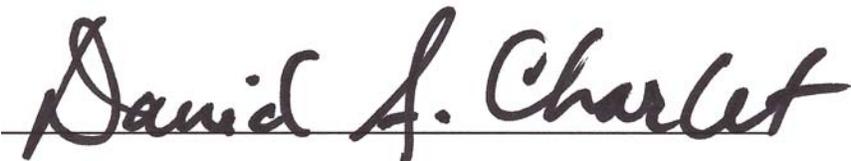


Response to
Evidence on Terrestrial Ecosystems Presented by SNWA
In the matter of the Groundwater Development in Cave Valley,
Dry Lake Valley, and Delamar Valley,
Applications 53987 through 53992, Inclusive

David A. Charlet, Ph.D.

20 December 2007

(signed) A handwritten signature in black ink that reads "David A. Charlet". The signature is written in a cursive style and is positioned over a horizontal line.

20 December 2007

David A. Charlet

The Southern Nevada Water Authority (SNWA) exhibits that concern the terrestrial ecology of lands affected by the groundwater development of underground waters of Cave, Dry Lake, and Delamar valleys give me no confidence that the project should go forward. The evaluation of impacts on biological resources was superficial and anticipates no effects on the systems in the valleys of origin. Moreover, they anticipate no effects on the ecosystems of neighboring hydrographic basins “downstream” of the valleys of origin, such as the White River, Moapa, and Pahranaagat valleys.

Land Use Assessment (SNWA 241)

The Land Use Assessment reports that there is virtually no private land ownership or activities in these basins. This is precisely the reason why they are so important in terms of the biological resources of the area. The ecosystems today are nearly continuous throughout, with relatively little fragmentation and virtually no human activity. These features make the valleys ecologically valuable to the ecoregion. These same features are qualities that persuaded federal land management agencies, the public, and Congress to designate Wilderness in the mountains that are part of these hydrographic basins. In all, the designated Wilderness within the hydrographic basins of the application includes Big Rocks Wilderness, South Pahroc Range Wilderness, Delamar Mountains Wilderness, the Far South Egans Wilderness, and the Mount Grafton Wilderness. The Far South Egans Wilderness extends well into the floor of Cave Valley. One of the reasons for these designations is that the areas and views are natural and lack the presence of human industry. These groundwater withdrawal applications, if approved, will transform these valleys into bustling industrial enterprises, destroying the Wilderness values and greatly harming the integrity of the ecosystems through both the groundwater withdrawal itself and by fragmenting the ecosystems due to the assembly of the means to convey the water – the pipeline and associated infrastructure (SNWA 2007).

Terrestrial Biological Findings (SNWA 321)

The Terrestrial Biological Findings Report as submitted represents excerpts from a larger document, as the pagination begins at page 52 and appendices referred to (SNWA 321 p. 53, p 58, p. 59, p. 70) are not included. Thus, the methods, materials, personnel, many of the results, and the dates of the surveys are unavailable for review. Nevertheless, the document reports some results of a transect survey along the portion of the proposed pipeline, facilities (“staging areas”), and potential exploratory areas that will be constructed in the valleys named in these applications. Of interest was a statement in the report that the proposed pipeline had already been moved (SNWA 321, p. 58), presumably for biological or other considerations. Nevertheless, many rare and sensitive plant and animal species were encountered in all of the valleys during the course of the surveys, whatever their extent or season. Also mentioned in the report was a *Pediocactus* that remained unidentified. There is only one *Pediocactus* species in Nevada, *Pediocactus simpsonii* (Engelm.) Britt. & Rose with two varieties, *P. s. var. robustior* (Coul.) L. Benson, and the typical variety, *P. s. var. simpsonii* (USDA NRCS 2007b). Was it not one of these? Were collections made and sent to experts who could identify the cactus?

Biological Resources (SNWA 239)

Absent from any of the SNWA evidence submitted was consideration for mitigation of the numerous activities generated from the implementation of these applications. Not only is there no mention of mitigation for known disturbances, there is no acknowledgment of any

cumulative consequences, known or unknown, from the project to the ecosystems of the basins from which the water is drawn.

Plants

The report mentions and maps phreatophytic communities in Cave Valley (SNWA 239: Fig. 2). However, it does not disclose what these phreatophytic species are, how they were mapped, or what is meant by “medium-density” or “high-density” phreatophytes. SNWA 239 (p. 6) cites SNWA 321 as indicating that “greasewood and/or four-wing saltbush are intermixed among the sagebrush,” yet I can find no such reference in SNWA 321, much less the existence of phreatophytic plant communities on the valley floor. Soil mapping surveys by the USDA Natural Resource Conservation Service (USDA NRCS 2000, USDA NRCS 2007) found no greasewood here, nor have I found any greasewood communities in any of these basins.

The SNWA-sponsored survey (SNWA 321) encountered four BLM-sensitive plant species along the proposed main pipeline route in Cave Valley: *Cryptantha welshii*, *Phacelia parishii*, *Asclepias eastwoodiana*, and *Sclerocactus blainei*. Along the proposed Cave Lateral Pipeline route, SNWA 321 reports that populations of *Cryptantha welshii* and “*Xanthisma grindelioides depressa*” (by which the authors must mean *Machaeranthera grindelioides* (Nutt.) Shinn. var. *depressa* (Maguire) Cronq. & Keck although the USDA plants database does not list *Xanthisma* as a synonym) were found. Further, SNWA 321 found apparently suitable habitat but no individuals of *Astragalus calycosus* var. *monophyllidius* and *Arabis shockleyi* in Cave Valley along the pipeline route during their survey.

In Dry Lake Valley, SNWA 321 also encountered *Asclepias eastwoodiana*, *Phacelia parishii*, and *Sclerocactus blainei* populations along the pipeline corridor and *Asclepias eastwoodiana*, “*Xanthisma grindelioides depressa*,” *Astragalus calycosus* var. *monophyllidius*, and *Phacelia parishii* were found at staging areas for the project. *Physaria pendula* is given as the scientific name for Parish’s *Phacelia* (SNWA 321: 6.3.2.4) but the occurrence of this *Physaria* is not discussed and I can find no reference to this name in the USDA plants database, either as a currently accepted name or a synonym for a taxon. Finally, SNWA 321 encountered populations of *Mirabilis pudica* in Delamar Valley. However, SNWA 239 reasons that since none of the sensitive plant species encountered are phreatophytes, there can be no impacts of the project on these populations. This reasoning completely ignores the direct impact of habitat destruction and individual mortality by the construction of the pipeline, staging areas, and exploratory activities, much less the impact of fragmenting these populations and facilitating the increase of weeds and the frequency of fire.

Further, the impact of SNWA’s proposed groundwater development on the plant life in hydrologically connected downstream basins is well illustrated by the Fish and Wildlife Service’s discussion (USFWS Exhibits 516 and 519), of the Owens Valley-like dust bowl conditions that may be the result of plant life decline due to lowering of the water table.

Mammals, Reptiles, and Birds

SNWA 239 mentions that seven species of bats utilize Cave Spring in Cave Valley and that all of them are BLM sensitive, yet there is no consideration of potential effects of the project on these populations, nor any plan to mitigate any impacts. Likewise, SNWA 239 reports that 14

bat species classified as sensitive by the BLM were recorded at Coyote Spring in Dry Lake Valley, but no potential impact of the project on the bats is considered. Similarly, SNWA 239 reports that 15 bat species were found at Grassy Spring in Delamar Valley, but has no plans to mitigate the effect of the groundwater project because they do not expect the water to go down, but even if it should go down, SNWA 239 naively concludes that correcting a drawdown would be simple because the groundwater development project could supply the water to the spring (SNWA 239 p18). Should this occur, additional pipelines would be laid to supply the spring, additional pumps to move the water, additional power sources to run the pumps; altogether these additional impacts will negatively impact the ecological integrity of the basin, including its bat populations, even more.

SNWA's survey (SNWA 321) found pronghorn and wild horses using the valleys, yet in SNWA 239 there is no consideration of any anticipated or unanticipated problems this project may pose for them. Thought was given to desert tortoises, including training employees to identify and handle the animals and the construction of fences. However, no thought is given to the impacts of the fences on other wildlife in the area, or the impact of the disturbance on tortoise metapopulations, or to the project's disturbance to these populations and the effect that may have to the security of the species. Some thought is given to the pygmy rabbit and sage grouse. However, since the USFWS ruling in 2005 did not show the pygmy rabbit or the Sage Grouse as deserving consideration for protection under the Endangered Species Act (ESA), and since these species depend on sagebrush and not phreatophytic communities, SNWA 239 does not consider any possible impact of the project on them. As a result of this failure to address cumulative ecological effects, there is no consideration of the impacts of the project on the sagebrush formations that will accrue from fragmentation, invasive weeds, and fire events and how these will affect the sagebrush-dependent species. The Bureau of Land Management (BLM), charged with managing these resources, is clearly concerned (BLM Exhibits 801, 812, 825, 827, 828). Moreover, after the exhibits were submitted in this protest, United States District Judge Winmill found that the Fish and Wildlife Service ruling (USFWS 2005 cited in SNWA 239) was tainted from pressure exerted by a high official and that the Fish and Wildlife Service must reconsider the status of the Sage Grouse and eight other species under the Endangered Species Act (Boone 2007).

Conclusions

I could find nothing in any of the SNWA exhibits that considers the increased likelihood of fire in the basins given the proposed level of human activities. I find no mention of any activities to mitigate the effects of the construction of the pipeline, staging areas, and exploratory activities to the plant populations that will be killed and the habitat that will be consumed, even though their surveys encountered sensitive plant species in every valley at sites where these activities will occur. Likewise, SNWA has no plan for mitigating the effects of creating new habitats for invasive weeds, along with new road networks and associated disturbances that will facilitate the spread of weeds and contribute to the increased likelihood for fire in the basins.

SNWA gives no consideration to the effects of the project on large herd animals such as the pronghorn, elk, mule deer, and wild horses that utilize the resources in these valleys. It would be very helpful to see the mitigation and restoration plans of the SNWA, especially since I know of no restoration protocol for any of the sensitive species to be removed by the project, and

mitigation programs associated with other pipeline projects in southern Nevada have resulted in limited or no success (Figure 1). If there are no plans to restore these habitats, such plans need to be made now, experiments must be conducted to demonstrate their effectiveness, and the enormous costs of these efforts must be included in the SNWA project cost estimates. SNWA 239 mentions in its conclusion (SNWA 239 p 19) that they have applied for Right Of Way (ROW) for the project and that the BLM may impose terms and conditions on them. I am certain that if the BLM approves the ROW there will be serious conditions and terms imposed, but this in no way gives me any confidence that the project should go forward since I have yet to see a “successful” restoration on any pipeline anywhere in Nevada, with or without BLM terms and conditions.

Finally, SNWA fails to consider any of the likely ecological effects on the basins downstream from the target valleys, despite the fact that the overwhelming weight of scientific literature indicates that White River Valley, Pahrnagat Valley, and Pahroc Valley receive significant inflow from the target valleys. As a result, SNWA fails to consider the Southwestern Willow Flycatcher, the migratory birds that frequent both the Pahrnagat and White River valleys, the Pahrnagat Valley montane vole, wild horses (BLM Exhibits 809, 825), or the many other wildlife species that depend on the riparian and spring resources in the Pahrnagat, White River, and Moapa valleys. Clearly, the federal agency charged with their protection is highly concerned about the project to its terrestrial ecosystems (USFWS Exhibits 516, 522, 524-526, 528, 532, 539, 542-561, 563-566, 568-570, 582-585).

Given the pervasive failure, throughout SNWA’s evidentiary submissions, to acknowledge or give meaningful consideration to the clear problems that the project will pose for these ecosystems, I recommend that the groundwater applications be denied.

Literature and Exhibits Cited

Boone, R. 2007. Judge: Government must reconsider sage grouse protections. [Online]. <http://www.heraldextra.com/content/view/245986/> . Retrieved 20 December 2007. The Daily Herald. Provo, Utah.

Bureau of Land Management Exhibits 801, 809, 812, 825, 827, 828.

Southern Nevada Water Authority. 2007. Southern Nevada Water Authority Clark, Lincoln, and White Pine Counties Groundwater Development Project: Draft conceptual plan of development. Prepared by Southern Nevada Water Authority for U.S. Bureau of Land Management, Nevada State Office, July 2007.

Southern Nevada Water Authority Exhibits 239, 241, 321.

USDA Natural Resources Conservation Service. 2007a. Soil Survey of Lincoln County, Nevada, North Part. Las Vegas, Nevada.

USDA Natural Resources Conservation Service. 2007b. The PLANTS Database (<http://plants.usda.gov>, 20 December 2007). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

USDA Natural Resources Conservation Service. 2000. Soil Survey of Lincoln County, Nevada, South Part. Las Vegas, Nevada.

US Fish and Wildlife Service Exhibits 516, 522, 524, 525, 526, 528, 532, 539, 542-561, 563-566, 568-570, 582-585.



Figure 1. Kern River natural gas pipeline in the Bird Spring Mountains, Clark County, Nevada. Pipeline was constructed in 1992 and restoration efforts, including reseeding and transplanting of *Yucca schidigera* and *Yucca brevifolia*, immediately followed pipeline construction. Note the dead *Yucca schidigera* stems and the complete absence of *Yucca brevifolia* along the pipeline corridor. Photo taken by the author in 2004. The condition of the ecosystems along the pipeline corridor looks essentially the same today.