-day someone might say, “Hekyu ñe'iopa! (They already came out!)” Nobody had to turn around and look. Everybody knew he or she was referring to the rapid buildup of thunderclouds over the mountain.

The low-flying winter clouds that hang, sha'iwua, on the mountains and produce the winter rains are called hikshpi. The rain they bring is called hikshpi juuk. Mexicans call these winter rains las equipatas, but nobody seems to know why.

Finally, when there are high thin clouds, for example Cirrus clouds, we say, “Komalim s-chevagig.” Komalim refers to their thin, flat appearance.

“S-kudshanig” means “It's foggy.” After a rain at night, in the morning it can be cold and foggy. Haze is komhivagi or komhivadag. The old-timers said that if in the morning there was a thin layer of haze all around in the air, it meant that a rattlesnake bit somebody somewhere. People would sometimes mistake the komhivagi for a jegos, the violent wind and dust storm that runs ahead of a summer thunderstorm. When they realized it was just a haze, someone might say, “Bo maas mo heg jegos 'ab meḡ, 'eḡa 'o wuḡ



apsh komhivadag hegkaj mat hema kei heg ko'oi." This means, "It looks like the jegos was coming our way, but it's just a haze because a rattlesnake bit somebody." After the 'O'odham acquired livestock, this could happen even if a horse or cow was bitten.

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## Rain

Rain in general is juuk. July is called juuk mashad, rain moon (month). The summer rainy season is called jukiabig. Rain from the winter clouds called hikshpi is hikshpi juuk. Rain from layers of clouds lying low over the ground is wo'iwuag juuk, from wo'iwua, to lie down. If it is just sprinkling, we say, "Vash siibañ." If it's raining hard, we say, "S-kavkam juuk." Very fine misty rain is called shuu'uwaḍ juuk, Tansy Mustard rain, because of the tiny seeds of that plant. When a foreign object gets in someone's eye, one 'O'odham remedy is to put one or two shuu'uwaḍ seeds in the eye. They will bring the object out. Fine, misty rain is also called sho'og juuk, lice eggs rain. The heavy winter rain that is whipped back and forth by strong winds from the north is called vamaḍ juuk, racer rain, after the snakes called red racers and black racers. The way the wind whips the rain back and forth reminds us of the way the racer's body whips back and forth as it streaks across the desert. By the way, if a lady at a dance notices that a man has red legs, she should avoid him. Red racers, wepegi vahammaḍ, have the ability to turn themselves into handsome men and may even marry an unsuspecting woman. Our Piipaash (Maricopa) friends have noticed the same thing.

If we want to say that it's going to rain, a common way is to say, "Ban pi o vo'iwua. (The coyote won't lie down.)" Coyotes don't like to lie down on soggy ground.

Other forms of precipitation are chia or chea, hail, gev, snow, and va'udag, dew. The winter visitors from the north who stay around the Why and Ajo area of Arizona are known as gevch'ed miligan, in-the-snow Americans.

## Surface Water Runoff

Now that we have had some rain, how does the water that doesn't soak in travel across the desert? It starts out in little gullies known as vipishañ. One of them is a vi'ishañ. A number of vipishañ coming down a slope merge into a wash, 'aki. Washes, 'a'aki, merge into larger washes. The place where such a large wash flows out onto a floodplain is called 'ak chiñ, mouth of the wash. From the 'ak chiñ, the water runs out onto a floodplain, vo'oshañ. Where the floodplain's downward slope angle, 'agshpaḍag, is low enough (maybe around one-half of a degree), fields were planted in the old days. There are places, for example not far south of Pisin Mo'o,<sup>1</sup> Arizona, where one floodplain empties into another one. Such a place is called vo'oshañ chiñ, mouth of the floodplain. In northern Sonora there is an area where a number of floodplains merge. The area is called Vo'oshañkam, Place with Many Floodplains. See Winters (2020: 889).

A wash associated with a particular village is often designated with the name of the village. For example, the wash that comes from the mountain well village of Siv Vavhia toward Koahadk, Arizona, is called Siv Vavhia 'akidag.<sup>2</sup>

Along these watercourses, there are various topographic features associated with the movement of surface water. A waterfall or head of erosion is called koahad (Figures 3 and 4). In 1800, the field area near today's Koahadk stretched from the mouth of Kohatk (*sic*) Wash for about two-and-one-half to three

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Volunteer executive director Allen Dart, RPA, is an *ex officio* board member

<sup>1</sup> Spelled Pisinimo on United States Geological Survey (USGS) maps.

<sup>2</sup> Spelled Sif Vaya and Kohatk on USGS maps.





miles downstream to a major head of erosion. At that time there were actually two villages, Siv 'Oidag at the upstream end and Koahadk at the downstream end of the field area. When farming ended at Koahadk in the 1950s, the field area was less than one mile long. See Winters (2020: 374-382).

A place in a floodplain where standing water soaks into the ground and gives rise to thick stands of tangled trees and brush is called va'akañ. This was the situation in the area of Marana, Arizona. The old 'O'odham name of the Marana area was Va'akañ, a name still known to some 'O'odham elders. Maraña is the Spanish word for va'akañ.

Swampy or marshy ground is called vaamul. The plural is vapamul. Two Spanish words for vaamul are pantano and ciénega. One day someone will find a document that shows that the Ciénega de los Pimas on the north side of the highway between Tucson and Benson, Arizona, was called Vaamul. A place where there are marshes is described by the short sentence, "S-vapamuligk."

A river is called 'akimeli (see Figure 5). The Colorado River is known as Weg 'Akimeli, Red River. The Gila River is simply called 'Akimeli. We also have 'Onk 'Akimeli, Salt(y) River, and Siv 'Akimeli, Bitter River, which was the name for Tonto Creek. It is not necessary for a watercourse to have water running in it over its entire length all year round to be called 'akimeli. There is a place in the Chukut Kuk District of the Tohono 'O'odham Nation where springs fed into a steep, narrow canyon and water ran for a short distance down the canyon. To farmers in the area who liked to picnic there, that was their river and they called the place 'Akimelik. See Winters (2020:50).<sup>3</sup>



Figure 3. View of the koahadk that gave the old village of Koahadk in the Sif Oidak District its name, looking toward the northwest; flood water running off the fields cascaded off the koahadk over a length of 900 feet

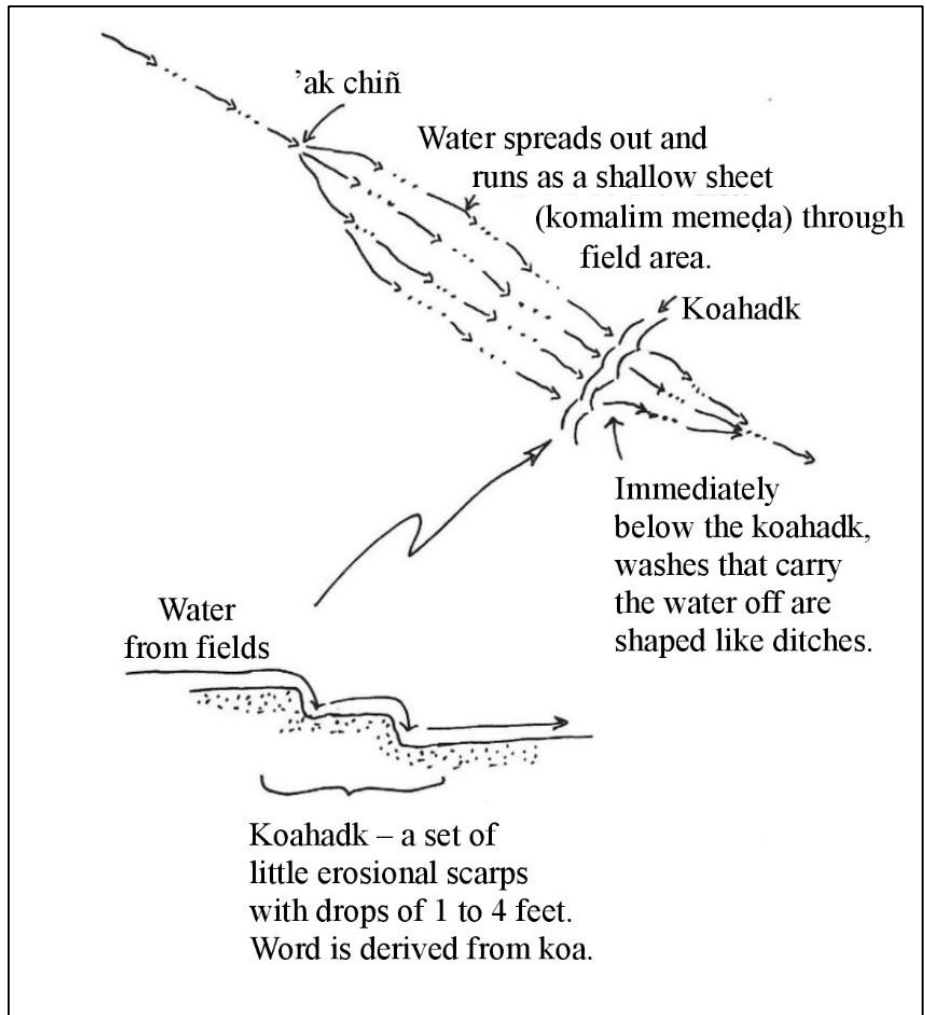


Figure 4. Sketches to illustrate the 'ak chiñ, fields, and koahadk in the Sif Oidak District, Tohono O'odham Nation; the koahadk itself is at the northeast end of the old field area

<sup>3</sup> Spelled Ak Komelik on USGS maps. This spelling completely distorts the meaning of the name. Unfortunately it has been copied and wrongly interpreted in one of the 'O'odham dictionaries.





*Figure 5. View looking downstream on the Altar River at Altar, Sonora; the bedrock vav, which brings the water to the surface, gave Altar its 'O'dham name, Vavk*

A place where running water ponds and sinks into the ground is called Vaak. This was the case at San Xavier del Bac (Vaak) before headward erosion of the Santa Cruz River ate through the area. When the water is going into the ground, we say, “Juupiñ heg shuudag. (The water is sinking in.)”, or “Humhid 'o heg shuudag. (The water is going down.)”

A flood is vi'indag (Figure 6). To say that the flood will damage the road, we just say, “T o vi'in voog. (It will wash out the road).”

A ditch or trench is vaikka, with plural vapaikka. This word is also used for a small wash with steep banks.



*Figure 6. A late summer thunderstorm over Wasson Peak generates a flash flood advancing down Golden Gate Road in Saguaro National Park West, Tucson Mountains, Arizona. (Photograph by Peter L. Kresan) Flash flood is vi'indag in 'O'dham.*





### Let's Put In A Well

Harry J. Winters, Jr.

Originally written in 2019  
from older notes

Here is a step-by-step, but not overly detailed, description in 'O'odham of how to make a well.

1. Tt hig o t jeeñgi vavhiakaj! Let's talk about a well! (We use the verb jeeñgi here because we are going to be talking about a number of activities, one after the other.)
2. Tt hig o vavhiat! Let's make a well!
3. Weepag 'am o vagt. First we'll dig a hole. (The excavation of the well.)
4. 'Amjed 'am hab o juu weegaj toñ hodi. Pi 'imhu ha'ichu o gei. Then we'll set the cement around it. Nothing will fall in it. Cement is toñ hodi, hot rock, because it gives off heat as it sets.
5. Gook 'ab o chuuchi'a sha'adk mo 'e wepo ha'asig. We'll erect two forked posts that are the same size. (We're going fancy. No plain posts ['uus] for us.)
6. 'An o vav 'uus, matt heg'ab o naggia kalit kahio. We'll lay a post across, on which we'll hang a pulley. (Talking about the horizontal beam.)
7. Kalit kahio 'an wecho 'e naggia. The pulley hangs underneath.
8. 'Amjed heg'ab kalit kahio hab o juu g vijina. Then we'll put the rope on the pulley.
9. Vijinat'ab o wuu heg kuuwo hekaj o vas heg shuudag. We'll tie the bucket on the rope with which we will dip out the water. (Instead of hekaj o vas heg shuudag you can say hekaj o 'i wuushad heg shuudag . . . with which we will bring out the water.)
10. 'Ab ahawo 'i vañi'o k o 'i wuushad heg shuudag. Then we'll pull on it (the rope) and bring up the water.
11. Kus haschukaj 'ep o t jeeñgi? So what else should we talk about?

### Downstream and Upstream

Kuiva, also pronounced kuivo, means downstream. Upstream is ta'i. Kuiva is sometimes translated by 'O'odham as west, north, or south. That is because water in the wash at their village runs in that particular direction. The people who lived along the lower Gila River west of the junction of the Gila and Salt rivers were sometimes referred to as Kuiva 'O'odham, Downstream 'O'odham, by the 'Akimeli 'O'odham (Pimas) on the middle Gila River. The only reason that kuiva has not been translated as east is because that is the direction to the Continental Divide.

Ta'i, upstream, is sometimes translated as north or east. The Gila River and Salt River flow from east to west. The Verde River, Agua Fria "River" and Colorado River flow from north to south.

'Agshpaḍag is the downward gradient of a hillside, wash, or floodplain, or a handicap ramp. Ta'ikoḍag is the upward gradient. "S-'agshpaḍag." means "It slopes downward." "S-ta'ikoḍag." means "It slopes upward."

Kuiva is an extremely interesting word. Pronounced kweva, it is the Yavapai word for downstream or south. That is the direction the Verde River flows from the upper Verde Valley territory of those Yavapais called Yavbé to the Salt River. The Yavapais who lived on the lower Verde River and in the Mazatzal Mountains and Superstition Mountains are called Kwevakapaya, Downstream People or South People, in Baaja Gwaawja, the Yavapai language. Mohave kaveek is translated as south since the Colorado River flows that way across and away from their territory. Kwchaan (Quechan, Yuma) kavée is translated as south because the Colorado River flows south through their territory. Piipaash and Halychdum, both called Maricopas today, have kvé, which is usually translated as west since the Gila, excluding bends, flows west to the Colorado. How did all these Yuman and 'O'odham peoples end up using the same word for downstream with its directional flexibility?!

### The Motion of Water

The verb used for the motion of water is meḍ, run or go fast. We say, "Meḍ heg shuudag 'akch'eḍ. (The water runs in the wash)." Rivers and washes do not run. Water runs. When water runs repeatedly in an area, for example in rainy seasons, we say, "'Ina memeda heg shuudag. (The water runs (repeatedly) along here)."

There is one exception to this. The front of a flash flood moves somewhat slowly. Tree limbs, brush and other debris, collectively known as vakola, are pushed along at the front of the coming floodwater. They impede, sha'ijid, the water. We use the verb him, to walk or go slowly, to describe the motion of that water at the front of the flood. See Winters (2020:700-703).





Figure 7. Cheepo at Chi'ulikam  
in northern Hicikwan District



Figure 8. Johnny Ortega at the largest cheepo  
at the village of Cheepo, Sif Oidak District

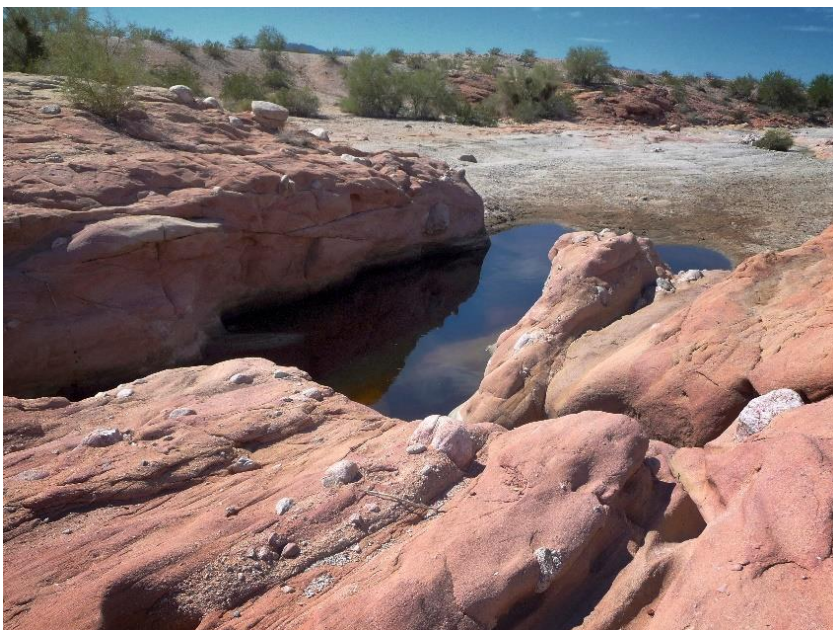


Figure 9. One of the cheepo  
in the wash south of Ge Hudaj

## Watering Places

A spring is called shon, plural shooshon. Spring water is shonkam shuudag or da'iwundam shuudag. Da'iwuñ means to come running out, for example, out of fractures in bedrock. There are hot springs on the lower Gila River at a place the 'O'odham call S-Toñ Shuudag, Hot Water. The Spanish name of the place is Agua Caliente. This is the name on maps of the area. We say, "Ge shonkam 'iibdag" of a person who has a steady heart; a heart that is calm and generous and always produces. A person with such a heart is like a reliable spring of water, shon, in the desert.

A plunge pool, natural tank, or tinaja is called cheepo (Figures 7-10). The plural is cheechpo. This word should not be confused with the word for bedrock mortar, which is chepa, plural chechpa.

A natural pond, usually in a gully or wash, is called vo'o, with plural vopo. Sometimes a pond is called hiktañ vo'o if it is in a crack in the ground. Vo'o is also used for the pond behind an earth-fill dam, for example the pond at Menager's Dam.

A vachki is an artificial pond created by building a dike, toonk, or dam, kuupk. Long ago vapchki (plural) were built to provide drinking water supplies for farmers at field villages. Since the acquisition of livestock, they have provided water for cattle and horses as well. In Spanish a vachki is called charco.

Some 'O'odham believe that it is important to drink water from a vo'o or vachki, rather than drinking only pure water, because matter in the pond water promotes the development of muhadag, also pronounced mohadag, a greasy brown substance that aids in the digestion of some foods, in the stomach. The Salt River Mountains, better known as South Mountains, south of downtown Phoenix, Arizona, are called Muhadag by the 'O'odham because there are some outcrops of metamorphic rocks in the southeastern part of the mountains whose color resembles the color of muhadag. How those rocks came to have that color is a long and interesting tradition related by both the





'O'odham and River Yumans. See Winters (2020:486-487).

Vavhia means well. The plural is vauphia. We also hear vahia and vaipia. In the Schuk Toak District we hear vavhai instead of vavhia. A well today is not what it was centuries ago. A vavhia was formerly a hand dug well down to the local water table. Some were shallow vertical wells. Others were circular, up to 100 feet in diameter, about 20 feet deep, and were accessed by a ramp. Some shallow wells had a ramp that was sloped so that floodwaters from a nearby wash could be diverted down into the well. For over 100 years now the word vavhia also has included deep vertical wells drilled by rotary drill rigs (Figure 11) and equipped with pumps and motors or windmills. The fan on a windmill is called papalóodi from the Spanish papalote, which in turn is derived from the Aztec language.

Vavhia is sometimes used in a humorous way. In the Hickiwan District of the Tohono 'O'odham Nation there are two places where there are small seeps of water. One is called Kakachu Ha Vavhiaga, Quails' Well, and the other is Muuval Vavhia, Bee Well. The -ga suffix on vavhia means that "well" is the quails' property. At times there is enough water for quails or bees, but not for a wagonload of people.

'Oo'ogvañik means a place where tears run down. I have been in two caves in 'O'odham country that have seeps in them and that are called 'Oo'ogvañik by the 'O'odham. One is in the southeastern Saucedo Mountains. The other is called Dripping Springs on maps and is in the Puerto Blanco Mountains in Organ Pipe Cactus National Monument. There are at least two other such caves in 'O'odham country, one of which is in Sonora and also was called 'Oo'ogvañik.

## Farming

A floodplain, vo'oshañ, downstream from the mouth of a wash, 'ak chiñ, was often, but not always, a good place for clearings for fields, gagga, and the fields themselves, 'o'oidag. That depended on factors such as the downward slope of the ground, 'agshpadag. At such places a thin sheet of water runs out from the mouth of the wash and spreads out over the fields. The water must run slowly enough to give the plants a good soaking and deposit nutrients without washing out the mounds the seeds are planted in, but not so slowly that it ponds and drowns the plants.

The farming methods used by the 'Akimeli 'O'odham on the middle Gila River and by the Maricopas (Piipaash) on the lower and middle Gila were different from those of the Tohono 'O'odham. This essay



Figure 10. Cheepo at To'otobidk, view from south; note the sinuosity described by To'otobidk





does not address those methods. Nonetheless, those Tohono 'O'odham with roots in the Hicikiwan District who lived with the Piipaash on the lower Gila River for centuries probably used farming methods on the lower Gila that were similar to Piipaash methods.

## Groundwater

Groundwater is called *jewuḍwecho kaachim shuudag*, water lying under the ground. For many decades wells have been drilled to depths below the water table. These wells provide water for domestic use and livestock. Some have been used for irrigating crops. In at least two places wells have been drilled into zones of hot water. Both places are called S-Toñ Shuudag, Hot Water.<sup>4</sup> One of those places, originally intended to be a housing area, was abandoned soon after the well was completed because a wind kept blowing up out of the well. I have felt the wind. No one wanted to live near a place beneath which lies a home of the wind, a *hewel kii*. Father Kino and Captain Manje learned about that the hard way in October 1699. See Winters (2020:275-277). I don't think the other hot water well, near Papago Farms, is producing today either.



Figure 11. 'Tohono O'odham cowboy Martín Vega and Harry Winters at the well at the old Tohono 'O'odham village called Totshagi in Sonora, Mexico

In closing, here is a little song about a windmill and water from Hikwoñ<sup>5</sup> village:

Hikwoñ Do'ag, Hikwoñ Do'ag.  
Hugidam vainam sikoli meḍad.  
'Ina t-wecho kaachim shuudag wuushad.  
Hewelkaj 'am sikoli meḍad.

Translation: Hikwoñ Mountain, Hikwoñ Mountain.  
The windmill next to it goes around and around.  
It brings up the water lying beneath us.  
It goes around and around with the wind.

## Reference Cited

Winters, Harry J., Jr.  
2020 *'O'odham Place Names: Meanings, Origins and Histories, Arizona and Sonora, Second Edition*. SRI Press, Tucson.

## About the Author

Harry J. Winters, Jr., PhD, is a geological engineer who has had a lifelong friendship with many 'O'odham throughout their lands. He is a fluent speaker of the 'O'odham language and is author of *'O'odham Place Names* (2012, 2020) and *Maricopa Place Names* (2018). He speaks enough of the Maricopa and Yavapai languages not to starve in their company.

**About the Cover.** The page 1 background image was created from photos by Allen Dart showing a cloudburst viewed west across the Altar Valley toward the Quinlan and Coyote mountains in southern Arizona (see p. 17), and water in the Colorado River viewed off the 1929 Navajo Bridge east of Marble Canyon, Arizona.

<sup>4</sup> One of these places is spelled Stan Shuatuk on USGS maps.

<sup>5</sup> Spelled Hicikiwan on USGS maps.



## Work Resumes on Sabino Canyon Ruin Project Documentation and Report

*Allen Dart, RPA*

The Sabino Canyon Ruin archaeological site northeast of Tucson, also known as the Sabino-Bear Canyon Ruin and by other names, was a fairly large settlement occupied by people of the Hohokam archaeological culture. Scientists, educators, and others had observed and conducted limited excavations there in the early twentieth century, but not much else was known about the site because none of the previous investigations were published.

From 1995-2001, Old Pueblo Archaeology Center operated its first public archaeology education and research program at the Sabino Canyon Ruin in cooperation with the Fenster School of Southern Arizona, which owned part of the site.

Old Pueblo's research at the Sabino Canyon Ruin was conducted as an archaeological field school open to the public. Through the seven years of fieldwork, over 950 adults and youths received hands-on excavation and in-classroom instruction in southwestern archaeology and history. Old Pueblo's research at the site determined that the Hohokam occupation began around 1000 and ended some time after 1325. During the program Old Pueblo not only conducted testing and data recovery excavations in several areas of the ruin owned by the Fenster School, but also completed an archaeological survey of virtually all of the public and private lands onto which the Sabino Canyon Ruin extends, with permission of the landowners.

Old Pueblo's Sabino Canyon Ruin project encountered several thousand pieces of pottery and other artifacts of stone, animal bone, and seashell, plus a few whole and partial pottery vessels and modeled ceramic artifacts. Constructed features identified during the project included five above-ground adobe-and-rock-walled compounds (including one that apparently was an enclosed public use area), numerous pithouses and one- or two-room above-ground structures, two Hohokam canals, two dog burials, outdoor roasting pits, and dense midden deposits (mostly in refuse-filled pithouses), and several thousand pottery, stone, bone, seashell, and modeled ceramic artifacts.

Old Pueblo ended fieldwork at the site in June 2001 as a conservation measure, because enough excavation and survey had been done to address the questions originally proposed in 1995 to guide Old Pueblo's research. Postfieldwork documentation and reporting on the field data and artifacts began



*"Bear Canyon Site 20" photo ca. 1920, showing remnants of one of the compound walls at the Sabino Canyon Ruin (Photo reproduced from A. E. Douglass photo collection courtesy of the Laboratory of Tree-Ring Research, The University of Arizona)*



*Old Pueblo's Sabino Canyon Ruin project director Sara Chavarria photographing an excavation in which school teachers had assisted during an "Archaeology in the Schools" workshop in June 1998*





*Above: Former Old Pueblo Archaeology Center President Jim Trimbell helped excavate this adobe-walled Hohokam pithouse at the Sabino Canyon Ruin*



*Right: Examples of pre-1100 and post-1100 painted pottery sherds encountered during Old Pueblo's Sabino Canyon Ruin project; notice the glittery mica flecks in several of them*



before the fieldwork was completed and continued intermittently after 2001, but came to a halt around 2008 when Old Pueblo had to deal with severe financial difficulties.

In the years since, the organization has recovered to the point that it now endeavors to complete the project data documentation and reporting. Most of this effort is now being conducted by volunteers, but a huge expense for it is to hire professional specialists to conduct highly detailed documentation and reporting on the pottery and other artifacts that were gathered from the excavations. The ceramic study alone is estimated to cost around \$40,000.

If you would like to support Old Pueblo's final research and publication effort, please read and respond to the information in the box below.

## **Donations Sought for Sabino Canyon Ruin Studies**

The newly begun effort to complete the Sabino Canyon Ruin documentation and report is privately funded with no support from government or universities, and as yet no grants. Therefore, Old Pueblo Archaeology Center seeks tax-deductible contributions to offset some of the costs.

If you or someone you know would like to support this effort you can donate in one of three ways:

- Mail your check, payable to Old Pueblo Archaeology Center, to PO Box 40577, Tucson AZ 85717-0577. Please write "Sabino Canyon Ruin" in the check memo line.
- Visit [www.oldpueblo.org/forms/donorfrm.php](http://www.oldpueblo.org/forms/donorfrm.php) and enter the dollar amount you want to pay (in place of the web page's \$0.00 figure above the "USD" line). Please enter "Sabino Canyon Ruin" in the "Any Questions or Comments?" cell.
- Call Old Pueblo's Executive Director Allen Dart at 520-798-1201 to authorize a charge to your credit or debit card. Old Pueblo accepts Visa, MasterCard, Discover, American Express, and Diners Club cards.





## Upcoming Activities

All times listed here are “ARIZONA/Mountain Standard Time.”  
Each year from the second Sunday in March to the first Sunday in November,  
ARIZONA/Mountain Standard Time is the same as Pacific Daylight Time.



### Thursday June 15, 2023: Online

“Third Thursday Food for Thought” free Zoom online program featuring “A Photo Essay of the Apache Surrender” presentation by historian Bill Cavaliere”

7 to 8:30 pm Free.

Register at this link:

[https://us06web.zoom.us/webinar/register/WN\\_-FSKZak5RleSw\\_mIj9vc7Q](https://us06web.zoom.us/webinar/register/WN_-FSKZak5RleSw_mIj9vc7Q).



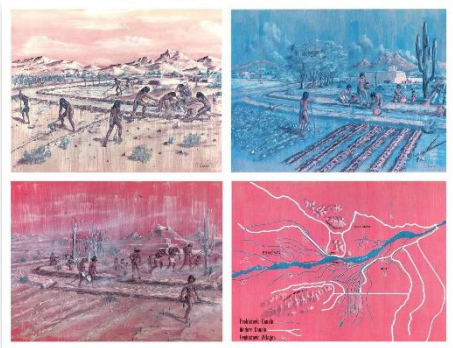
### Thursday July 20, 2023: Online

“Third Thursday Food for Thought” free Zoom online program featuring “O’odham Place Names: Meanings, Origins and Histories” presentation by Harry J. Winters, Jr., PhD

7 to 8:30 pm. Free.

Register at this link:

[https://us06web.zoom.us/webinar/register/WN\\_e0QYkHObrfCvES3XfFiESg](https://us06web.zoom.us/webinar/register/WN_e0QYkHObrfCvES3XfFiESg).



### Wednesdays September 6-December 6, 2023

“The Hohokam Culture of Southern Arizona” online adult education class with archaeologist Allen Dart

6:30 to 8:30 pm each Wednesday except skip October 25 and November 22. \$99 donation (\$80 for members of Old Pueblo, Arizona Archaeological Society, and Friends of S'edav Va'aki Museum).

To register contact Old Pueblo at 520-798-1201 or [info@oldpueblo.org](mailto:info@oldpueblo.org).



### Thursday September 21, 2023: Online

“Third Thursday Food for Thought” free Zoom online program featuring “The Historical George McJunkin Reimagined through His Archaeological Sites” presentation by archaeologist Brian W. Kenny

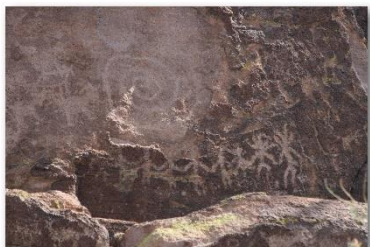
7 to 8:30 pm. Free.

For more information contact Old Pueblo at [info@oldpueblo.org](mailto:info@oldpueblo.org) or 520-798-1201.





## More Old Pueblo Archaeology Center Upcoming Activities



**Saturday September 23, 2023: Tucson-Marana, AZ**

**“Autumn Equinox Tour to Los Morteros and Picture Rocks Petroglyphs Sites” with archaeologist Allen Dart**

8 am to noon. \$35 donation (\$28 for Old Pueblo and Friends of S’edav Va’aki Museum members).

To register contact Old Pueblo at 520-798-1201 or [info@oldpueblo.org](mailto:info@oldpueblo.org).



**Saturday October 7, 2023: Tucson-Marana, AZ**

**“Tucson and Marana Yoeme (Yaqui Indian) Communities” cultural sites tour with Yoeme traditional culture specialist Felipe S. Molina**

8 am to 1 pm. \$35 donation (\$28 for Old Pueblo Archaeology Center and Friends of S’edav Va’aki Museum members)

To register contact Old Pueblo at 520-798-1201 or [info@oldpueblo.org](mailto:info@oldpueblo.org).



**Wednesday December 6, 2023: Online or by mail**

**5 pm December 6 is the deadline to get your tickets from Old Pueblo Archaeology Center for “The Jim Click Millions for Tucson Raffle” of a 2023 Ford Bronco Raptor valued at \$76,580, or two first-class round-trip airline tickets to anywhere in the world, or \$5,000 cash.**

Your purchase of each \$25 ticket benefits Old Pueblo and other southern Arizona charities!

For more information contact Old Pueblo at 520-798-1201 or [info@oldpueblo.org](mailto:info@oldpueblo.org).

### Old Pueblo President Monica Young Receives Arizona Archaeological and Historical Society’s Unsung Hero Award



**Congratulations Monica Young** – not just for providing the periodical review on page 2 but also for being selected by the Arizona Archaeological and Historical Society for its 2022 Alexander J. Lindsay Jr. Unsung Hero Award!

This award is given in honor of the late Dr. Lex Lindsay, a long-time southwestern archaeologist who for many years was an AAHS officer and board of directors member. The Lindsay Award is presented annually as a lifetime service award to those individuals whose tireless work behind the scenes has often gone unrecognized but that often is critical to the success of others’ research, projects, and publications.

Monica Young received her Bachelor’s and Master’s degrees in anthropology from the University of Arizona, and is employed at the Arizona State Museum (ASM) as a curatorial museum specialist in the ASM Repatriation Office and as a research specialist in ASM’s Office of Ethnohistorical Research. She has served on Old Pueblo Archaeology Center’s board of directors since 2011 and as our President since 2014.

Monica also serves on the Southwestern Mission Research Center (SMRC) board of directors and as its Treasurer, Corresponding Secretary, and assistant editor of the *SMRC Revista* newsletter; and she is the outreach and administrative person for Mission Garden in downtown Tucson. She has been involved in Old Pueblo’s and SMRC’s major outreach initiatives, educational tours, and public lectures in archaeology and history of the Greater Southwest.

As noted in the AAHS August 2022 newsletter that announced Monica as the recipient of this award, “Everyone who has the privilege of working with Monica will attest to her strong work ethic, efficiency, passion for the task at hand, and, significantly, a decency we all should emulate. She embodies the letter and spirit of the criteria for the Alexander J. Lindsay Jr. Unsung Hero Award.”

**Congratulations again, Monica!**





**What It's Really All About:  
Old Pueblo's Children's Education Programs**



Old Pueblo Archaeology Center's Old Pueblo Educational Neighborhood (OPEN) program allows children and adults to learn about archaeology, Indigenous cultures, and the scientific method by participating in the excavation of a simulated Native American archaeological site. The current site, OPEN3, includes full-size replicas of the Arizona Hohokam archaeological culture's pithouses. At OPEN3 Old Pueblo offers opportunities for school groups to learn and practice techniques used to excavate real archaeological sites. In the process, they are exposed to scientific interpretation of how ancient people constructed their houses, what they ate, what they might have believed in, and how they created beauty in their lives. The OPEN program has been recognized as a superior children's archaeology education program in independent evaluations by both archaeologists and professional educators.

**Old Pueblo's OPENOUT (Old Pueblo Educational Neighborhood Outreach) program offers 45- to 60-minute presentations to children by trained archaeology educators. Each presentation brings archaeology and the past alive for children. Presentations available include "Ancient People of Arizona," which provides an overview of the Southwest's Ancestral Pueblo, Mogollon, and Hohokam cultures; "Lifestyle of the Hohokam," which focuses on how people of the ancient Hohokam culture lived; and the "What is an Archaeologist?" presentation that gives children an idea of what archaeologists do and how they learn about people through their work.**

Old Pueblo also offers a Tours for Youth program that features guided visits to real archaeological sites for school classrooms and other organized children's groups. Tucson-area archaeological sites visited in the tours aspect of the OPEN program include the Picture Rocks petroglyphs site (in cooperation with that site's owner, the Picture Rocks Redemptorist Renewal Center), Los Morteros Hohokam Village in Pima County's Los Morteros Conservation Park in Marana, and the Vista del Rio Hohokam site in the City of Tucson's Vista del Rio Cultural Resource Park.

Most of Old Pueblo's revenues are used to continue the OPEN program, including to provide classroom scholarships to help offset the fees Old Pueblo normally has to charge to schools. If you would like to help us continue this program, please consider becoming a member of our *Archaeology Opportunities* supporting organization!

**Archaeology Opportunities Membership/Old Pueblo Archaeology Subscription Application Form**

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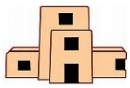
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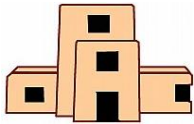
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### **Old Pueblo Archaeology Center's *Archaeology Opportunities* Membership and Discounts Program**

***Archaeology Opportunities*** is a membership program for persons who wish to support Old Pueblo Archaeology Center's education efforts and perhaps even to experience for themselves the thrill of discovery by participating in research. Membership is also a means of getting discounts on the fees Old Pueblo normally charges for publications, education programs, and tours. Members of *Archaeology Opportunities* at the Individual membership level and above are allowed to participate in certain of Old Pueblo's archaeological excavation, survey, and other field research projects, and can assist with studies and reconstruction of pottery and other artifacts in the archaeology laboratory. Membership benefits include a 1-year subscription to the **Old Pueblo Archaeology** electronic quarterly bulletin, opportunities to participate in Old Pueblo's member-assisted field research programs, discounts on publications and archaeology-related items, and invitations and discounts for field trips and other events.

**Old Pueblo Archaeology** is the electronic quarterly bulletin of Old Pueblo Archaeology Center, a 501(c)(3) nonprofit corporation. Questions, comments, and news items can be addressed to the editor Allen Dart, at [info@oldpueblo.org](mailto:info@oldpueblo.org) or 520-798-1201, or by mail to Old Pueblo Archaeology Center, PO Box 40577, Tucson AZ 85717-0577. For more information please visit our web site: [www.oldpueblo.org](http://www.oldpueblo.org). Your *Archaeology Opportunities* membership helps support Old Pueblo's children's education programs.