

September 25, 2011

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Dear Ms. Woods:

Thank you for the opportunity to comment on the Draft EIS (DEIS) for the Groundwater Development Project.

I have been on the faculty of the University of Nevada Las Vegas since 1960, and have specialized in research on the endemic fishes of Nevada, especially those confined to isolated springs in the desert environment. During that time I have published more than 85 scientific articles or chapters in the peer-reviewed literature, have recommended numerous fish species for listing under provisions of the Endangered Species Act, have served as a consultant to nonprofit organizations, to state and federal government entities in Nevada, Utah, Arizona, and California, and served as an expert witness in administrative hearings and court cases.

I have reviewed the Draft Environmental Impact Statement, especially the chapters covering Aquatic Biological Resources (chapter 3) and Monitoring, Management, and Mitigation (Chapter 2), and wish to offer the following comments for your consideration.

The Proposed Action, as well as Alternative A (or any alternative other than "no action") will produce a host of adverse environmental consequences that will be borne disproportionately by residents of the area directly affected (Eastern and Central Nevada and western Utah). Residents of the area into which water importation is proposed will, in general, be less adversely impacted. The environmental consequences borne disproportionately by residents of Eastern and Central Nevada, and western Utah, include substantial increases in atmospheric dust, vegetation change, land subsidence, spring, stream, and wetland failure, and the innumerable changes in lifestyle forced by these avoidable environmental changes. **The EIS must acknowledge this disproportionate adverse impact.**

The DEIS does an excellent job of identifying the aquatic biological resources dependent on the groundwater-dependent ecosystems that will be adversely affected by the proposed project. A major failing of the DEIS lies in its assertion that permanent damage to aquatic biological resources as a consequence of proposed groundwater development can be prevented or mitigated by the proposed MMM program. In fact, removal of the quantities of water from the groundwater system as described by the Proposed Action or any of the action Alternatives (including Alternative A) will result in an unacceptable and irretrievable loss of biodiversity.

The principle driving force behind the consequences described in the previous paragraph lies in the fact that the states of Nevada and Utah had, as of February 2006, granted water rights to 102% of the estimated "perennial yield" throughout the regional groundwater flow system (Deacon et al. 2007, Table 2). As of February 2006, applications for an additional 169% of the estimated "perennial yield" had been filed in the Nevada portion of the regional groundwater flow system. These applications included the approximately 330,000 acre-feet per year requested by the Southern Nevada Water Authority (SNWA asserts they are seeking about 180,000 acre-feet per year from those applications).

Because the perennial yield was already completely allocated by early 2006, additional water rights granted within the regional groundwater flow system can only increase the rate at which springs, streams, and wetlands disappear, groundwater tables fall, and phreatophyte communities fail. In fact, because "perennial yield" is really an estimate of the quantity of water in a groundwater flow system that is discharged from springs, streams, evapotranspiration, and interbasin flow, groundwater pumping in any amount reduces those discharges. This physical reality means that any mitigation proposal depending on groundwater pumping from deeper in the aquifer can, over the long term, only serve to exacerbate the problem allegedly being mitigated. **The EIS must acknowledge this physical reality specifically as it applies to proposed mitigation for the Shoshone ponds, and generally as it applies to other proposed mitigation activities. Pumping from deeper in the aquifer, over the long term, will exacerbate surface water supply problems in the aquifer! In other words, the proposed solution (mitigation) will make the problem worse!**

Section 3.7 (Aquatic Biological Resources) of the Clark, Lincoln, and White Pine Counties Groundwater Development Project DEIS completed by BLM is a thorough examination and evaluation of the probable effects of the proposed project on aquatic biological resources within the area of impact. The area of impact is defined by a regional groundwater model used for analysis of the project. The groundwater model used by BLM estimates impacts over a smaller geographic area than is estimated by other models that have been used to examine this problem (Elliott et al. 2006, Myers 2006, 2007, 2011a,b, Schaefer and Harrill 1995, and others). This suggests that the very serious impacts to Aquatic Biological Resources described in the DEIS may be considerably understated. **The EIS should address the issue of underestimating the geographic area over which impacts may occur.**

The effects of the project on Aquatic Biological Resources are controversial enough, and uncertain enough to anticipate a relatively high probability of litigation under provisions of the Endangered Species Act as a consequence of the proposed action. **The EIS should evaluate the consequences (i.e. construction delays, increased costs) of this kind of litigation, as well as the high probability that the proposed action and all the alternatives (including Alternative A) are likely to result in violations of Federal law (Endangered Species Act).**

The DEIS recommends using Alternative A (including the mitigation and monitoring identified in Chapter 2) as a starting point in reviewing the draft EIS. Alternative A proposes somewhat reduced groundwater pumping and a Monitoring, Management, and Mitigation process representing extensive and comprehensive efforts by SNWA and federal agencies to minimize environmental effects of the groundwater project. The DEIS and numerous other studies, analyses, and scientific papers (e.g. Bredehoeft and Durbin 2009, Deacon et al. 2007, Mayer and Congdon 2007, Patten et al. 2008, Walton 2011, and others) make it obvious that there will be far-reaching, permanent and extensive adverse effects to the Aquatic Biological Resources of the region. While the MMM effort is commendable and may temporarily reduce some impacts to the Aquatic Biological Resources of the region, it is clearly incapable of avoiding or mitigating unacceptable environmental consequences to these Resources. Principal reasons for this are as follows:

1. The MMM (Monitoring, Management, and Mitigation) program is structured so that an Executive Committee comprised of one manager from SNWA and one from each of the DOI (Department of Interior) Bureaus will have final decision-making authority.

This structure ensures that, over the long run decisions will be biased toward delivering water to Las Vegas. This is because the SNWA representatives' primary job responsibility is to deliver water to Las Vegas, while DOI Bureau managers have responsibilities to implement the policies of the federal administration for whom they work. One example of the sometimes contradictory effect of DOI Bureau managers attempting to discharge their primary responsibilities is that people holding these positions have, in the past, filed protests with the Nevada State Engineer against the SNWA applications for groundwater rights, and under a different federal administration, requested withdrawal of those same protests. **To even approach objectivity, the EIS must propose a different final decision-making system for the MMM program, or explain how this inherent structural bias toward delivering water to Las Vegas is to be balanced in a way that will not lead to increased jeopardy for Special Status species, increased probability that federal (ESA) and state (water law) laws and regulations will not be violated.**

2. The Stipulated Agreements governing the MMM program include the following provision: "Any commitment to funding by the DOI bureaus or the SNWA in the stipulation, including specifically any monitoring, management, and mitigation actions provided for in Exhibit A is subject to appropriations by Congress or the governing body of the SNWA as appropriate."

In the present (and long-term) political climate, funding from public sources is under extreme pressure. Long-term survival of the MMM program is therefore highly unlikely. The MMM program as described will, over the long term, make Aquatic Biological Resources in the area of impact increasingly dependent on continuation of the program, while the program itself becomes increasingly unlikely to exist. **The EIS must acknowledge that fact and explain how it is to be overcome.**

3. The MMM program, because of problems described as "Aquifer Response Time" (Walton 2011) or "time to full capture" (Bredehoeft and Durbin 2009), is capable of identifying groundwater supply problems that will get worse downstream in the groundwater flow system. It is not capable of preventing those problems from getting worse. **The EIS must explain how the MMM program can overcome this inherent problem stemming from the physics of how groundwater flow systems function.**

4. The Aquatic Biology MMM program focuses especially on Special Status Species and game species. This approach tends to overlook the numerous recently described species whose status has yet to be evaluated, as well as the numerous as yet undescribed species occurring in the area of impact. Because numerous new species have recently been described from the area of impact, and biodiversity in the area is poorly known, **the EIS must explain how the MMM program proposes to avoid loss of biodiversity of this large group of undescribed or uncategorized species.**

5. Shoshone Ponds in Spring Valley and Big Springs in Snake Valley are two habitats specifically identified as aquatic habitats likely to disappear as a consequence of the proposed action. Alternative A will not change that outcome. Mitigation measures suggested include the possibility of creating alternative or substitute aquatic habitats intended to replace those unavoidably lost, or maintaining the habitats by groundwater pumping from deeper in the aquifer. The latter strategy will simply exacerbate the long-term problem, as described above. Moving the habitat to an alternative, naturally maintained habitat could conceivably be considered appropriate for Shoshone Ponds (an artificial habitat intended to help maintain one or more specific Special Status species). It cannot be considered appropriate for any natural habitat such as Big Springs. This is because Big Springs presently supports a rich, largely natural biodiversity which includes Special Status species and probably includes some species as yet unrecognized, undescribed, or whose status has yet to be evaluated. The interactions and interdependencies helping to support those Special Status species and influencing the evolutionary trajectory of all species within that habitat are only incompletely known. At present it is inconceivable to even contemplate developing sufficient knowledge to permit construction of an artificial habitat that would come close to duplicating ecological conditions capable of supporting the biodiversity of any natural habitat/ecosystem. **The EIS must recognize this distinction between mitigation for artificial habitats and natural habitats, including recognition of the fact that replacement of natural habitats cannot be accomplished.**

To summarize, my principal objections to the Proposed Action are:

1. The adverse effects of the Proposed Action (dust, destruction/disappearance of phreatophyte communities, spring, stream, and wetland failure, land subsidence) will be borne disproportionately by residents of eastern and central Nevada and western Utah, while the principle benefits (economic growth) will accrue predominantly to the residents of Southern Nevada. (Provided the boom and bust cycle facilitated by the water importation scheme doesn't completely wipe out the benefits from economic growth.)

2. Some proposed mitigation measures (i.e. pumping from deeper in the aquifer) will, over the long term, exacerbate problems allegedly being mitigated.
3. The regional groundwater model used in the analysis of probable impacts suggests adverse impacts over a smaller geographical area than is indicated by several other recent, credible groundwater models. Yet that fact is not acknowledged in the DEIS.
4. The Proposed Action and Alternative A will produce severe environmental consequences likely to include violations of Federal and State law, as well as violation of the BLM obligation to serve its public trust responsibilities.
5. The final decision-making authority for the MMM program (the Executive Committee) is structured with a bias toward delivering water to Las Vegas.
6. Reliance on congressional appropriation or funding from SNWA to maintain the MMM program virtually guarantees a short lifespan for the program. The consequence will be to make biodiversity in the area increasingly dependent on a program increasingly likely to be eliminated.
7. Aquifer Response Time, or Time to Full Capture permit a monitoring program to identify problems in an aquifer likely to get worse. Once identified however, there is no way to reverse the situation.
8. Desiccation of surface water habitats will destroy all species dependent on those habitats. In the area of probable impact this will include not only the special status species, but also the many undescribed or unrecognized species. No mitigation program can compensate for this loss.
9. Natural habitats cannot be replaced.
10. The No Action alternative is the only one that would permit BLM to conform to its mission: "to sustain the health diversity and productivity of the public lands for the use and enjoyment of present and future generations." The Proposed Action will inevitably result in harmful irreversible and irretrievable impacts on public lands and resources.
11. Total project costs and sources of funding are not described.
12. An honest analysis of the purpose and need for the project (growth and development in Las Vegas) is not described.
13. The effect of a reduction in precipitation over the next hundred years as a consequence of climate change is not evaluated.
14. Approval of any alternative other than "No Action" will conflict with BLM's duties under NEPA and FLPMA.

15. Predicted land subsidence, desiccation of surface water habitats (springs, streams, wetlands), destruction of phreatophyte communities, increased atmospheric dust, adverse impacts on wildlife, encroachment on existing water rights, and devastating consequences to human and natural systems demand a recommendation for the "No Action" alternative.

16. The proposed MMM program will exacerbate some problems it claims to mitigate, identify some problems that can only get worse, establish a system biased toward delivering water to Las Vegas, and increase dependence of biodiversity on a human-dependent program increasingly likely to disappear over time.

17. Effects of a decline in the water table of less than 10 feet, while potentially substantial, are largely ignored.

18. The timeframe analyzed extends only 200 years into the future, while the effects will be felt throughout the life of the project -- which may extend much longer than 200 years.

19. Groundwater mining is supposedly illegal in Nevada, a major effect of the proposed project is likely to be another boom and bust cycle in Las Vegas.

20. There is no doubt about the far-reaching, extensive, irreversible and irretrievable environmental damage the project would cause.

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