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“Water Talk”



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From the Project Manager , By Larry Sinclair

With a final settlement of its longstanding water rights dispute, the Gila River Indian Community will control a large quantity of water in one of the most arid regions of the United States—the desert Southwest. It is this region that is dealing with a rapidly expanding population today. The population of the Phoenix metropolitan area, for example, is projected to double to more than six million people in the next 40 years. Projections for Pinal County (Casa Grande, Coolidge, Florence and Maricopa in particular) indicate that its population could increase to nearly one

million people in that same time period.

With this growth, Arizona municipal and industrial water use is expected to nearly double. Surface water available to Arizona—including Colorado River water—is already over apportioned and current ground water use exceeds natural and artificial recharge of underground aquifers by nearly one million acre-feet per year.

When the Community concludes its water settlement, it will have more than 650,000 acre-feet of water available. To put this into perspective, one acre-foot of water is equiva-

lent to 326,000 gallons of water, enough to sustain a family of four people for one year (223 gallons per person per day). At that rate, the Community’s annual amount of settlement water could support 2.6 million people a year. That is equivalent to the combined population of eight valley cities: Phoenix, Mesa, Tempe, Scottsdale, Chandler, Gilbert, Glendale and Peoria.

With a burgeoning population surrounding the Community, it is easy to assume the Gila River Indian Community will nicely profit from its available

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Pima-Maricopa Irrigation Project

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P-MIP's New Education Initiative

The Pima-Maricopa Irrigation Project is committed to the education of Community youth. A demonstration of this commitment is visible in P-MIP's new Education Initiative, which will debut with

the fall 2001 semester. This initiative is designed to teach Community youth about the historic and modern uses of the Community's water resources. It will also help students clearly identify the role P-MIP

plays in the process of delivering water to the Community. It will allow students and Community members to follow the development and construction of the irrigation system as it brings water to Commu-

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**Fish Farm Tour
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O'odham Oidak Demonstration Fish and Prawn Farm

The Chinese have a saying, "Where there is water, there should be fish." Agriculture in central Arizona depends on irrigation. Some years past, a cotton farmer discovered fish in his farm's irrigation canals after the water from a flood had receded. The farmer also discovered that he might get a second crop if he kept the water in the canal and fed the fish.

Water is too expensive for fish alone to carry the cost. However, if balanced with land agriculture, a profitable operation is possible. In desert regions of Arizona, most fish farms use this basic integrated irrigated agriculture/aquaculture concept. The O'odham Oidak Demonstration Fish and Prawn Farm at the Juvenile Detention and Rehabilitation Center (JDRC) in Sacaton is demonstrating how Community members can integrate aquaculture with irrigated agriculture here in the Community. The farm is managed by Ed Mendoza, with P-MIP's Dr. George Brooks serving as technical advisor.

One goal of O'odham Oidak, according to Ed Mendoza, is "to motivate young people to do this kind of work." Dr. Brooks concurs, but adds that another goal is to demonstrate to the Community how it can inexpensively adapt aquaculture into a traditional farming operation. The demonstration site is situated on a 20 acre parcel of land that replicates an allotment. Every aspect of the farm is scalable, meaning it can be expanded or reduced in size, depending on the needs and desires of the landowner(s).

The demonstration farm begins with a lateral entering the "allotment" with water being diverted into the pond. The pond uses the Pens in Earthen Raceway (PERC) method that was developed

by Dr. Brooks especially for farmers in central Arizona. It is a 5 1/2 foot deep rectangular-shaped pond that is lined with a 70 mil plastic covering. Four mesh cages, or net pens, are suspended on parallel strands of steel cable that cross over the pond. Two sets of wires hold the four cages. While Dr. Brooks and Ed Mendoza are determining the exact limits, they believe each cage can accommodate up to 800 pounds of fish, although they currently each hold 200 pounds.

The farm is also testing the most efficient means to supply oxygen to the fish. While all air is pumped to the pond site by two 1/2 horse power regenerative blowers and transported to the water through PVC pipes and garden hoses, the air supply for each cage varies. One may have the air supply directly in the cage, while another has the air supply adjacent to the cage. Still another may be twenty feet from the air supply. Tests are also conducted to determine the maximum volume of air needed to sustain the pond (which will determine the maximum number of fish).

The farm currently stocks 800 pounds of tilapia, a fish native to Africa and known to do well in cages (two fish farms within the Community are currently the largest producers of tilapia in Arizona). Tilapia are an approved species for aquaculture in central Arizona.

At O'odham Oidak, mixed-sexed tilapia are maintained in net pens, minimizing reproduction and maximizing growth. Three thousand fresh water prawns (shrimp) swim freely in the pond eating missed fish food, scales and aquatic insects. "The market for prawns," Dr. Brooks points out, "is tremendous. Millions of pounds are imported every year to the United States." If the O'odham

Oidak Demonstration Farm convinces the Community of the merits of aquaculture, the Community can expect to benefit from this "free" crop. The fish themselves can be marketed or eaten by the Community. As Ed Mendoza points out, aquaculture is ultimately designed to "get a hold of Community health issues such as diabetes."

Water enters the farm canal through a head gate and is diverted into the pond through a gravity flow valve. Water exits through a weir on the opposite end of the pond, allowing new water to be cycled in every four days. When the water exits the pond it is laden with natural fertilizers and is used downstream to irrigate a variety of traditional and non-traditional crops grown at the farm.

The entire operation at the demonstration farm is showing how one person can successfully farm an allotment and cultivate a harvest of fish and prawns at minimal cost. Everything at the farm has been built using the "Home Depot method," meaning that most supplies are easily and inexpensively available.

As with any new land farm, a new fish farm is unique. Thus, management strategies are continually being refined at O'odham Oidak. Students from JDRC and Sacaton Middle School's GEAR-UP Program are involved in assisting with the management, care for and maintenance of the farm. Equally important, they are gaining hands-on math and science skills. They are also learning to live a part of their cultural heritage. They continue to help customize and refine the farm. "We hope to have all the bugs worked out within a year," Dr. Brooks notes. "Then we believe our system will be ready and adaptable to use throughout the Community."

Project Manager, *Continued*

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land and water resources by marketing its agricultural products to those valley markets. Some mistakenly believe that if the Pima-Maricopa Irrigation Project builds the necessary canals to distribute this water to Community lands then everything will work out. Building canals, however, is the easy part.

To benefit from this water, the Community must put it to beneficial use. That means the water must actually be used for a specific, beneficial purpose. While one could argue the legal issues of water law, the surest and most effective way to ensure that the settlement waters will be available for future generations of Community members is to fully utilize all available water. If the Community does not divert and actually use its allocation of water, someone else will. There are some 25 million people in the lower Colorado River Basin (Arizona, Nevada and California) who are hoping that the Community fails to put its fair share of the water to beneficial use; some are counting on the Community to fail.

Uncontrolled development within the Community, including the construction of scattered housing, is restricting current land use—especially agriculture—and potential future development. In turn, this could preclude the Community from putting all of its hard-earned water resources to beneficial use. If large parcels of land cannot be developed for agricultural purposes, then large quantities of Community settlement water may not be beneficially used. In turn, the protection

of water resources for future generations is jeopardized through lack of use.

Scattered housing, along with the creation of additional Pesticide Management Areas (PMAs), could actually harm the Community in the long run—unless it devises new land-use planning criteria to govern the rapid expansion of housing and PMAs within the Community. While P-MIP (and other tribal programs) respects the rights of landowners to maximize the use of their land for homesites or other purposes, these rights should be balanced with the rights of neighboring landowners. They should also be evaluated within the context of the overall good of the Community.

At some point, the Community may choose to lease some of its water to off reservation users. Certainly some of the settlement water will be used within the Community for non-agricultural purposes. But to fully utilize the water resources will require extensive agricultural development within the Community. If uncontrolled development continues, it may seriously limit the Community's beneficial use of its hard-fought settlement waters. A long-standing pillar of water law is "use it or lose it." If the Community does not put its water to beneficial use, someone else will.

Agricultural development sometimes frightens people, especially those who are under the mistaken notion that all Community members must once again become farmers if the Community is to fully and beneficially use its water resources. This is neither realistic nor desirable. Certainly agriculture plays a role in the cultural heritage

of the Community. But agriculture today needs fewer workers than in past years. Many Community members may choose to simply grow a few acres of fruits and vegetables, or perhaps just enjoy a small garden. While these endeavors require the use of water resources, by themselves they will not allow full utilization of the Community's settlement waters. Large-scale agricultural development will be necessary for this to occur.

It is also important that the Community recognize that agriculture does not have to be permanent. While commercial agriculture will allow for the immediate use of settlement waters, once the water is protected by putting it to beneficial use then the Community—at its discretion and own choosing—can decide to use it for other purposes. With an assured supply of water for future generations, the Community may devise other, more appropriate uses for the water. Agricultural development, however, remains the key to putting the Community's water to beneficial use today.

Conversion Table

Water

1 acre foot =	43,560 cubic feet
1 acre foot =	325,829 gallons
1 cubic foot =	7.48 gallons

Land

1 acre	= 43,560 square feet
1 square mile	= 640 acres
640 acres	= 1 section
36 sections	= 1 township

P-MIP and Community School Children Tour the O’odham



P-MIP’s Dr. George Brooks, center, explains to P-MIP staff and students from Sacaton Middle School how the O’odham Oidak Demonstration Fish Farm works.



Dr. Brooks and Farm Manager Ed Mendoza demonstrate how the fish cages can be easily pulled in and the fish harvested. By maintaining different sized fish in each cage, the fish experience reduced stress and grow to a larger size. The hoses in the foreground provide the necessary air supply to the ponds.

Right: The O’odham Oidak Demonstration Fish Farm currently stocks tilapia, a fish known to do well in the heat and grow to market size rapidly. They are fed 3% of their body weight daily.



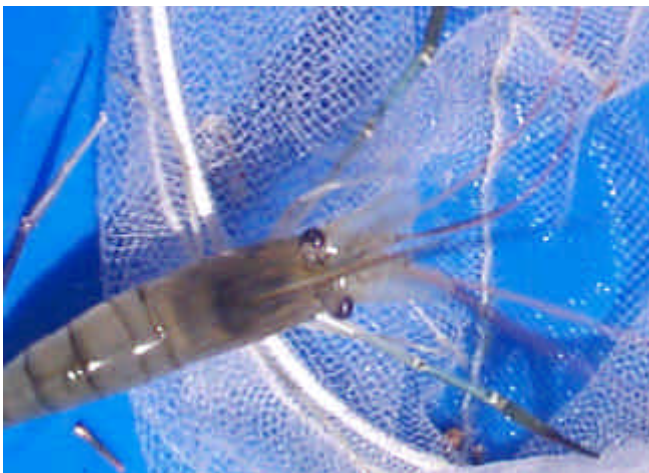
At left, water enters the O’odham Oidak Demonstration Fish Farm through a distribution lateral. The gate diverts the water into the pond. On the opposite end, pond water filled with natural fertilizers exits through a weir back into the distribution lateral. It is then applied on the fields. The demonstration farm uses no pesticides or fertilizers other than what is provided naturally in the water.

Oidak Demonstration Fish Farm at the JDRC

Below: Two 1/2 hp motors pump air into the pond, providing the necessary air supply. The entire demonstration farm is premised on the "Home Depot method." As Dr. Brooks points out, the "Home Depot method" simply means that almost everything needed to construct and maintain a fish pond can be purchased at Home Depot or a similar do-it-yourself store.



Above: Water from the fish pond is cycled back into the distribution laterals and can be applied on any agricultural field. Adding a fish pond to a Community member's field requires minimal expense and maintenance and is a doubly efficient use of the water. The current O'odham Oidak Demonstration Fish Farm sits on 20 acres and replicates a typical allotment within the Community. An individual or a group of people could put in one or more ponds on their lands.



Above: While tilapia are grown in mesh cages in the pond, three thousand fresh water prawns (or shrimp) swim freely in the pond, feeding on missed fish food, decayed fish matter and other natural foods. They are not fed. This is in effect a "free" crop. Arizona currently imports millions of pounds of shrimp annually. Community members could potentially tap into this extremely lucrative market.



Above: Dr. Brooks conducts numerous experiments at the demonstration fish farm. Here he is weighing shrimp with GEAR-UP students from Sacaton Middle School. The shrimp are then placed in special containers and will be weighed and examined periodically to determine their optimal growing conditions.

Schedule of Events

- **July 3**— Council meets @ 9:00 A.M.
- **July 13**— Agricultural Development Steering Committee Meeting 11:30 to 2:00 @ P-MIP Engineering Conference Room
- **July 18**— Council meets @ 9:00 A.M.



July 2001

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3 Council meets @ 9:00 A.M.	4 Independence Day Holiday	5	6	7
8	9	10	11	12	13 AG Development mtg. 11:30-2:00	14
15	16	17	18 Council meets @ 9:00 A.M.	19	20	21
22	23	24	25	26	27	28
29	30	31				

Education Initiative, Continued

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nity fields.

The Education Initiative will kick off this summer with five field tours for all schools that serve the Community. These tours will be all-day events (8:00 A.M. to 4:00 P.M.) and provide teachers, support staff, administrators and school board members with a first-hand view of the entire P-MIP system. The tours will begin off Community lands east of Coolidge and will move west along the main stem system in District 1 all the way to District 7. It is targeting all schools that serve the Gila River Indian Community.

The Initiative is made up of a number of components and is envisioned as a multi-year project.

As part of this Initiative, P-MIP has developed a new website (www.gilariver.com). It includes twelve links to highlight all of the activities of P-MIP, including Cultural Resources, Agriculture Outreach, Photo Documentary, Maps, Newsletters, Education, History, and current Projects. P-MIP will also make available to schools a "Speaker's Bureau," consisting of P-MIP employees who are willing to speak to Community school children. P-MIP will also make teacher resources (such as maps) available for classroom use.

Beginning with the August 3, 2001, edition of the Gila River Indian News (GRIN), P-MIP will provide a lesson plan, reading and activity that teachers will be able to

use in the class to teach children about the importance of water to the Community, both historically and today. The theme for 2001-2002 will be "A Crisis on the Gila River." Twenty lessons examining the historic Akimel O'otham and Pee Posh uses of the Gila River and its tributaries and the causal factors behind the loss of the waters of the river system will be included in a special 2-page pullout section of the GRIN.

Future development will include educational material for the primary elementary grades (a series of coloring/activity books) and a fully integrated K-12 curriculum. For further information, contact Dave DeJong at (520) 562-6742.



So What's an Annual Funding Agreement?

Since P-MIP was created by the Community in 1995, it has been funded through what is called an annual funding agreement (AFA). At the same time, the Community has compacted with the US Department of the Interior to operate a number of former federal programs.

In 1988, Congress amended the Indian Self-Determination Act and authorized a 5-year Tribal Self-Governance Demonstration Project (Title IV). Up to twenty tribes were selected to participate. In 1994, this provision became permanent and, by 1999, there were more than 200 tribes or tribal consortia that had joined into self-governance compacts. This represented 67 AFAs with BIA plus three with non-BIA bureaus. The Gila River Indian Community is a self-governance tribe and P-MIP operates under one of the three AFAs with a non-BIA

bureau, the Bureau of Reclamation (BOR).

So what is the difference between a self-governance compact and an annual funding agreement? First, self-governance compacts are documents that affirm the government-to-government political relationship between federally recognized Indian nations and the United States Government. They are authorized by the Indian Self-Determination and Education Assistance Act, as amended. Second, they serve as "umbrellas" for Indian nations or tribal groups wishing to control their own programs. Compacts are agreements with the Secretary of the Interior that are on-going and spell out the general obligations and responsibilities of each contracting party. Their purpose is to transfer to participating tribes the control of, funding for

and decision making concerning certain federal programs. Typically, parts of a self-governance compact apply to all bureaus within the Interior Department.

An annual funding agreement, on the other hand, is with a tribal program and is a funding agreement that must be renewed annually. It applies to a specific bureau and outlines specific functions and responsibilities. The AFA between P-MIP and BOR, for example, outlines the responsibilities and obligations of P-MIP in constructing the irrigation project on behalf of the Community.

Self-governance compacts, then, are broad umbrella agreements with Indian nations and tribal groups while annual funding agreements are for specific programs that must be renewed each year.

P-MIP Job Openings

The following job vacancies are available at P-MIP. Closing date, if applicable, is listed in parenthesis.

- Archaeologist III (open until filled)
- Archaeological Survey Technician (open until filled)
- Database Coordinator (open until filled)
- Assistant MIS Manager (closes 7-31)
- Assistant Public Involvement Specialist (closes 7-31)

If you or someone you know is interested in any of these positions, contact the Gila River Indian Community Human Resources Department or stop in and visit with Gracie Miles at the P-MIP Human Resources Office. She can be reached by calling 562-6715.

Useful Telephone Numbers

<u>Department</u>	<u>Number</u>
P-MIP Public Involvement	562-6718
Department of Land and Water Resources	562-3301
Office of Water Rights	796-1344
Department of Environmental Quality	562-2234
Department of Public Works	562-3343
Executive Ke	562-6000
Council Ke	562-3311
District 1 Service Center	215-4471
District 2 Service Center	562-1807
District 3 Service Center	562-3334
District 4 Service Center	418-3661
District 5 Service Center	315-3441
District 6 Service Center	550-3805
District 7 Service Center	430-4780

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Mission

"To develop a distribution system, agricultural lands and riparian habitat areas for beneficial use of water resources."

We're on the Net:
www.gilariver.com



Agricultural Development Steering Committee Update

On Thursday, June 14, P-MIP hosted the third in a continuing series of Agricultural Development Steering Committee meetings. The Agricultural Development Steering Committee brings together Community members and farmers, tribal departmental representatives, Gila River Farms personnel and P-MIP staff to develop an agricultural development plan.

A second draft of a comprehensive Agricultural Development Plan was reviewed and comments solicited. The Committee recognizes that the Community has a unique window of opportunity lying before it: an imminent and large quantity of settlement water. This water will require agricultural development to fully and beneficially use and protect

for future generations.

The revised plan incorporated discussion from the previous draft. What the Committee seeks to answer now is how the Community can best support existing and new agriculture. A number of means were discussed, including the creation of a new (or an addition to an existing) office to promote all facets of agriculture.

The Committee is also analyzing existing land use plans to determine how they might better promote economic—and agricultural—development. The Committee recognizes there are multiple social, cultural, recreational and economic impacts associated with development, and it seeks to promote all of these within a general agricultural development plan.

The Committee also seeks to minimize the constraints on existing and new agriculture. In the past decade the Community has witnessed substantial tracts of agricultural land go out of production. As land goes out of production, rehabilitation costs to bring it back into production are increased. As additional homes are put up throughout the Community, more Pesticide Management Areas may be created and more land may go out of production. Building—or rehabilitating—canals will not reverse this trend.

The Committee is submitting a report to Council this month. Its next scheduled meeting is Friday, July 13, from 11:30-2:00. At that time it will begin formulating a proposal to Council to implement the Agricultural Development Plan.