vernalpool@riseup.net
09/06/2011 01:19 PM

To nvgwprojects@blm.gov
cc
bcc
Subject [Fwd: NO ACTION FOR SNWA PIPELINE!!]

Hello,

This was originally sent in for public comment to the wrong address;

---------- Original Message ----------
Subject: NO ACTION FOR SNWA PIPELINE!!
From: vernalpool@riseup.net
Date: Wed, August 17, 2011 2:49 pm
To: nvprojects@blm.gov

Greetings,

Am writing in for public comment on the proposed SNWA pipeline from Snake and Spring Valley aquifers to the Las Vegas region. Am strongly encouraging the BLM to take the "NO ACTION" alternative in regards to the SNWA pipeline for the following reasons;

1) The water in the Snake and Spring Valley aquifer system is residual groundwater from an earlier climate before the Ice Age when there was significantly more rainfall than there is now. At the rate of extraction proposed by the SNWA, the groundwater will lower below the current level as the rate of recharge in our modern climate is not anywhere near the original recharge rate during the time when the aquifer was filled.

2) Based upon the premise of #1, the lowering groundwater level (rate of discharge > rate of recharge), would result in several springs and seeps no longer being low enough for the groundwater to emerge at these sites. Since the springs and seeps are now above the groundwater level, they will soon dry out.

3) Based upon the premise of #2, the now dry springs and seeps will no longer be able to support the endemic species such as spring snails and others who previously adapted to the unique conditions of their home spring or seep. Endemic species such as spring snails are found no place else on Earth and their species depends upon certain conditions of their habitat to remain intact or they face extinction. In the case of Snake and Spring Valley, there are spring snails there that adapted over many generations to the specific chemistry and temperatures of these particular springs. Many are descended from ancient snails who once inhabitated glacial Lake Lahontan, and after it dried out from a changing climate, only the oasis of these springs have given the snails enough water needed to survive the harsh desert conditions. In the case of the SNWA water extraction, several endemic species of spring snails would most likely become extinct as the springs and seeps they need for survival are now just bowls of dust.

4) Even metamorphosed limestone as found containing the Snake and Spring Valley aquifer below ground has been known to collapse and subside following overdraft. If local ranchers already admit that certain summers

the springs run low when there is a great deal of pumping from neighboring ranchers, it follows that the much greater withdrawals planned by the SNWA would further lower the groundwater. In addition to drying out springs and seeps, lowering the groundwater can have other geological consequences such as aquifer cavern collapse, subsidence and loss of aquifer capacity.

The metamorphosed limestone caverns of the Snake and Spring Valley is underneath a large overburden of unconsolidated sedimentary basin fill debris. The tremendous weight of the sediments rests on top of the limestone caverns, and the upwards pressure of the aquifer water supports the aquifer cavern ceiling as an arch supports the roof of a cathedral. Remove the upwards support pressure of the aquifer water by significantly lowering the water table from overdrafting as the SNWA plans, then the consequence will be loss of upwards pressure and eventual collapse of the aquifer cavern roof from the tremendous weight of the overburden. This same geological event can be witnessed in Lehman Cave's Talus Room, where ancient climate change lowered the water table, later causing the collapse of the ceiling.

Once the aquifer cavern ceiling collapses from subsidence, the capacity for water storage is reduced as there is less open space for water to be stored. Limestone aquifer cavern collapses from groudwater overdraft are frequently witnessed in Florida as sinkholes. Other locations have shown that even metamorphosed limestone can fracture and collapse following groundwater overdraft.

5) The Las Vegas dace and the Vegas Valley Leopard Frog are extinct resulting from groundwater overdraft in the early decades of Las Vegas developments. There were several artesian springs under Las Vegas now dry, and the springs that were habitat for the Vegas dace and the Vegas Leopard frog are also dry as a result of groundwater overdraft. We term insanity as "repeating the same actions and each time expecting different results." It appears that the insanity is in the behavior of the SNWA authorities if they believe that more species won't become extinct from overdrafting another aquifer even further away.

We in the GBWN urge the BLM to stop the insanity of endless aquifer overdrafts by the SNWA and choose the

NO ACTION ALTERNATIVE FOR SNWA PIPELINE

Thanks for your time and consideration,

Mark Miller
P.O. Box 1864
Elko, NV 89803

BLM_NV_NVSO_GWProjects

From: vernalpool@riseup.net
Sent: Tuesday, September 06, 2011 12:54 PM
To: BLM_NV_NVSO_GWProjects
Subject: [Fwd: SNWA is Gambling with Extinction]
Attachments: Snails.doc

---------- Original Message ----------
Subject: SNWA is Gambling with Extinction
From: vernalpool@riseup.net
Date: Tue, August 30, 2011 12:47 pm
To: nvprojects@blm.gov

*** Am having each email returned to me as a "delivery failure". Am going to keep trying until the message is recieved!! ***

---------- Original Message ----------
Subject: SNWA is Gambling with Extinction
From: vernalpool@riseup.net
Date: Thu, August 18, 2011 3:20 pm
To: nvprojects@blm.gov

Hello again,

Am sending a report called "Gambling with Extinction; Snails, Dace, Chub and Trout Threatened by SNWA Pipeline to Las Vegas".

Part of the reason i'm sending these reports is as a prediction of probable events resulting from the SNWA pipeline extractions from the Snake and Spring Valley aquifer. Since this is on public record, it cannot be said by the BLM that "we did not know the risks of the SNWA pipeline on endangered snails".

This report essentially states "IF the SNWA pipeline is completed, THEN the final outcome will be lowered groundwater, dry springs and dead snails, eventually becoming extinct species of snails endemic to these springs."

The BLM is given trust by the people to protect the ecosystems it manages.
Therefore, in order to comply with the objectives of protection of the ecosystem, it is important that the BLM do NOT grant access to SNWA pipeline across public lands.

Thanks again for your time,

Mark Miller
Elko

Gambling with Extinction; Snails, Dace, Chub and Trout Threatened by SNWA Pipeline to Las Vegas

By Mark Miller

Gambling in Las Vegas as a tourist attraction is one thing, yet gambling with the survival of rare and threatened species of an entire food web is another. What the Southern Nevada Water Authority's (SNWA) Las Vegas pipeline proposal is doing is just that, gambling with the risk of extinction of several endemic species of snail and the fish that depend upon them as a food source. Combined the snails and the fish that eat them make up a complicated and interdependent food pyramid, and the loss of the spring habitat would result in the collapse and destruction of the food web, and extinction or extirpation of all the component species on all levels of the food pyramid. The SNWA proposed pipeline would extract millions of gallons per day from the carbonate aquifers of the Snake and Spring Valleys of White Pine County east of Great Basin National Park. The risks presented by the SNWA pipeline have resulted in several lawsuits and petitions from environmental conservation groups hoping to protect endemic spring species before the damage is irreversible.

The recent lawsuit and petition by the Center for Biological Diversity and the Freshwater Mollusk Conservation Society is to protect 42 species of spring snail from becoming further endangered and/or extinct from lack of water due to aquifer overdraft by the proposed SNWA pipeline from the Snake and Spring Valley aquifers to the Las Vegas valley region some 250 miles away. The petition is for the U.S. Fish and Wildlife to list the 42 varieties of spring snails as endangered species. (Brean, Las Vegas Review
Journal)

"These 42 species of spring snails are severely threatened by groundwater withdrawal proposed by the Southern Nevada Water Authority and other users," said Tierra Curry, conservation biologist with the Center and lead author of the petition. "Unsustainable groundwater pumping threatens not just these snails but also hundreds of other desert species and water supplies for rural residents and future generations." (Mrowaka/Curry, Center for Biological Diversity)

Many of the 42 species of spring snails on the petition list are endemic to the springs found in the Snake and Spring Valleys, meaning their only occurrence worldwide is in these locations. The spring snail species mentioned depend upon a consistent flow of aquifer water emerging at specific spring sites found in the valleys. This makes the snails an excellent indicator species of declining water tables. If the springs dry up from a water level drop after the SNWA pipeline overdrafts the aquifer's water coming to the surface, the spring snails have no more habitats and disappear, eventually being forced into extinction. This is not natural selection of evolutionary based extinction, simply wrongful and thoughtless actions against viable watersheds by human powered bureaucracies like SNWA and their supposed needs to appease developers.
Most spring snails belong to the Genus Pyrgulopsis and are subtly diverse in their mitochondrial DNA. Their life cycle is entirely aquatic and they cannot move about between habitats on their own. This indicates that the genetic diversity amongst the spring snail varies on a geographic scale.
(Hsui-Ping Lui, Rocky Mountain Center)

The snails are found in Clark, Lincoln, Nye, and White Pine counties in Nevada and Beaver and Millard counties in Utah. One single spring location is home to 14 of the 42 snail species, and 39 are found at fewer than 10 locations. None of the 42 species are currently protected by state or federal laws. (CBD) According to the Center's Rob Mrowaka, "Without protection under the Endangered Species Act, these spring snails will be lost forever. Groundwater withdrawal, spring diversion, livestock grazing, and an array of other threats severely threaten these 42 spring snail species along with the other species that depend on desert springs." (CBD) The U.S. Fish and Wildlife Service has 90 days to decide if the petition requires Endangered Species Act protection for the spring snails another year to determine if the species require protection as endangered species.
(CBD)

The variety of spring snails described in the lawsuit are the base level of the food pyramid of these springs, depended upon as a food source by other endemic fish species like the chubs, dace and young Bonneville cutthroat trout that also

call these springs their home. Groundwater mining by SNWA would drastically lower already reduced water table and spring outputs, resulting in several years of dry conditions would surely spell extinction for these snails and the fish that depend upon them.
The SNWA seems to feel that gambling can be used to determine the outcomes of this proposal, as evidenced by their lack of willingness to run computer models more reliable than gambling. SNWA director Pat Mulroy claims that gambling and guesswork is the only way to go, "Until there are test wells drilled and the system is stressed, there's no way to know for sure what the impact will be." However, this statement was put to an actual computer model test by Dr. Paula Cutillo, a hydrologist at the National Park Service whose results show that pumping would draw down groundwater levels by approximately 200 feet over a 75 year period. U.S.
Fish and Wildlife hydrologist Roger Congdon found the same results when he ran the computer tests. (Sabel, Next American City)

The calibrated ground water flow computer model Dr. Cutillo used was originally developed by Timothy Durbin, a hydrologist employed by SNWA.
However, the SNWA refused to release any of their results to the public, though the results obtained by Dr. Cutillo were entered as evidence as exhibit # 2504 at the Spring Valley Hearings held August 4th, 2006 (Coalition of National Park Service Retirees).

A 200 foot drop in groundwater levels would mean that we all say goodbye to the spring snails, chubs, dace and all the other endemics of the aquifer fed springs forever. We would give up all that biodiversity forever just so a few more golf courses could have green manicured watered lawns in the deserts near the Coyote Springs developments. Maybe there was another reason that Mulroy would rather roll the dice of uncertainty than attempt to test scientific models to more accurately predict the outcomes of the SNWA's pipeline project on water levels?

According to Dr. Cutillo, "It's hard for decision-makers to deal with the uncertainty, but these models are the best tools you can use to make well-informed decisions. They're all good representations of the system."
If the SNWA scientists could reasonably guess at the pipeline's outcome, running an accurate computer model as Cutillo did would only confirm evidence their worst fears that the pipeline proposal is inherently flawed and should be scrapped from SNWA's agenda forever. (Sabel, NAC)

During a 1994 interview with High Country News, Mulroy stated that piping water from the north to Las Vegas was the "singularly most stupid idea anyone's ever had." Of course that statement was made before the drought that dropped Lake Mead's water levels and the continued sprawling development like Whittmore's "Coyote Springs" that stretches homes further and further away from the Las Vegas urban centers. However, continued development following a severe drought still does not make the pipeline any better an idea than it was in 1994. (Sabel, NAC)

Maybe Ms. Mulroy should stick by her original statement made in '94 to HCN and abandon the SNWA's reckless pipeline proposal for good in favor of controlled urban centered growth and reliable water conservation measures practices by other desert cities like Tuscon, AZ. Let's help ensure that gambling remains in Nevada's casinos and out of Great Basin springs, watersheds and aquifers!

Unfortunately, Ms. Mulroy's response to the computer models was to claim that the SNWA would monitor the pumps and water levels and attempt to mitigate any harm the drop in water levels does to the spring ecosystem after it occurs. According to Matt Kenna, the lead attorney for the pipeline's opposition groups, this approach by SNWA is counterproductive, "They're basically saying, 'Grant us the water, let us build a pipeline, and [then] we'll tell you what the impacts are.' It doesn't make sense."
(Sabel, NAC)

Oddly enough, several influential southern Nevada Democrats including Harry Reid are supporting this proposal, despite the obvious threats to the ecosystem if the SNWA pipeline plan proceeds. While most people consider the Democrats to be the party of the environment, the backing of the SNWA pipeline by Democrat Senator Harry Reid is very contradictory to the ideals of supposedly ecologically aware Democrats. Since Harry Reid is originally from the southern Nevada town

of Searchlight, he identifies with the needs of southern Nevada for water, despite the ecological cost that some of the recent proposals entail. However, the needs for the pipeline may be exaggerated and mostly serves developers like Harvey Whittemore whose latest planned community of “Coyote Springs” is conveniently located directly on the SNWA pipeline route on the intersection of the U.S. Highway 93 and State Road 168 to Moapa.
The Coyote Springs development is planned to contain 159,000 homes and 16 golf courses on 42,000 acres. Though Whittemore claims he will supply his own water to the development, his early backing of the SNWA pipeline may be toned down now for public relations reasons. It is difficult to imagine how all these suburban homes will draw water from the region when nearly none is available. The latest water source Whittemore has his sights on is 5,000 acre feet / year from Kane Springs, and he may not yet be finished with his attempts to tap into the SNWA pipeline (Nevada Observer).

Apparently Whittemore feels confident that more water is just around the corner, as Clark County commissioners recently approved a zoning change to Coyote Springs that would allow for a 200 foot tall casino-hotel with convention center to be built on 125 acres of the development. Only one of the five commissioners voted against the zoning change, Chris Giunchigliani, who said a casino was not needed by a community originally marketed as a haven for retirees and others who wanted to live further from the urban areas.

"I don't see the public purpose for creating a gaming district under state law," said Giunchigliani, concerned about worsening traffic. (Knightly, Ely News).

After a recent bicycle trip past the Coyote Springs site under construction, it became apparent to me the scale of this monstrosity, and the amount of water required to sustain this sort of development would be phenomenal. After witnessing this sprawling disaster firsthand, one could only hope that an “act of God” would somehow delay this project from completion, before the Kane Springs Project dries out yet another spring for the fallacious logic of even more desert golf courses for the wealthy elites. It is amazing with all the home foreclosures around Las Vegas that the proposed 159,000 homes of Coyote Springs would all find themselves owners!

Hopefully the latest developments in the lawsuit and petition to U.S. Fish and Wildlife by environmental groups to protect endemic spring snails would remind Senator Reid that Nevada’s entire ecosystem is worthy of protection, not just the urban ‘ecosystem’ of the Las Vegas valley region and even more thoughtless suburban sprawl of Whittemore’s Coyote Springs.
Maybe the lawsuit and petition can return Senator Reid to his sensibilities as a Democrat whose job is to protect the environment, not give away more spring water to sprawl-happy developers like Harvey Whittemore.

One would also think that an agency like SNWA would learn from the mistakes of the past, yet this doesn’t appear to be the case either. Since the beginning of the casino’s development boom in Las Vegas during the 1950’s, there have been continued extractions of their local aquifer system that has resulted in the extinction of another endemic native fish, the Las Vegas dace following a drop in aquifer water levels. Prior to the past few decade’s development, indigenous peoples and early settlers enjoyed the region’s many artesian wells, wetlands and green meadows that gave the city its current name, “The Meadows” (Schyler, Defenders of Wildlife).

Originally there were three distinct artesian springs in the Las Vegas valley, named Big, Middle and Little. These springs were surrounded by willows, cottonwoods and saltgrass (Ward, 134). Past flows of the three major springs located near present day I-15 and U.S. Highway 95 were releasing flows of between 3 and 4 thousand gallons per minute, now all three are dry (Ward, 136). Since 1904, the water table of Las Vegas valley dropped by 200 feet, with subsidence accompanying the drop in groundwater (Ward, 136). This drop in groundwater levels resulted in the aquifer under Las Vegas being compromised in its ability to store as much water as prior to the subsidence. Following the construction of Hoover Dam and the Colorado River Compact of 1922 regulating waters of Lake Mead, Las Vegas became dependent on this new source of water and now relies on the aquifer mostly during summer months. The Colorado River’s Lake Mead supplies the region with 85% of their water, as the aquifer is pumped during the summer at rates greater than they can be replenished (Ward, 137).

The Colorado River Compact was an agreement between four states of the upper basin (CO, WY, NM, UT) and three of the lower basin (AZ, CA, NV).
Each basin was allocated up to 7.5 million acre feet per year, and unused allocations could be bought up by other states (Ward, 135). The trade off between cash for water allocations is not always fair, and certain states tend to dominate when taking their fair share. Irrigation demands for thirsty crops like cotton in California can take out over 4.4 million acre feet/year from Lake Mead, robbing both Nevada and Arizona of their unused allocations (Ward, 143).

Of the 300,000 acre feet/year of water available to Nevada from the Colorado River Compact, on average residents use 64% of their allotment for watering lawns and washing cars, where most is lost into the surface soils (Ward, 140). On the other hand, indoor water that reenters the drainage system as wastewater can count as return flow credits as it eventually goes down the Las Vegas wash and into Lake Mead. The return flow credits in 1996 gave the region 356,000 acre feet after having returned 131,000 acre feet to the Lake in wastewater (Ward, 139). Water banking is another method of injecting unused allocation directly into the ground, though as these are not actual aquifers, there could be loss from seepage.

Other improvements to water consumption included specific times when lawn watering was allowed, making it illegal to water lawns between 12 noon and
7 pm during May and October (Ward, 141). Cash rewards were given to residents who converted their lawns to drought tolerant plants, called xeriscaping (Ward, 142). However, the low price of water for residents encourages waste. According to Dr. French of the Desert Research Institute, "The community is wasteful because water is cheap." During the time of the article's publishing, rates varied between lowest use at 0.98 cents/ 1,000 gallons to the greatest use rate of $2.27 per 1,000 gallons (Ward, 142).

However, all these conservation measures came too late for the Las Vegas dace, whose springs were drying up as early as the 1960's following the casino boom a decade earlier. Only ten years of pumping from the aquifer resulted in the extinction of the Las Vegas dace. The extinct Las Vegas dace was named after biologist and UNLV Prof. Jim Deacon who among others discovered the disappearance of Rhinichthys deaconi as the springs dried up. Since 1975 the Las Vegas dace was officially listed as extinct by U.S.

Fish and Wildlife (Schmidt, Native Fish Conservancy). Prof. Deacon also predicted another possible extinction of the Pahrump poolfish, and timely intervention protected the fish by relocating it to another spring as the Manse spring dried out from excess groundwater withdrawals for irrigation.
The relocation approach will not work for many other species, as all the other spring inhabitants cannot all be forced to squeeze together in the few remaining functional springs. In other situations conditions may be unfavorable from one spring to another, and many species have adapted to specific geochemistry and climates of certain springs, and relocation would have an adverse impact on biodiversity, especially for the genetic diversity of the spring snails. Prof. Deacon says that the proposed pipeline could cause a greater water table reduction over 100 years than the previous drop that happened 15,000 years after the glaciers receded.
(Schyler, DoW)

The dace and chubs of the springs are classified as Cypriniformes, or the family of carps and minnows (Cyprinidae). They are identified by cycloid scales and abdominal pelvic fins, their fins having soft rays lacking true spines. All members have toothless jaws; though they do have strong pharyngeal teeth for breaking up food (Sigler, 148). Many are distantly related yet are all unique species adapted to the springs. Some of the significant members of the region likely effected by lowered water tables and decline of spring snails are the Utah chub (Gila atraria Girard), that in turn is a forage species for larger fish (Sigler, 163). The Pahranagat roundtail chub (Gila robusta jordani Tanner) found only in nearby Ash Springs is listed by U.S. Fish and Wildlife as endangered (Sigler, 177).
The least chub (Iotichthys phlegethontis Cope) once inhabited many springs and streams of the Bonneville Basin, yet is now restricted to Snake Valley. Specimens were collected from Millard County, UT in 1942 and later from Leland Harris Spring of Juab County, UT in 1970 (Sigler, 182). Snails are a major component of the least chub's diet. Greatest risks to this threatened species are lowered water tables of the springs and hybridization with other species of chubs (Sigler, 184).

Other species of concern likely effected by declining water tables and loss of snails as a food source are the Big Spring spinedace (Lepidomeda mollispinis pratensis Miller and Hubbs) that inhabits the spring fed marsh northeast of Panaca and the Meadow Valley Wash in nearby Lincoln county just south of the Snake Valley region (Sigler, 187).

While the snails comprise the base of the food pyramid and the dace and chubs the middle tiers, the upper levels of this ecological structure include the cutthroat trouts, members of the family called Salmonidae. The Bonneville cutthroat trout (Salmo clarki utah Suckley) is a descendant of the ancestral trout species that thrived in ancient Lake Bonneville, and now inhabits limited streams and springs of the former lake bed. Snake Valley was once an arm of Lake Bonneville, and this species stayed here once the valley waters became isolated from the larger lake basin. The current populations of surviving Bonneville trout inhabit small clear and isolated streams of the Snake Valley (Sigler, 112). Maintaining deeper cut banks and brush along streams for cover is essential to the trout's survival. Any reduction in the stream depth from lowered water tables would also contribute to extinction of the Snake Valley's population of Bonneville cutthroat trout.

From the spring snails at the base to the Bonneville trout at the top of the pyramid, all depend upon a regular supply of water flowing out from the Snake and Spring Valley's aquifers in the sights of the SNWA pipeline.
In addition to the species that live directly in the springs and streams, there are many terrestrial animals that rely on these same springs being there for their own water supply. Local rancher and activist Dean Baker showed members of the Sierra Club the surviving Kane Springs that are frequently visited by a herd of pronghorns and other animals, including livestock. The sedges surrounding Kane Springs were covered with the tiny snails endemic to that spring. Many of the snails are specifically matched to the type of vegetation found growing at the spring (Von Seggern, Toiyabe Sierra Club).

Since many of the region's springs remain functional, it is clear that current practices by ranchers extracting aquifer water for irrigation of alfalfa and other grass crops are not as detrimental to the springs as the proposed SNWA pipeline would be. Though there are reports of other springs drying out prematurely, the aquifers seem close enough to their previous levels to provide water for the springs. The computer model tested by Dr.
Cutillo added the SNWA extractions to already existing extractions by ranchers for irrigation.

One of the most significant differences between ranchers extracting aquifer water from the springs for irrigation and the proposed SNWA pipeline is that when ranchers use aquifer water for irrigation of alfalfa and for livestock, the water remains in the respective valleys it was removed from and can eventually percolate downward and rejoin the same aquifer, thus keeping the water table somewhat stable. However, the SNWA pipeline will be a net export of water from the valleys into the Colorado River watershed 300 miles south of the valley aquifer system, with no chance of return to its original source.

This is probably the main reason the computer models tested by Dr. Cutillo predict the 200 foot drops in groundwater levels over several decades, and why SNWA avoided testing these models. On an average rate of 200 feet over 75 years, it follows that within only two decades the drop in water levels will be significant enough to dry up the majority of the springs permanently, resulting in mass extinctions as the spring food pyramid collapses, from snails to Bonneville trout and everyone in between. The net export of water away from the valleys will result in a net decline year after year, as the infiltration rate into the aquifer cannot match the export rate out of the valleys into Las Vegas and eventually the Lower Colorado River system.

As the net water export rate continues to overmatch the recharge infiltration rate, the aquifer cavers themselves will become emptied and filled with air instead of water. The results of this process can be witnessed firsthand at Great Basin National Park's Lehman Caves in the Talus Room, where prehistoric water levels lowered as a result of climate change and emptied the limestone carbonate aquifer of its water. With the water removed from the chamber, there was nothing remaining to support the limestone roof under the overburden of materials above, and the roof collapsed into the cavern. Though the limestone is slightly metamorphosed into marble, the tremendous overburden of sediment fill above the aquifer caverns will overwhelm the caverns once the water is removed, and the result will by subsurface

collapse and subsidence of the overburden. The long term result of aquifer cavern collapse and overburden subsidence is inability of the aquifer to store as large an amount of water as prior to the collapse.

Modern day examples of land subsidence and aquifer cavern collapse can be witnessed in several places; Florida's sinkholes after their carbonate limestone aquifers collapse, and the land subsidence in both the San Joaquin Valley of California and the decreased performance of the Midwest's Ogallala aquifer following land subsidence decades ago. There is no logical reason to expect any different outcome in the Snake and Spring Valley aquifers following the succession of aquifer overdraft, cavern collapse and land subsidence. The textbook definition of insanity is repeating the same identical processes and each time expecting different results. Clearly we have several historic examples of repeating the same process of aquifer overdraft and each time expecting unlimited supplies from a finite resource. Each time the eventual outcomes of these processes of aquifer mining overdraft are the same, collapse and subsidence, yet this time SNWA is claiming to expect different results.

Once again SNWA is attempting to time their release of another draft environmental impact statement to occur when the Nevada State Engineer will be conducting four weeks of hearings on the Snake Valley, with only 30 days remaining thereafter for public comment (Strickland, Toiyabe Sierra Club). For the amount of trouble the SNWA is going through to obtain the temporary and unstable source of water from distant aquifers, they could be investing their time, thought and resources to actually providing the people of the Las Vegas valley with reliable and time tested methods of water access and conservation measures.

Some alternative methods to reliable water savings includes rainwater catchment barrels and converting non-native water dependent landscaping like lawns into drought tolerant ground covers and landscaping with native plants. Las Vegas residents should recognize by now that they do not reside in the rainy regions east of the Mississippi and should live accordingly by adapting their lifestyle to the desert in which they chose to reside.

Public agencies like SNWA need to further help people of Las Vegas region attain the goals of water conservation. Instead of wasting billions of dollars on pipelines that could likely result in eventual drawdown and collapse of the distant aquifer, why not spend a fraction of this money on supplying every business and resident with their own rooftop rainwater harvesting barrels with filtration systems? This would help residents harness the waters of the desert's heavy summer downpours directly, saving on energy and not losing as much rainwater to runoff and evaporation in parking lots. Rainwater harvesting barrels are capable of storing large amounts of water collected from the surface area of each rooftop, and can be filtered of pollutants by an easy to assemble kit. The difference between rainwater harvesting and simple rainwater collection barrels is the filtration system, to have safe and consumable drinking water from rooftop rainwater collectors as provided by a rainwater harvesting system several filtration components such as; first flush, coarse debris removal, UV sterilization and reverse osmosis need to be included. Simple rainwater collection barrels can be used for landscaping, not for drinking!

The complete process of rainwater harvesting includes; a catchment area like a roof, terrace or other flat surface, a coarse mesh to filter out large debris, oversized gutters sized to transport maximum flow during greatest intensity of rainfall, conduits to transport water from rooftop gutters to rainwater harvesting system, first-flush valve to ensure that initial rainfall carrying majority of pollutants is diverted from the harvesting device, filtering unit with media such as layers of sand, fibers, charcoal, and gravel to prevent remaining dirt and debris from entering the system.

Another option is for the SNWA to operate native plant nurseries in every neighborhood, encouraging drought tolerant landscaping and eliminating a great deal of the water wasted by sprinklers on grass lawns. Certified botanists could help the public with transplanting questions and providing expert advice on combinations of plants best adapted to one another. The maintenance for native plant gardens once established is minimal, as they do not require labor of watering and have evolved resistance to most pest species. For the strongest willed resistors who cling without reason to their thirsty turf lawns, a hefty lawn tax can be implemented to make up for the extra water required for this illogical form of desert landscaping. By cutting back on water consumption by reducing the yearly demand of water dependant lawn landscaping, there will be greater ability to store water in the Las Vegas aquifer's "water bank" directly underground for future drought emergencies.

For the good of all Las Vegas valley residents, suburban sprawl developments such as Harvey Whittemore's Coyote Springs way out from the urban center need to be strongly discouraged. Attempts to provide water far out at these distances will require more transport infrastructure and more water lost during this transport through leakage. It would be interesting to discover if there are credible links between the SNWA pipeline promising extra water for future developments of similar projects, and what Mr. Whittemore's direct role is in supporting these ideas for their short term profit based on claims of future water availability, regardless of the actual outcomes of the pipeline project.

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Collaborator: Dr. Robert Hershler National Museum of Natural History Smithsonian Institution
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http://www.biologicaldiversity.org/news/press_releases/2009/great-basin-spring-snails-02-17-2009.html
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