

Sunset/ New Mexico New Model Pipeline Application

Submitted by Sunset/New Model Canals

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Tier 2 Criteria: Sunset and New Mexico New Model Canals

1. Piping both the Sunset and New Mexico New Model Canals would extend the water supply through conservation.
 - a. The Gila River runs through the Virden Valley with the Sunset Canal on North side and the New Mexico New Model on the South side. The Sunset Canal point of diversion (pod), where the pipeline will start and divert the Gila River Water into the canal, legal description is Township 19S Range 21W Section 21. This is at the top of the Virden Valley and runs approximately 9 miles to the New Mexico/Arizona state line. Approximately 1 mile is BLM with the rest being on private lands. The New Mexico New Model (hereafter referred to as New Model) is diverted downstream and the legal description is Township 19S Range 21W Section 11. NM New Model is approximately 5 miles of canal running on private lands. Each canal company has right-of-way access all along the canal. Attached is **Exhibit A**, which is a map, showing both canals and the orange arrow at each indicates their diversion points.
 - b. The source of water to be put to use is surface river water out of the Gila River. According to the Gila Water Decree of 1935, each landowner who owns a surface water right is entitled to receive 6 acre/feet of water per acre of water right (1. **Page 12**). Neither canal own water rights; it is their sole job to distribute said water to each user to the best of their ability. The installation of pipe will only cover the 2,236 acres of the Sunset and the 315.24 acres of the NM New Model in New Mexico, even though the Sunset Canal services 316 acres in Arizona and NM New Model has 1,728. And though the primary benefit is for Canal users in NM the efficiency achieved will ensure that AZ users receive their allotted water.
 - c. There are several ways in which piping both canals will conserve the needed water supply. Over 75% of surface water irrigation acreage using Gila River water in New Mexico is in the Virden Valley. (2. **AWSA Proposal Presentation**)

Need for water conservation:

- Currently each canal has to divert more water than is actually used for irrigation due to a “conveyance loss” of water in the canal from leaks, evaporation, soaking, vegetation, and debris, etc. Approximately 20% of water that is diverted from the river into the canal is a “conveyance loss” into the canal. To quantify that; a full “allocation” diverted out of the canal is approximately 30 cubic/feet of water per second (cfs) and a 20% loss of that would be 5 cubic/feet of water lost per second. In 2010, the Sunset Canal diverted 9,233 acre/feet of water; a 20% loss would be 1,846 acre/feet. The New Model Canal diverted 5,508 acre/feet of water; a 20% loss would be 1,100 acre/feet. This conveyance loss only affects canal users; this loss does soak into the canal lining and return to the watershed. However, this amount of water cannot be used for irrigation but is charged to the canal systems, meaning it counts against the 6 acre/feet allotment. Currently there is no system to account for return flow to the river and although each canal has explored the need to be credited for return flow the Gila Water Commission will not support it. This makes any effort to conserve that water loss and to utilize all water diverted extremely important.

Conservation:

- Placing a pipeline in each canal would eliminate the need to divert more water than is being used because there would be no need to account for water “conveyance loss” into the canal. All water diverted could be used, therefore only requiring the exact amount to be diverted leaving the extra in the river. To quantify that; approximately 2,950 acre/feet of water is conserved. Using 2009 numbers there would have been 2,040 acre/feet of water conserved. Differences in numbers would account for the amount of water in the River each year.

Conservation of water can be achieved by:

- Each turnout in the canal system will be equipped with a Plug Valve that when shut is guaranteed to not leak any water for 50 years. Weather such as rain and wind erode canal banks and cause leaks allowing for water loss and causing costly repairs. Rainstorms also leave a lot of gravel and mud in the canal that has to be cleaned out. The pipeline is weather resistant eliminating leakage and cutting down on maintenance.
 - For water flow the canal system has 10 corrugated steel siphons that were put in around the 1920’s and are reaching the point where they need some big and costly repairs to stop water loss. This pipeline will be pressurized allowing those 10 siphons to be condensed to just 1. These siphons are continually plugged up with debris that take a lot of time and effort to clean and clear. Condensing it down to one will eliminate a lot of work and money spent.
 - Virden has a history of hot/dry months before the monsoons. This combined with the open ditch system allows for constant evaporation. A closed pipeline system will eliminate all evaporation loss suffered.
 - Most of the Sunset Canal is a complete dirt bottom canal that is lined on both sides by water using vegetation. Cotton woods, salt cedars, phreatophytes, and grasses are significant water users. Soaking and vegetative use can account for much of the water loss. A pipeline will allow for no water soaking and control unwanted vegetation, making all the water carried in the pipeline usable.
 - High desert winds and an abundance of Russians thistles, more commonly known as tumbleweeds, are a constant problem. Each canal spends time and money to keep the ditch clear and unobstructed; i.e. the siphons that get plugged. Again, a pipeline will eliminate this time consuming and costly activity.
 - During heavy rains the canal acts as an overflow drain and is forced to dump water that is metered against us. Having each turnout on the pipeline metered can eliminate this from happening.
 - A pipeline will also extend the water supply by allowing users to explore other irrigation methods, which are extremely water friendly such as drip tape and pivot sprinkler systems.
- d. Placing each canal in pipeline will make sure that each canal can fully comply with AWSA and CUFA regulations. New Mexico is required to allow X amount of water to pass into AZ. The meters installed will allow

for close monitoring and water that would not need to be diverted into the canal could be used to fulfill this demand. And when any “return flow” to the river is recognized and credited the monitors will be able to give accurate numbers. This proposal will not be creating any new water to account for and will not be using any more than we are allotted meeting the AWSA and CUFA standards.

2. Technical Viability

- a. (1) ADS Design Pro specifically deals in the HDPE pipe that will be used. Stating that this is the best pipe to use for placing each ditch in a pipeline. It is durable, watertight performance, great flow capacity, etc. It is easily installed and very flexible.
- b. (1) Is a similar project study done in the Walla Walla Irrigation District. Here they had a dirt lined ditch, which they converted to a pipeline. This project showed previous conveyance losses are now conserved in the mainstream of the river, they went from 9.6 cfs diverted to 6 cfs diverted giving them a savings of 3.6 cfs.
 (2) Is an official Natural Resource Service report on Pipeline use for irrigation water conveyance. A picture of a flow chart shows the positives and negatives for pipeline. It shows a decrease in evaporation loss, erosion, and leaching, etc. for positives. And as previously stated there is also a slight decrease in biodiversity and wildlife habitat and artificial wetlands. However, water availability, net return, agribusiness, and economic benefit to farmer, aquatic health for humans and animals are all listed as positives.

3. Estimated Costs

- a. Planning, construction, and administration. Placing both canals in a pipeline is a very costly project. Without outside funding this project could not be attempted. In a Gila San Francisco Water Commission meeting (GSFWC) this project was proposed specifically for the AWSA proposals, they estimated that the cost would be around 7.5 million. (2. AWSA Proposal Presentation) As part of budget planning Hunter Contracting Company drew up a sample bid as a reference. This sample bid showed that the cost for the pipe alone would be around 7 million. Therefore we have used this sample bid to work up our Budget. Once we are approved for the grant we will go through the actual bidding process to choose the best contractor for the project.

<u>Item</u>	<u>Itemized Cost</u>	<u>Quantity</u>	<u>Total</u>	<u>Grant/Canal Co.</u>
<u>Planning</u>				
Grant Application				
Meetings	\$1,800.00			Canal Co.
Grant Writing	\$2,000.00			Canal Co.
			\$3,800.00	
<u>Construction</u>	See sample bid			Grant
(Sunset Canal)				
Purchase Pipe	\$87.00 (per foot)	63,360 feet	\$5,512,320.00	
Purchase Gravel	\$8.50 (ton)	110,000 ton	\$935,000.00	

Purchase Flow Meters	\$4,878.00 each	60.00	\$292,680.00	
Purchase Valves	\$30,000 each	13.00	\$390,000.00	
Drop Inlets	\$1,124.91 each	57.00	\$64,119.87	
Installation and Clean Up			\$2,169,669.00	
			\$9,363,788.87	
(New Mexico New Model)				
Purchase Pipe	\$87.00 (per foot)	26400.00	\$2,296,800.00	
Purchase Gravel	\$8.50 (ton)	38,000 ton	\$323,000.00	
Installation and Clean Up			\$1,261,656.00	
			\$3,881,456.00	
Fixed Cost (I.e. - Permits, signs, insurance, etc.)			\$4,754,755.13	
			\$18,000,000.00	
<u>Administration</u>	\$3,072.00		\$3,072.00	Canal Co.
<u>TOTAL</u>			<u>\$18,006,872.00</u>	

These figures have to keep in mind that due to the Virden Valley location and its extremely rural nature; companies, equipment and supplies needed for such a project have to come from long distances to complete this job.

- b. Most additional or on-going costs would be greatly reduced and the Canal companies would fund any incurred. With open canal systems the maintenance was time consuming and costly, last year spending approximately \$48,265. With a piped canal maintenance would decrease dramatically. However, a Canal employee will still be employed to schedule water delivery and check for leaks, clean flush gates, clean fish screens, etc. Beyond salary and low maintenance on-going costs are minimal.
- c. This project does not directly affect the Gila River or its flow causing little if any environmental impact to the water flow. Using fish screens will increase some aquatic life to the river. New Mexico is spending a lot of time and money to eradicate the phreatophytes along rivers and canals, a pipeline will eliminate their water supply thus giving NM about 13 miles phreatophyte free. A professional construction company will be hired and the County will be involved to insure that all environmental laws and organizations such as NEPA will be followed. Such costs and requirements cannot be quantified at this time because this is the first project like this to be done in the Virden area and due to its uniqueness it will be the pioneer for other projects to follow. However, the budget has some cushion to cover any costs that should arise in order to keep in compliance with all environmental codes.

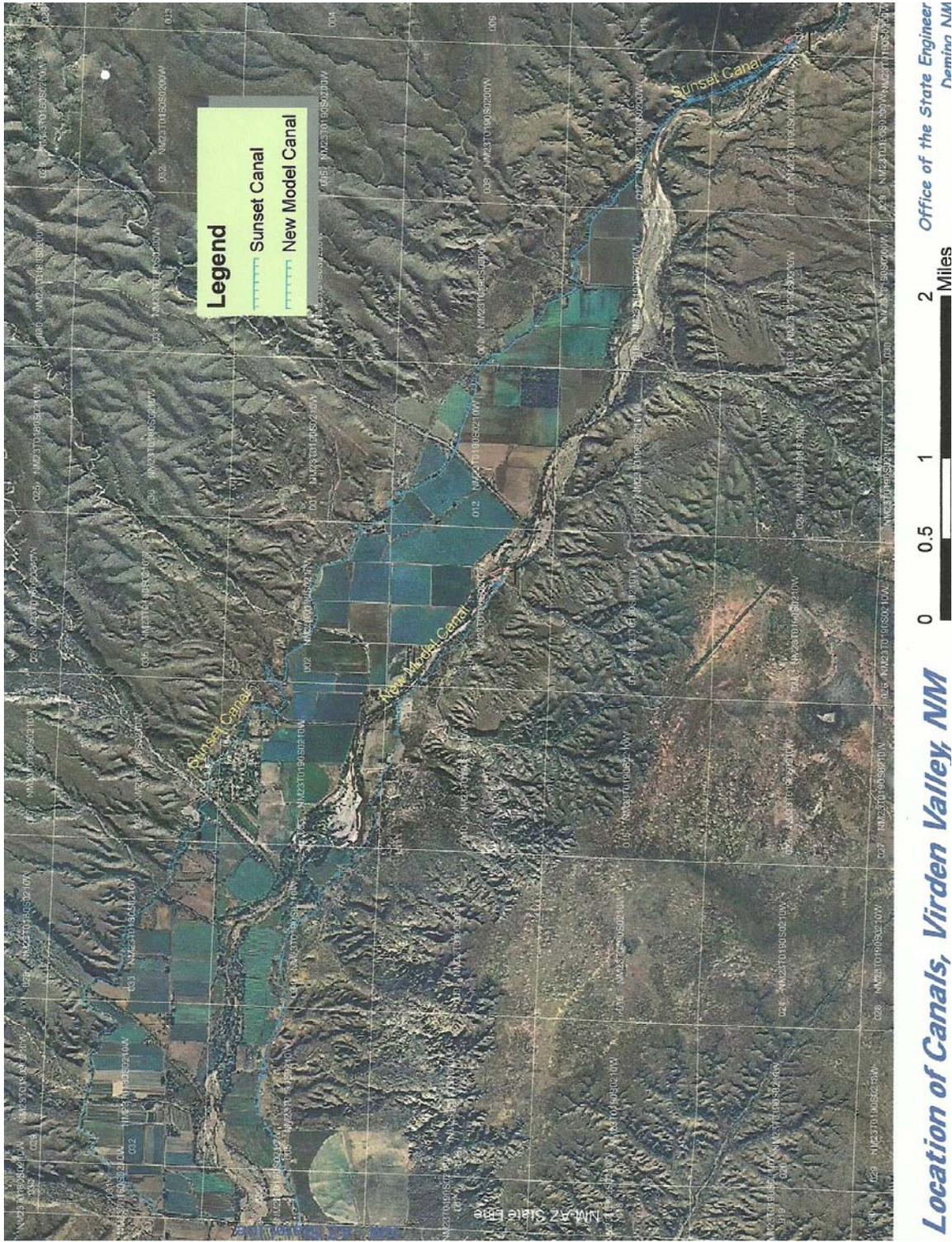
- d. This proposal is seeking funding from the AWSA to complete the Pipeline Project in the amount of \$18,000,000.00. Due to the enormity of the cost, a grant such as this would be the only way a project would be completed. After the pipeline is installed each canal company has a secure source of funding from previous settlements to cover ongoing costs. This will ensure the completion and success of this project.
4. Impacts both Adverse and Beneficial
- a. Due to leaks and seepage some vegetation such as cotton wood trees, salt cedars, and mesquites grow along the canal banks. This unwanted vegetations is being controlled by burning and chemical application.
- Some vegetation along the canal beds cannot be sprayed with chemical due to the types of crops grown using this water. So a Canal employee has to manually burn the weeds and brush back the unwanted vegetation. Safety is a major concern that would be eliminated with a pipeline.
 - Some vegetation is managed with the use of approved chemicals. Although the chemicals are all approved a pipeline would reduce the amount needed to maintain each canal.
- b. There would be minimal environmental impacts to both wildlife and recreation but it would be very beneficial in terms of safety and preservation.
- Although some immediate habitat along the canal would suffer, the Gila River is close enough to service all large and small game animals that used to use the open canal system to water. Many producers are looking at installing some run-off storage for re-irrigation, which could take the place for this wildlife habitat. Some listed wildlife are present in our area such as the Gila Monster, but none have been reported around the Canal and enclosing it will ensure that no animals are drown.
 - Placing fish screens at the head of the pipeline will divert fish and aquatic animals from entering the canal and allow them to stay in the river. Currently any fish that enter the canal cannot return to the river and cannot survive in the canal since it does not run all the time. At this time the NM Fish and Wildlife are trying to introduce the Virden area as critical habitat for the Spikedace and Loach minnow, however because the Gila River does not run all year long it truly is not suitable for critical habitat. However, these fish screens will also ensure that should a Spikedace or Loach minnow show up down stream it will remain in the river and not sucked into the Canal.
 - Virden is primarily a desert-based region, most of the vegetation will become grasses and bushes that can survive on what rain the region receives. Again, run-off ponds that producers install would help mitigate some loss of vegetation.
- c. After implementation adverse environmental impacts would be minimal if at all. Beneficial impacts would be significant.
- Virden Valley is comprised of various agricultural entities. There are over 2,333 acres serviced by both the Sunset and New Mexico New Model. The agricultural production grown on these acres provides the livelihood for most of the valley. Cotton, Corn, Silage, Milo, Chile, Fruits, Nut Trees, Alfalfa, Grasses, and Cattle are grown up and down the Gila River and with that being their only source for water it is extremely important to conserve and use that water beneficially. A pressurized pipeline will allow users to better manage their water use and implement other water

conserving practices for irrigation such as drip tape and pivot sprinklers. Impact to the underground aquifer will be minimal at first, irrigation of crops will continue to place water back into the ground, and then will increase the total amount as water is managed better.

- While placing the canal in a pipeline would adversely affect some recreation it would greatly benefit public safety. Each canal currently runs through rural communities along private property where many families with small children reside. With the open canal system there is no way to limit or control public access. The canal is currently piped behind the Village of Virden because of this concern and it has proven wise. There were reported accidents where people, adults and children, had fallen in with the open canal and since it has been piped there haven't been any. Crawdad fishing and swimming are current recreation activities around the canal; however due to siphons all along the canal that pull the water there is a real danger in allowing such activities to continue. Putting a pipeline eliminates the openness and allows Canal Companies to control access and increase safety.
 - Having the ability to divert water in a controlled manner with the use of a pipeline will allow for better fire control and flood relief.
- d. There are established water rights in this valley as early as the 1880's, making some acres a "priority water user". "Priority water user" means that they are entitled to the available water first. The purpose of the Sunset and New Model canals is to deliver Gila River water to users for irrigation and agricultural use. Each canal has an obligation to make sure that each user's water is available to them when there is sufficient water in the River. Since the 1880's acreage has expanded and the job of servicing the needs of the canal has increased. Placing a pipeline will ensure that each canal can continue it's purpose in providing irrigation water, only now it would be in a much more beneficial and conservative manner. Each canal currently complies with all state and federal laws and regulations, placing the canals in a pipeline will not affect this compliance.
5. Economic or Cost Analysis
- a. As previously stated, water is vital to the local economy in the Virden Valley. Virden Valley is situated directly at the AZ/NM state line and the Gila River runs right through it. Therefore, NM and AZ have had to agree to some water regulations. The Gila River also services the Gila River Indian Community and San Carlos Indian tribes further complicating the water issues. Because of these factors Acreage in the Virden Valley is restricted to only allow 6 acre-feet of water to be used on an acre. Thus, a 20% water loss, or water which cannot be used for irrigation or consumption, is significant. A 20% loss would calculate to roughly 5 cubic/feet per second of water lost. Reclaiming that 20% loss could benefit everyone using the canal systems. Using a pressurized pipeline also allows for the placement of meters at each turnout to better monitor water use. Cost of electricity and administration increases each year, with a pressurized pipeline businesses can implement new irrigation practices that not only conserve water but also are cost beneficial. A pipeline will also allow the water to be diverted in a more controlled manner making it available for fire protection and flood relief.
- b. Initial cost to install and place the proper head gates, meters, and outlets will be significant. However, the pipe that will be used is regulation style pipe that is durable, weather resistant, and has a long life. This will lower cost for

- maintenance and repair as well as administration of water for each canal for approximately 100 years.
- c. Although the Sunset and New Model canal companies will be contributing significant dollars to construct this project; considering each canal's secure funding there should be little cost put on individual users as the project is installed and completed.
 6. This proposal is based on caring for the needs of the Virden Valley in New Mexico.
 - a. The sole purpose for the canal system is to fulfill the obligation each Canal Company has to provide irrigation water to its users. A pipeline will only increase the Canal Companies ability to do this task more efficiently, safely, and conservatively.
 - b. Each canal company strives to meet the current needs of it's users, however due to previously mentioned challenges such as leaking head gates, 50 year-old siphons, and weather damages some needs are unmet. A pipeline will allow for better water delivery in a more timely and managed fashion. There will also be fewer canal shutdowns for maintenance purposes. The Sunset and New Model canals are confident that any increase in demand for water can be addressed with the pipeline.
 - c. Flood control would be much easier with a pipeline. Instead of having an open canal where water can break through the dikes and run everywhere, water could then be diverted in an orderly fashion to designated areas.
 - d. Fire protection and prevention are addressed using the pressurized system with gated turnouts making water readily available.
 - e. A pipeline will cut out some recreation but will definitely increase the safety of all who live around the Canal systems. This increased safety comes from enclosing the canal system rather than the open ditch and controlling public access.
 - f. With fish screens in place wildlife will be kept in the Gila River. Conservation of water will increase the amount in the underground aquifer and Gila River. A reduction of chemical use for vegetation management that could potentially increase the quality of water.
 - g. A pipeline will greatly benefit each user by allowing all water diverted to be put to beneficial use. It will allow producers to implement water and cost saving irrigation practices. Using the metered turnouts will allow better recording of water use and allow producers to visually calculate water consumption.
 7. Supporting the Application (County and Conservation District are still working up letters of support)
 - Hunter Contracting
 - Gila/San Francisco Water Commission
 8. This proposal is for the Virden Valley and will only affect Hidalgo County directly. However, indirectly it could increase the amount of water in the aquifer and river thus affecting those down river in Arizona. It can also serve as an example to other canal systems for conservation practices.
 9. Placing the canals in a pipeline will certainly allow agricultural and ranching uses to increase by allowing them to do more with the water available to them. Municipally the Virden Valley could increase because of the increase to public safety. Many do not wish to build near the open canal for safety reasons, the open canal and potential drowning danger and wildlife such as snakes. With a closed canal system these potential dangers are eliminated making the locations along the canal more appealing for economic development.

Exhibit A. Map of Canals and Virden Valley



References

1. Gila Water Decree

Gila Water/Globe Equity Decree of 1935

Excerpt from:

Page 12

V

That each of the parties named in the Schedule of Rights and Priorities set out below and made part hereof (hereinafter for convenience often referred to as the Schedule or Priority Schedule), in proper person or in the representative capacity indicated, has acquired and owns the right or rights accredited to him in said Schedule; that the Gila River is the stream from which the water called for under each of said rights is and may be diverted; that the point of such diversion, the name or description of the dam, canal, or other appliance through which said diversion is accomplished and said waters are carried to the lands through the irrigation of which said right has been acquired, together with--as to individual defendants, and plaintiff where the appropriation rights of others have been conveyed to it as hereinafter further described--the description of said lands and the number of irrigable acres thereof in each quarter or quarter-quarter section, or lot or lots as the case may be, to which said right applies, are as stated in said schedule opposite the name of each of said parties in appropriately designated columns thereof; that the priority date of each of said rights is as stated for each owner in the column so designated, and such owner is entitled thereunder and as of the date of said priority to divert from the natural flow of the stream, at the point of diversion so designated and to carry and convey to, and apply to beneficial use upon, said lands for the irrigation thereof, during each irrigation season, a total amount of water not exceeding 6 acre feet per each acre of said lands, which said amount shall not be diverted from the stream at any time during said season at a greater rate than one-eightieth (1/80) of a cubic foot per second for each acre of said lands, except as hereinafter provided; that the right of direct diversion from the natural flow of the stream for each of said parties, therefore, may be readily calculated, for the area then being irrigated, as follows:

No. of acres times 6 = Total allowable diversion in acre-feet during each irrigation season;

2. Gila/San Francisco Water Commission

www.ose.state.nm.us/PDF/ISC/.../AWSA-ProjectProposal-92110.pdf

**AWSA PROPOSAL PRESENTATION
FOR HIDALGO COUNTY**

GSFWC MEETING

September 21, 2010

This proposal is a collection of ideas from Hidalgo County presented to the Gila/San Francisco Water Commission (GSFWC) to be considered as they move toward making recommendations to the New Mexico Interstate Stream Commission regarding use of the Arizona Water Settlements Act (AWSA) money and water awarded to New Mexico in the 2004 legislation.

1. Agricultural irrigation.

use of a portion of the additional water should be set aside for agricultural uses in the Virden Valley.

The water can be diverted in the existing diversion dam/canal systems in the valley.

There are two canals, one on each side of the river.

Over 75% of surface water irrigation acreage using Gila River water in New Mexico is in the Virden Valley.

One canal alone, Sunset, serves about 65%, 2432 acres of the 3733.8 total acres, of all surface water irrigation along the river.

Of the AWSA water that is used for agricultural purposes a proportional amount (75%) should be set aside for Virden Valley irrigators, providing they want to contract for it.

2. Canal lining.

A portion of the AWSA money should be set aside for the purpose of lining the two canals in the Virden Valley that serve 75% of the surface water irrigated acreage on the Gila river.

The Sunset Canal is approximately 9 miles long in New Mexico. As previously stated, it serves about 65% of all surface water irrigated acreage on the Gila River and is almost entirely unlined.

The New Model Canal is about 5 miles long and has old, dilapidated lining along most of it.

Lining or piping of both canals will cost somewhere around 7.5 million dollars.

3. Off stream storage.

Although this diversion project is not in Hidalgo County, it would serve Hidalgo as well as Grant County residents.

We propose to divert water above Gila near the Gila Wilderness, convey it by gravity using either open canal or pipeline to a point next to the river at the mouth of Schoolhouse Canyon which is just west of Mangas Creek. At that point a dam would be constructed and water stored in Schoolhouse Canyon.

There is approximately 250 ft. of fall between the diversion and the bottom of the dam. The canal or pipeline will be about 15.5 miles long.

This diversion would provide for some flood protection.

Gila Valley irrigators could take water as it flows through the canal/pipe.

Gravity flow requires no energy and will accept dirty water that pumping does not provide for.

Water can be let out to downstream users as needed and the river may be kept from going dry in reaches that suffer from drying up almost annually.

A canal or pipeline going through the Cliff/Gila valley could provide for additional fire protection.

If it is found that the Schoolhouse Canyon project is not sufficient, a similar off-stream storage may be considered with a diversion near Redrock and storage on Blue Creek.

4. Mainstream dam.

This option, though controversial, may be the best way of diverting and storing AWSA water as well as providing for other needs. Our proposal would be to construct a dam in the vicinity of the Lower Box.

This dam may have less of an environmental impact than one farther up the river.

It would provide for a great deal of flood protection to residents below the dam as well as public roads and bridges and private property.

It would provide for a constant, dependable supply of water for 75% of the water users along the Gila River.

It would be a little over 100 miles from the nearest large dam on the river.

Section 2a.

(1) <http://www.ads-pipe.com/en/product.asp>

Low Head Irrigation

Known for design innovation, ADS meets the growing need for water, transmission and irrigation in arid regions with a cost-effective solution: N-12 Low Head Pipe.

Major savings on installation costs ADS Low Head HDPE pipe offers significant installed cost savings due to:

CUSTOMER SUPPORT

ADS N-12 Low Head Corrugated Pipe - the innovative solution to your Low Head irrigation needs

ADS Low Head Pipe, made of High Density Polyethylene (HDPE), was specifically designed to meet the increasing challenges of water irrigation. It provides structural strength, joint integrity, flow capacity, flexibility and economy to serve the important needs of this market. It can be utilized for ditch enclosures for irrigation, irrigation pipe replacement and other low head pressure and irrigation projects.

Features and Benefits High structural strength derived from its corrugated profile Joint integrity with watertight performance Flow capacity Light weight Great durability Hydraulic efficiency Design flexibility Lower installation costs Available in 24" (600mm) through 60" (1500mm) diameters Exceeds the requirements of ASTM F2306 due to its hydrostatic design basis (HDB) pressure rated resin and advanced connection design.

The light weight of HDPE Fast and easy installation through long lengths and push's together joints Reduced on-site labor and equipment requirements

A flexible joint with watertight performance Recognized by its purple branding wrap, the ADS Low Head HDPE Pipe joint is a modification of the integral bell-and-spigot joint used in N-12 WT pipe. Longer bells and spigots increase allowable joint offsets while/ensuring watertight performance. Multiple polymer wraps on the longer bell provide additional sealing area and ease of joint assembly in tough field conditions. The spigot has been designed with two gaskets to provide redundant sealing of the joint. The result is a watertight yet flexible joint that can handle the pressures associated with low head irrigation projects.

The structural strength and flow capacity you need for irrigation projects The strength of Low Head Pipe, derived from its corrugated profile, allows it to support H-25 live loads with a minimum of 12" of cover (24" for 60" pipe). HDPE is highly resistant to chemical attack and is unaffected by soils or effluents with pH ranges of 1.5 to 14. The

Section 2b.

(1) www.wwbwc.org

WWRID Eastside Ditch Project



This project was created to help restore summer flows for 2.5 miles of habitat used by ESA-listed steelhead and bull trout. By cooperating with farmers willing to improve the efficiency of their irrigation systems, the project helps maintain the economic viability of the valley while conserving water and improving fish passage. **Water that was previously lost to evaporation or seepage is now conserved in the mainstem of the Walla Walla River.** The project included two main elements: 1. Conversion of the WWRID Eastside Ditch into a pipeline including consolidation of an additional diversion to eliminate an annual push up dam; 2. On-farm conservation and conversion projects by landowners within WWRID boundaries. (For detail about the restoration of flows in the Walla Walla River, [click here.](#))

All portions of the project were successfully completed during 2001-2003. The project proposed to increase stream flows from anywhere between 1 and 7 CFS (cubic feet per second) with an expected return of 3.5 CFS. The actual total water going to instream flows from all portions of the project is 4.743 CFS (This number may change slightly following final OWRD injury review of Conserved Water Applications). The \$290,482 of OWEB funds were matched by \$520,306 from other sources including: a grant from Bonneville Power Administration, fish screens for Eastside from ODFW, and labor and time from WWRID, individual landowners, and WWBWC. The results will be monitored for a minimum of five years.

WWRID Eastside Ditch Conversion to Pipeline

All portions of the project were successfully completed during 2001-2003. The project proposed to increase stream flows from anywhere between 1 and 7 CFS (cubic feet per second) with an expected return of 3.5 CFS. The actual total water going to instream flows from all portions of the project is 4.743 CFS (This number may change slightly following final OWRD injury review of Conserved Water Applications). The \$290,482 of OWEB funds were matched by \$520,306 from other sources including: a grant from Bonneville Power Administration, fish screens for Eastside from ODFW, and labor and time from WWRID, individual landowners, and WWBWC. The results will be monitored for a minimum of five years.

The Walla Walla River Irrigation District (WWRID) converted 3.6 miles of earthen irrigation canal to 3.32 miles of buried pipeline to serve 258 acres of Senior (summer) water rights. **The pipeline operates as an on-demand system diverting water equaling the use along the pipe, greatly reducing the acre-foot total removed from the river.** WWRID was able to consolidate turnouts and straighten the ditch as the pipeline was installed in order to increase efficiency. **New fish screens, measurement devices and headgates were installed at the diversion point on the Walla Walla River improving fish passage and monitoring capability.** WWRID developed a landowner and water rights database of patrons served by the pipeline and signed new easements with the landowners. A new magnetic flow meter was installed at the Point of Diversion to measure and monitor the amount of water used. Additional meters were placed on user turnouts over 2" in diameter to allow the district to better manage water rights and collect individual water use information.

Diversion rates during the summer prior to the installation of the pipeline typically were 9.6 CFS. After the installation of the pipe, the typical diversion rate was 6 CFS for a savings of 3.6 CFS for all of Eastside. An application is being prepared to submit to OWRD for the Instream protection of the water under the Allocation of Conserved Water program.

There is the potential that additional water may be kept instream at any given moment as the Pipeline is on-demand and only diverts the amount of water needed (up to the legally established water right). The piping of

Section 2b.

(2) nracs143_026633.doc

August 2008

IRRIGATION WATER CONVEYANCE—PIPELINE

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 430 (AA-GG)



IRRIGATION WATER CONVEYANCE—PIPELINE

Irrigation water conveyance includes pipelines and appurtenances installed as an integral part of an irrigation system.

PRACTICE INFORMATION

The purpose of this practice is to efficiently deliver or convey water from a source of supply to points of application or storage to facilitate management of irrigation water. The practice reduces erosion, conserves water, and protects water quality.

Underground pipelines serve as an integral part of the irrigation water distribution system and significantly improve the overall efficiency of the system.

The practice standard applies to water conveyance and distribution pipelines installed above or below ground.

This standard does not apply to multiple outlet pipes, except main line pipes that have multiple

risers with distant point of discharge.

This practice requires proper design and installation to function properly.

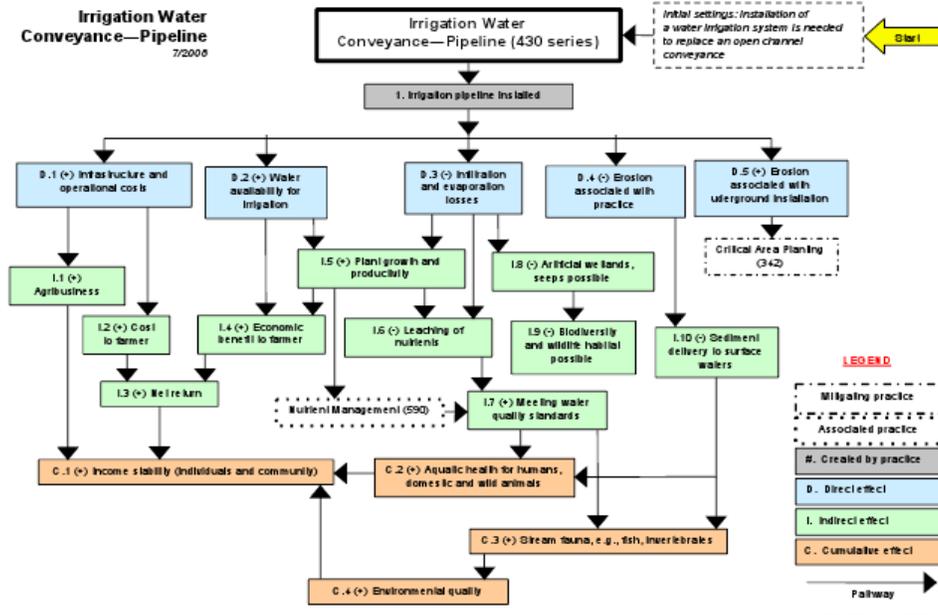
COMMON ASSOCIATED PRACTICES

Irrigation Water Conveyance—Pipeline is commonly used in a Conservation Management System with practices such as Irrigation Water Management (449), Pumping Plant (533), Irrigation System (441, 442, 443, 447), Critical Area Planting (342), and Nutrient Management (590).

For further information, refer to the practice standard in the local Field Office Technical Guide and associated specifications and job sheets.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Irrigation Water Conveyance—Pipeline
7/2006



Note: Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.

The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Sample Bid

Cost Breakdown Structure (CBS) Register

HUNTER CONTRACTING COMPANY
11-P058--Hildago Irrigation

CBS Position Code	Description	Forecast (T/O) Quantity	Unit of Measure	Unit Cost	Total Cost (Forecast)
JOB	JOB				
	PRIME BOND	1.00	Lump Sum		\$116,442.80
	PRICE % ADD-ON	1.00	Lump Sum		\$4,576,462.34
	JOB FINANCING	1.00	Lump Sum		\$0.00
	INDIRECT COST ESCALATION	1.00	Lump Sum		\$0.00
	DIRECT COST ESCALATION	1.00	Lump Sum		\$0.00
	INDIRECT COST ADD-ON	1.00	Lump Sum		\$0.00
	JOB MANAGEMENT & EQUIPMENT	1.00	Lump Sum	\$0.00	\$0.00
	GENERAL EXPENSE	1.00	Lump Sum	\$0.00	\$0.00
	DIRECT COST ADD-ON	1.00	Lump Sum		\$0.00
1	Sunset Canal	1.00	Each	\$9,363,793.	\$9,363,793.84
1.1	Prep canal install ABC	63,360.00	LF	\$9.50	\$601,616.87
1.2	Install Pipe	63,360.00	LF	\$11.31	\$716,370.66
1.3	Backfill Pipe	63,360.00	LF	\$10.24	\$648,669.87
1.4	Install Flow Meters	60.00	Each	\$630.10	\$37,805.93
1.5	Drop Inlets	57.00	Each	\$1,124.91	\$64,120.09
1.6	Equipment Crossings	40.00	Each	\$925.69	\$37,027.50
1.7	60" BFV	13.00	Each	\$30,000.00	\$390,000.00
1.8	Purchase Flow Meters	60.00	Each	\$4,878.00	\$292,680.00
1.9	Purchase Pipe	63,360.00	LF	\$87.00	\$5,512,320.00
1.10	Purchase ABC	110,000.00	Ton	\$8.50	\$935,000.00
1.11	Clean Up	1.00	Each	\$128,182.9	\$128,182.91
2	New Mondel Canal	1.00	Each	\$3,881,459.	\$3,881,459.02
2.1	Remove existing Lining	26,400.00	LF	\$12.93	\$341,435.35
2.2	Prep Canal install ABC	26,400.00	LF	\$9.50	\$250,911.30
2.3	Install Pipe	26,400.00	Each	\$11.32	\$298,770.70
2.4	Backfill Pipe	26,400.00	Each	\$10.25	\$270,535.30
2.5	Build Overshoots	17.00	Each	\$3,312.21	\$56,307.64
2.6	Purchase Pipe	26,400.00	LF	\$87.00	\$2,296,800.00
2.7	Purchase ABC	38,000.00	Ton	\$8.50	\$323,000.00
2.8	Clean Up	1.00	Each	\$43,698.72	\$43,698.72
3	General Requirements	1.00	LS	\$331,152.7	\$331,152.75
3.1	Fixed Costs	1.00	LS	\$84,563.07	\$84,563.07
3.1.1	Equipment Mob	1.00	LD	\$3,496.39	\$3,496.39
3.1.2	Structures Equipment Mob	1.00	LD	\$496.39	\$496.39
3.1.3	Set-Up, Temp Facilities	1.00	LS	\$7,660.00	\$7,660.00
3.1.4	Special Insurance	1.00	LS	\$17,000.00	\$17,000.00
3.1.4.1	Builder'S Risk	1.00	LS	\$15,000.00	\$15,000.00
3.1.4.2	Extraordinary Insurance	1.00	LS	\$2,000.00	\$2,000.00
3.1.5	Project Signs	1.00	EA	\$592.33	\$592.33
3.1.6	Scheduling	1.00	LS	\$2,000.00	\$2,000.00

Cost Breakdown Structure (CBS) Register

HUNTER CONTRACTING COMPANY
11-P058--Hildago Irrigation

CBS Position Code	Description	Forecast (T/O) Quantity	Unit of Measure	Unit Cost	Total Cost (Forecast)
3.1.7	Construction Photos	1.00	LS	\$3,250.00	\$3,250.00
3.1.7.1	Aerials	4.00	EA	\$750.00	\$3,000.00
3.1.7.2	Misc Materials	1.00	LS	\$250.00	\$250.00
3.1.8	Compliance Testing (Q.C./ Q.A.)	1.00	LS	\$20,000.00	\$20,000.00
3.1.9	Survey, RLS (also see HCC duration driven cost)	1.00	LS	\$7,000.00	\$7,000.00
3.1.10	?? need a MCESD SWPP ??	1.00	LS	\$1,375.00	\$1,375.00
3.1.11	Set-Up, SWPP	1.00	EA	\$1,696.89	\$1,696.89
3.1.12	Dust Control Permit (See Notes for Pricing) (1 to Less than 10 Acres)	1.00	LS	\$1,325.00	\$1,325.00
3.1.13	Trackout	1.00	EA	\$6,364.58	\$6,364.58
3.1.14	Facility Testing, Training, Start-Up	1.00	LS	\$6,465.46	\$6,465.46
3.1.15	Clean Up	1.00	LS	\$5,841.01	\$5,841.01
3.2	Duration Driven Costs	1.00	MO	\$246,589.6	\$246,589.68
3.2.1	Temp Facilities	6.00	MO	\$2,835.00	\$17,010.00
3.2.2	Supervision	6.00	MO	\$38,263.28	\$229,579.68
3.2.3	Service	1.00	MO	\$3,822.10	\$3,822.10
3.2.4	Sweeper - Pick-up Broom	1.00	MO	\$3,520.00	\$3,520.00
3.2.5	SWPP, Maintance	1.00	MO	\$1,603.92	\$1,603.92
3.2.6	Construction Water	1.00	MO	\$1,900.00	\$1,900.00
3.2.7	Per Diem	1.00	MO	\$4,590.00	\$4,590.00
					\$18,269,310.74

Letters of Support



September 30, 2011

Mr. Estevan López, P.E.
Director, Interstate Stream Commission
130 South Capitol Street
Santa Fe, NM 87504-5102

Dear Mr. Lee:

Hunter Contracting Co. and our original firm, Hunter Ditch Lining (still a wholly-owned subsidiary of Hunter Contracting Co.) has proudly been serving the needs of the agricultural community since 1947. The company was founded to serve the farming community of Gilbert, Arizona, primarily to build concrete lined irrigation ditches. The benefits were many, the idea caught on, and our company flourished.

With increasing demand and competition for water resources, many irrigation districts are converting earthen canals to pipelines for some of the same reasons farmers lined ditches decades ago. Converting to a pipeline greatly reduces the amount of water loss experienced in a typical earthen canal delivering water to the farmers. This is accomplished by the reduction of water being absorbed into the ground, as well as the amount of water that is lost daily through evaporation. In the American Southwest, it is not uncommon to lose over an inch of surface water daily. When taken into account that irrigation districts operate and maintain miles of canals this can add up to huge water loss. A conversion to pipeline distribution is an opportunity for tremendous annual savings and resource conservation.

A distribution system with miles of canals also requires a considerable annual expenditure for maintenance. By conveying the water through a pipeline this cost is virtually eliminated. The safety of the public and livestock is greatly enhanced when irrigation water is transported via pipeline.

In addition to the aforementioned benefits, pipeline conveyance can provide enhanced water management capabilities. Currently, water is delivered via an open gate. Time and experience is the only way to gauge the amount of water delivered to each farmer. With a pipeline, flow meters installed at each outfall can record the quantity of water delivered.

And finally, a bill working its way through Congress (H.R. 2842, Bureau of Reclamation Small Conduit Hydropower Development and Rural Jobs Act of 2011) is designed to remove the environmental road blocks for small hydro generating plants. Small is defined as 1.5 MW or less. By conveying the irrigation water through a pipeline it may be possible to generate electricity using existing technology.

In summary, conversion of an open canal system to a pipeline conveyance system can:

- Dramatically reduce loss through evaporation and soil contact
- Provide opportunities for microhydro-electric power generation
- Reduce annual maintenance cost while enhancing community safety
- Enhanced water management capabilities

I would welcome an opportunity to speak with you in greater detail about the opportunities outlined above. Please contact me any time at 602-359-1656 (cellular phone) or via e-mail (keliid@huntercontracting.com). Thank you for your consideration, and I look forward to meeting with you in the near future.

Sincerely,

A handwritten signature in black ink, appearing to read "Keli Dobberstein", is written over a horizontal line.

Keli Dobberstein
Director of Business Development

Corporate Office • 701 North Cooper Road • Gilbert, Arizona 85233 • (480) 892-0521 • Fax (480) 892-4932
Tucson Office • 8940 North Camino Martin • Tucson, Arizona 85741 • (520) 744-0727 • Fax (520) 744-0847

ARIZONA - (520) 7951-6511 ENG • (520) 674-2121 D & L R BLDG • (520) 7951-3011 GEN COM • (520) 7951-3007 B O4 GEN RES ENG • CALIFORNIA - (909) 851-1111 A SLN ENG

GILA SAN / FRANCISCO WATER COMMISSION
(Successor to the Southwest NM Water Planning Group – SWNMWPG)

MEMBERS:

CATRON COUNTY
HIDALGO COUNTY
Catron County Commission
Hidalgo County Commission
Village of Reserve
City of Lordsburg
San Francisco Soil & Water -
Village of Virden
Conservation District
San Francisco Ditch Association
Hidalgo Soil & Water –

**C/O PO BOX 898
Silver City NM 88062**

Vance Lee, Chairman

575-358-2661

E-Mail vancelee@aznex.net

Tom Bates, Vice Chairman

575-546-8848

Conservation District
GRANT COUNTY
Grant County Commissioners

Bill Woodward, Treasurer

575-538-8034

LUNA COUNTY
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Town of Hurley
City of Deming
Village of Santa Clara
Village of Columbus
Gila Basin Irrigation Commission
Deming Soil & Water-
Grant Soil & Water -
Conservation District
Conservation District

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November 27, 2011

Members of the AWSA Tier 2 Evaluation Committee:

The membership of the Gila San Francisco Water Commission has reviewed the Sunset and New Model Canal project proposal and voted unanimously to support it. The Commissioners understand that they have supported more projects than can be implemented with the available resources, however they continue to be committed to keeping the AWSA water in the Southwest Water Planning Region of New Mexico and using the available money to do so as well as support other water supply demands in the region. After you have evaluated and ranked the Tier 2 projects, the GSFWC will make recommendations to the ISC relative to the projects by resolution.

Thank you for your consideration of this letter of support.

Vance Lee, Chairman
Gila San Francisco Water Commission

