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Public Comments Processing
Attn: FWS-R8-ES-2009-0069
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Re: Comments of the Western Urban Water Coalition on the Draft Economic Analysis of Critical Habitat Designation for the Arroyo Toad – FWS-R8-ES-2009-0069

I am writing on behalf of the Western Urban Water Coalition (WUWC) to submit comments on the Draft Economic Analysis (DEA) of the proposed designation of critical habitat for the arroyo toad under the Endangered Species Act (ESA). The Service has proposed designation of 112,765 acres in seven counties of southern California. U.S. Fish and Wildlife Service News Release (June 28, 2010), *available at* <http://www.fws.gov/ventura/newsroom/nreleases/2010/nr100005.html>. The final designation must take into account any exclusions that are determined necessary based on the costs of the proposed designation. The WUWC has been extensively involved in the determination of ESA economic exclusions and offers these comments from that perspective.

When a species of fish or wildlife is listed under the ESA, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service (collectively, the Services) are required, in most circumstances, to designate “critical habitat” for the species. The ESA defines critical habitat as “specific areas . . . on which are found those physical or biological features” that are “(I) essential to the conservation of the species and (II) which may require special management considerations or protection.”

The ESA also requires the Services to consider economic impacts when they designate critical habitat. 16 U.S.C. § 1533(b)(2); 50 C.F.R. § 424.12(a). An area shall be excluded from critical habitat if the benefits of exclusion outweigh the benefits of specifying such area as part of the

critical habitat, provided deleting the area will not result in extinction of the species. 16 U.S.C. § 1533(b)(2); 50 C.F.R. § 424.19. The Supreme Court has held that the requirement that economic impacts be considered in the critical habitat designation process is one “of obligation rather than discretion.” *Bennett v. Spear*, 520 U.S. 154, 172 (1997).

The current process began with the publication last fall of a proposed rule designating arroyo toad critical habitat. 74 Fed. Reg. 52,612 (Oct. 13, 2009). Along with the recent notice reopening the comment period on the proposed designation (75 Fed. Reg. 37,358, June 29, 2010), FWS published, and solicited comments on, the DEA. The analysis, in short, finds that there are economic costs exceeding \$10 million in eight of the 23 habitat areas for arroyo toad. Costs exceed \$100 million in four very urbanized areas. However, there are no biological rankings of the habitat areas that would provide the basis for comparisons with costs, and thus a rational way to justify habitat exclusions. The analysis falls short of fulfilling the section 4(b)(2) requirements.

The WUWC consists of the largest urban water utilities in the West, serving over 35 million western water consumers in 13 metropolitan areas in five states.¹ Several WUWC members operate facilities potentially affected by the proposed designation. In addition, the WUWC has a longstanding institutional interest in critical habitat exclusions under section 4(b)(2), having developed recommended principles to determine when the costs of designation outweigh the benefits. These comments apply the WUWC’s past policy positions on critical habitat exclusions to the arroyo toad critical habitat DEA.

HISTORY OF ECONOMIC EXCLUSIONS UNDER THE ESA

Approximately ten years ago, the Services followed a so-called “baseline” approach to analysis of the economic impacts of critical habitat designation. This approach attributed all economic impacts to the listing stage and few or no economic impacts to critical habitat designation (CHD). The courts invalidated this approach on grounds that the “jeopardy” and “critical habitat” tests are intended to be separate and distinct. *New Mexico Cattle Growers Ass’n v. U.S. Fish and Wildlife Service*, 248 F.3d 1277, 1285 (10th Cir. 2001); *National Ass’n of Home Builders v. Norton*, No. 00-0903 (D. Az., Sept. 21, 2001) (order remanding CHD to FWS).

¹ The membership of the WUWC includes the following urban water utilities: *Arizona* – Central Arizona Project, City of Phoenix; *California* – East Bay Municipal Utility District, Metropolitan Water District of Southern California, San Diego County Water Authority, City and County of San Francisco Public Utilities Commission, Santa Clara Valley Water District; *Colorado* – City of Aurora, Denver Water; *Nevada* – Las Vegas Valley Water District, Southern Nevada Water Authority, Truckee Meadows Water Authority; and *Washington* – Seattle Public Utilities.

Following the *New Mexico Cattle Growers* decision, the Services began exploring how to improve their estimates of incremental economic impacts of CHD. Recognizing the importance of this issue, the WUWC commissioned a detailed economic study designed to develop recommended principles that the government could follow in evaluating the impacts of CHD. The result was the WUWC Position Paper issued in April 2003, entitled "A Recommended Method for Economic Analysis of Critical Habitat Designation Under the Endangered Species Act." Attachment 1 (as revised in 2010). The WUWC submitted this statement of principles to the Services and applied them, through the City of Phoenix, to the proposed CHD for the southwestern willow flycatcher in May 2005. Attachment 2. The WUWC also submitted these principles to Secretary Kempthorne in his listening sessions in 2006-2007, to Principal Deputy Shaffroth in April 2009, and to Counsel to the Assistant Secretary for Fish and Wildlife and Parks Michael Bean in April 2010.

NMFS set an important precedent by using a more practical method to assess 4(b)(2) exclusions on salmon and steelhead critical habitat both in the Pacific Northwest and in California in 2005. *See* 70 Fed. Reg. 52,630 (Sept. 2, 2005); 70 Fed. Reg. 52,488 (Sept. 2, 2005). Following an approach that reflected many of the WUWC principles, the NMFS CHD exclusion analysis followed the concept that economists should focus their analysis on giving policymakers the input they need to make sound decisions in accordance with the law. Teams of biologists ranked 764 watersheds in the Pacific Northwest and 317 watersheds in California as high, medium, or low biological value based on a variety of primary constituent elements (PCEs). Nine different types of human activities affecting that habitat were identified. Special management considerations were specified, and direct costs were estimated for each type of modification, along with a likelihood of occurrence, to generate expected direct costs for each type of project. A point estimate of economic impacts for each habitat area was generated, with indirect and induced costs added using a regional model. The resulting matrix of biological values and economic impacts identified the potential exclusion of a significant number of watersheds. For instance, in California a total of 42 watersheds were recommended for complete exclusion with another six recommended for partial exclusion. The recommended exclusions reduced the total economic impacts by 28%, with debate left open for potential exclusions that would reduce impacts by an additional 57%. While there were a number of technical issues in the methodology that could be debated, and while both biologists and economists appeared to err repeatedly on the side of caution for the salmonids, the analysis represented a significant step forward in developing the process to designate sufficient habitat to conserve the species, while trying to reduce the net social costs of such an action.

Unfortunately, in the intervening years since the *New Mexico Cattle Growers* decision, the methodology used to calculate economic impacts has become confused, with a wide variation in

standards and inconsistent results.² Attachment 3 is a table of recent CHDs identifying the type of economic studies that accompanied the action. Of the economic studies performed, six continued the baseline approach with nearly all costs considered to be incurred coextensive with listing. Five studies used the incremental approach to measure the additional cost of CHD using a with-and-without CHD analysis. Twelve studies used a hybrid approach that included both coextensive costs in the baseline and incremental costs. Thus, there remains wide variation in the methodology and diligence of each study to estimate the incremental costs of economic activities due to CHD.

One recent economic study and 4(b)(2) exclusion process conducted in 2009 deserves special mention. The study of the southern district population segment of the North American green sturgeon built upon the work done on West Coast salmon and steelhead. The approach used benefit-cost analysis (BCA), but relied heavily on a particular type of cost-effectiveness analysis (CEA):

Assessing the benefits of critical habitat designation in a BCA framework is straightforward in principle, but much more difficult in practice. ... However, the available data are insufficient to quantify the benefits of designating critical habitat for green sturgeon, particularly with respect to discrete geographic areas. [p. 1-2]

* * *

The alternative form of CEA being applied to the green sturgeon analysis is one that develops an ordinal measure of the benefits of critical habitat designation. Although it is difficult to monetize or quantify benefits of critical habitat designation, it is possible to differentiate among habitat areas based on their estimated relative need for special management. For example, habitat areas can be rated as having a high, medium, or low biological value. The output (a qualitative ordinal ranking) may better reflect the state of the science for the geographical scale considered here than a quantified output, and can be done with available information.

² A recent decision of the Ninth Circuit potentially conflicts with the *New Mexico Cattle Growers* decision of the Tenth Circuit. In *Arizona Cattle Growers' Ass'n v. Salazar*, the Ninth Circuit relied on its own 2004 decision in *Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service*, 378 F.3d 1059 (9th Cir. 2004), amended by 387 F.3d 968 (9th Cir. 2004), to hold that CHD is largely related to species recovery and hence the economic analysis could look only at the difference in costs between the restrictions imposed by listing and those needed for recovery. The WUWC principles continue to apply under either the Ninth or Tenth Circuit decisions, with the costs evaluated defined whether all costs and habitat values are considered (*New Mexico Cattle Growers*) or only those that represent the difference between jeopardy and recovery (*Arizona Cattle Growers*).

Individual habitat areas can be assessed using both their biological evaluation and economic impact assessments, so that areas with high conservation value and lower economic impacts have a higher priority for designation, and areas with a low conservation value and higher economic impacts have a higher priority for exclusion. [p. 1-3]

Although it considered some costs as coextensive with listing, the analysis included a probability analysis that the green sturgeon CHD would add to the special management measures implemented. Following principles similar to those recommended by the WUWC as early as 2003 and adopted by NMFS in the salmonid CHD in 2005, the economists involved in the green sturgeon review assessed 15 different economic activities, using very specific management measures and their incremental costs. The sturgeon biological team rated 39 habitat areas High, Medium, Low, or Ultra-Low for conservation value. The Service then used a set of four decision rules to determine eligibility for exclusion. All areas rated High were not eligible for exclusion. Areas rated Medium were eligible if costs exceeded \$100,000; areas rated Low were eligible if costs exceeded \$10,000, and areas rated Ultra-Low were eligible if there were any costs.

Eighteen of the 39 areas were determined eligible for exclusion. The economics team then asked the biological team to assess if exclusion would significantly impede conservation or result in extinction. Of the 18 eligible areas, 13 were finally excluded. It is worth noting that this practical approach reduced the total economic impacts of designation by \$8,654,000, or 40.1%, in the low-impact scenario and by \$304,034,000, or 82.9%, in the high-impact scenario. The end result yielded significant improvements in net social welfare while still ensuring conservation of the species. The green sturgeon and salmon and steelhead studies demonstrate that it is possible to use a practical approach to some very complex problems and develop information that helps policymakers get to Pareto-superior societal outcomes. As more CHD processes use this approach, it will likely be improved further over time.

For the reasons discussed in the next section, the WUWC stands by the view that following the principles described in the 2003 Position Paper will yield 1) more efficient sets of critical habitat that conserve species and minimize societal costs, 2) more transparent processes enabling stakeholders to anticipate outcomes, and 3) more effective use of limited planning resources for economic analysis.

**APPLYING THE WUWC PRINCIPLES TO THE
ARROYO TOAD SECTION 4(b)(2) EXCLUSION DETERMINATION**

The following discussion applies each of the WUWC principles to the arroyo toad CHD DEA.

Principle 1. A cost-effectiveness approach is the appropriate framework of economic science for weighing the economic costs and benefits of critical habitat designation.

The Service should employ a cost-effectiveness framework that is designed to find the least-cost means to achieving the ESA-mandated objective of designating and protecting habitat that is essential for species conservation. This simplified form of benefit/cost analysis is appropriate for two reasons: a) the numerator in the benefit/cost equation has been fixed at the ESA policy objective of preserving habitat essential for species conservation, and b) the economic benefits of species preservation have already been captured during the earlier and separate decision to list the species. The Service is provided the discretion to use cost-effectiveness analysis in OMB Circular A-4. It says on page 11, “Generally, cost-effectiveness analysis is designed to compare a set of regulatory actions with the same primary outcome” Conservation of arroyo toads is the primary outcome in this case.

A cost-effectiveness framework is practical because it accepts the statutory objective of protecting habitat essential for species conservation and focuses limited analytical resources on estimating the costs of including specific geographic areas for special management within the designation. It sidesteps the need to use costly, and sometimes controversial, non-market valuation techniques to monetize the benefits for a species. The costs of designating each habitat area can then be compared to the biological value of the habitat to arrive at a designation of critical habitat areas that protects essential habitat containing necessary PCEs, while minimizing economic costs. Biologists lack the information to make strict quantitative assessments that can be monetized, but they are able to reach consensus on an ordinal ranking of the contributions of habitat areas to species conservation.

Application to the Arroyo Toad DEA. The arroyo toad study acknowledges that “the primary purpose of the rulemaking (i.e. the direct benefit) is the potential to enhance conservation of the species.” (p. 29, line 705). “Rather than rely on economic measures, the Service believes that the direct benefits of the proposed rule are best expressed in biological terms that can be weighed against the expected cost impacts of the rulemaking.” (p. 29, line 711). The study appropriately does not invest resources in attempts to monetize the direct benefits.

This would seem to be an expression of support for cost-effectiveness analysis, but the study does not get to that point for the arroyo toad. The study needs to take the next step of acknowledging that the total benefits of conserving the species will be very similar for each set

of habitat segments that accomplishes the goal of conserving the species. In other words, the numerator of the benefit-cost equation is very similar for each set of habitat areas. This assumption of a numerator fixed by the ESA sets up the use of cost-effectiveness analysis. However, this study does not embark on an explicit search for the least-cost combination of critical habitat that would conserve the arroyo toad.

The study acknowledges that ancillary benefits may indirectly accrue from CHD, such as the value of increased recreation, or green space from CHD in real estate developments. Again, the study does not use scarce planning resources to attempt to monetize these side benefits, but instead qualitatively describes the categories of potential benefits and the types of benefits that might flow from various types of management prescriptions for arroyo toad conservation. This is a marked improvement from studies used in other CHD economic analyses, which spend considerable effort trying to measure types of potential benefits.

Principle 2. Agency biologists should determine the biological value of specific habitat areas for the conservation of the species.

The only way that critical habitat benefits need be specified is in biological terms of the contribution of specific areas to species conservation. Biologists – not economists – should decide which habitat and physical/biological elements of that habitat have the most biological value for species conservation and what special management measures are needed to conserve species beyond those measures necessary to prevent jeopardy to, and likely extinction of, a species.

The relevant questions for biologists are: (1) What are the physical and biological features of habitat that are essential for the conservation of a species?; (2) Which specific habitat areas contain those elements that are essential for the conservation of the species?; (3) How much of the specific habitat areas containing those elements is essential for the conservation of the species?; and (4) What are the special management measures that would be applied to protect the essential physical and biological features of areas designated as critical habitat? By answering these questions, biologists can delineate the sum total of eligible habitat areas and the relative value of each habitat area as a contribution toward the statutory objective of species conservation. When biologists answer these questions, economists can provide meaningful cost estimates for comparison with the biological benefits of protecting critical habitat in a particular area.

Application to the Arroyo Toad DEA. The proposed rule for arroyo toad answers the first question in general terms. The second and third questions are not addressed. The fourth question is answered quite well in the assumptions of what measures would be required of each land use.

It is not necessary to specify the exact amount of biological value for each habitat area. Instead, the Services need to use their professional judgment to delineate and subjectively prioritize specific geographic areas based on the quality of habitat attributes present at a given location and the degree to which the area is essential to the conservation of a species. Ranking the qualitative benefits of various habitat segments is highly appropriate under OMB Circular A-4 (p. 45).

It is this biological ranking of CH areas that is lacking in the arroyo toad study. The failure to rank the biological contribution of each area leaves the Service without a decision rule for making exclusions. The decision inquiry in the section 4(b)(2) exclusion analysis should be “*Can we increase net social welfare by excluding this habitat segment and still conserve the species?*” Application of the 4(b)(2) principles developed by the WUWC will place the Service in the best position to answer this question.

We agree with the comment suggested by the San Diego County Water Authority that the assumption that 80% of the floodplain is occupied by the toad needs to be re-evaluated. There appears to have been some confusion with a biological opinion expressed in Appendix H that 80-85% of breeding habitat was occupied.

Principle 3. Economists can estimate the direct and indirect economic costs of critical habitat designation for specific geographic areas and standards for habitat protection.

The Services should be afforded some flexibility in choosing the economic tool that is most appropriate for each designation. The more complicated economic models should be used to analyze designations of large geographic areas and areas where economic activity is concentrated. The simple, direct-cost method should be used where designations are small in area, or where there is little variation in the type of land/water use and economic activity throughout the proposed designation.

Application to the Arroyo Toad DEA. The methodology for this study represents a marked improvement over past efforts for other species, which dismissed many legitimate costs of CHD as “co-extensive,” reducing the analysis to a measurement of the administrative costs of consultation. It is worth noting that of the \$798 million in incremental costs of CHD identified for the arroyo toad, only \$2 million of these costs were the estimated cost of consultations. This gives a measure of the magnitude of costs ignored in past studies of other species’ CHD.

This study does a good job of:

- Clearly delineating between baseline and incremental costs.
- Realistically assessing the incremental costs of project modification and opportunity costs for real estate development, water supply, grazing, mining, road construction, and utilities

and infrastructure. By transparently assessing both the method and the assumptions behind the analysis, this study makes it possible for affected parties to offer additional data that may improve the study's conclusions.

- Creatively looking for other hidden costs such as the cost of project delays and uncertainty, stigma, and increased costs of compliance with state law (CEQA).
- Being clear about the type of special management considerations that CHD may require of each land use, including both the cost of project modifications to better conserve the species and the opportunity costs forgone by CHD.
- Being clear with a list of assumptions and the direction of potential error that each may introduce (Table ES-5, p. 12).
- Estimating both annual cost and present value of the cost over the next 25 years.
- Estimating distributional impacts to various stakeholders, and separating these impacts from the changes in net social welfare estimated for direct costs.

Habitat Conservation Plans. The study acknowledges the various habitat conservation plans (HCPs) that exist in the study area. Several are multi-species in nature. All costs of developing these HCPs are allocated to the baseline status of the world prior to CHD. This is disingenuous. At least a portion of the motivation for entities to develop an HCP is the anticipation of CHD and the use of an HCP as a consideration for exclusion. This fact is acknowledged in the economic study for the quino checkerspot butterfly (p. 2-8) which said, "incremental impacts may include indirect impacts resulting from reaction to the potential designation of critical habitat (e.g. developing habitat conservation plans)." And again, on page 2-15, "For example, a landowner may have been previously unaware of the potential presence of the species on his or her property, and expeditious completion of an HCP may offer the landowner regulatory relief in the form of exclusion from the final critical habitat designation. In this case, the effort involved in creating the HCP and undertaking associated conservation actions are considered an incremental effect of designation."

Indeed, relevant critical habitat covered by HCPs is proposed for exclusion from arroyo toad CHD, so developing HCPs as a preemptive strategy by land developers seems sound. In fact, some WUWC members are currently pursuing HCPs for exactly the purposes of addressing CHD restrictions and increasing their planning certainty going forward. A practical and more theoretically sound approach for this study might be to allocate a portion of the HCP implementation costs to the CHD increment. The use of "incremental factors" is found in the green sturgeon study with respect to other types of costs.

Water Impacts. The study makes a good faith attempt to estimate the costs of CHD for each affected water supply project on an individual basis, looking both at any costs of project modification to help dams make releases for in-stream flow requirements, and at the cost of replacing lost water from the least costly alternative. This approach mirrors the approach

WUWC used in assessing the cost of designating Horseshoe Reservoir as critical habitat for the southwestern willow flycatcher. *See* Attachment 2.

However, this analysis inappropriately assigns all water supply impacts within the baseline impacts and assigns no costs to the incremental effect of CHD (p. C-1). It bases this assumption on interviews of dam operators conducted in 2005. Given the highly dynamic nature of water supply in southern California, this seems very disingenuous. Changes are likely to flow from the designation of critical habitat. The study then compounds its error by limiting its search for new impacts on water supply.

The San Diego County Water Authority (SDCWA) was aware of no conversations between the economists and their staff. Moreover, none of the SDCWA's member agencies have raised concerns about meeting arroyo toad requirements following listing, something that normally occurs when new regulations arise. Metropolitan Water District (MWD) had been contacted, but only about two very specific issues, and not about providing replacement water. Many of the replacement water estimates in the DEA are for water supplied by the SDCWA, with costs provided by its members. Both wholesale water supply entities raised concerns about the DEA's suggesting they could be the source of replacement water. They could make no guarantee of replacement water for arroyo toad purposes, as their priority is to meet the region's demand for municipal water. Thus, the DEA inappropriately commits increments in water supply to arroyo toad protection, when it may have already been committed to another purpose, such as an assured future supply for municipalities.

In addition, the costs for additional water supplied by SDCWA are much higher than those used in the study. While Table 3-4 on page 67 cites water costs of \$520-560 per acre-foot, SDCWA cites a 2010 price of \$690 per acre-foot of untreated water, rising over time to \$1,634 per acre-foot in 2025. These costs represent a minimum price. It is more likely that the price should be that of developing the next cheapest source of new water, an even higher figure.

The study consistently assumes that 50% of the water volume that would have been released during the breeding season will require replacement, while the other 50% will be made up in operational flexibility elsewhere in the system (p. 64). It is not at all clear whether this is a reasonable assumption for all water agencies involved. The study considers the assumption to be moderate simply because it is halfway between zero and 100% flexibility. Again, posing this question directly to the affected agencies seems appropriate. Using a zero, or at least much lower, percentage for operational flexibility seems appropriate until an improved estimate can be derived from interviews with water agency managers.

Nor does the study note that SDCWA plans to add an additional 117 feet to San Vicente Dam to yield another 156,000 acre-feet of supply, and construction is underway. The study does not

estimate how that plan may have to be modified or have its yield reduced or flows altered. This opportunity cost will be substantial, and it needs to be included in the study's estimates as an incremental cost of CHD.

The concluding point in measuring the cost of water supply impacts is that the water supply situation in Southern California is very dynamic, with each new restriction pushing price higher and higher. There have been considerable changes since 2005, and the web of technical and institutional relationships among water agencies is very complex. As minimal (if any) changes have been made to date in the water supply regimes of existing water agencies due to the listing of the arroyo toad, it seems that the water impacts need to be moved from baseline to incremental. The DEA needs to make a stronger effort to understand the nuances of the management prescriptions and the search for replacement water.

Principle 4. Use a practical approach for weighing the costs of critical habitat designation against the benefits of critical habitat protection.

Under the recommended cost-effectiveness framework, the Service is provided with information on the relative costs and benefits of designating or excluding specific geographic areas from habitat designation. Areas that have high habitat value and low economic cost will usually be included. Areas that are low in habitat value but high in economic cost should be excluded. And, if high habitat value-low cost areas do not provide enough habitat for the conservation of the species, then the Service can consider including high value-high cost areas, or low value-low cost areas to achieve species conservation objectives. This process has the added benefit of narrowing the debate over habitat exclusions to more productive discussions about the biological value of a given habitat area and the size of economic impacts that might accrue. Private parties will find it easier to advocate their interests in exclusions in factual ways.

Application to the Arroyo Toad DEA. Because the biological values of the 23 critical habitat areas have not been ranked, this step has not been followed in the case of the arroyo toad. While it appears that many of the PCEs may be present within each area, it is the responsibility of biologists to rank the areas on their ability to sustain populations of the arroyo toad. The economic costs of CHD have been clearly measured and ranked, though they need refinement. A decision rule on thresholds for consideration of exclusion must be proposed. Lacking ranking of biological values, it is not possible to combine economic cost rankings and biological rankings to prioritize areas to be considered for exclusion in the 4(b)(2) process. This is not sufficient. Given that the incremental costs of CHD exceed \$10 million in eight of the 23 habitat areas, and exceed \$100 million in four of the areas, there is huge potential for accomplishing cost savings to society and still conserving the arroyo toad species through the use of the WUWC triage exercise of comparing biological benefit with economic cost in each habitat area.

Principle 5. Avoid efforts to monetize biological benefits—Attempting to monetize the biological benefits of designation and species recovery adds little value to policymaking.

There is little value gained in attempting to monetize the biological value of habitat areas. Such efforts must rely on expensive and sometimes controversial non-market valuation studies. Prioritizing habitat segments mirrors the information that might be gained through a monetized approach, but does so in a way consistent with the relatively crude levels of available biological data.

Application to the Arroyo Toad DEA. The arroyo toad study wisely avoids efforts to monetize benefits of species conservation, and contributes a comprehensive, but qualitative, listing of potential side benefits of CHD.

CONCLUSION

The economic analysis of the proposed CHD for the arroyo toad represents a marked improvement from many previous studies that relied heavily on co-extensive impacts to exclude incremental costs. The DEA does a thorough job of identifying types of incremental costs, including both direct costs of modifying various types of land use and indirect costs such as project delay, uncertainty, stigma, and state regulation compliance. The exception is its failure to list water supply impacts as incremental. It does use different approaches to capture the incremental costs of each land use, and it effectively separates distributional impacts from efficiency impacts. Both annual costs and the present value of 25 years of costs are presented. The costs of additional consultations are measured and amount to only a small fraction of the \$798 million total incremental costs. The WUWC supports the basic principles and methods applied to reach this conclusion.

The DEA appears to have made key omissions, however. First, it should have allocated at least a portion of the costs of creating and modifying HCPs to the incremental side of the costs, as HCPs are often pre-emptively developed as a strategy to achieve regulatory relief.

Second, the study failed to interview wholesale providers of water supply such as the SDCWA. The SDCWA's plans to expand the San Vicente Reservoir were not included among water impacts. Further, the assumption that half the replacement water could be supplied through management flexibility remains unverified. And, most important, the vast majority of water supply impacts should be counted as incremental to the CHD, not part of the listing baseline.

One advantage to following the WUWC principles in economic analyses is that it serves to shift the analysis to the finer points of the methodology and bring new information to light. We hope our comments have shown several places where the economic methods could be refined.

The WUWC requests that the following revisions be made to the final economic analysis and 4(b)(2) report:

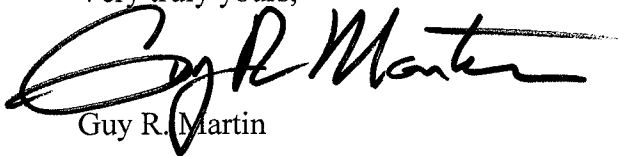
1. Explicitly recognize that a cost-effectiveness approach is the correct form of benefit-cost analysis for critical habitat evaluations, leading analysts to search for the least-cost combination of critical habitat that will conserve the species.
2. Re-evaluate and adjust the assumption regarding the percentage of floodplain occupied by the arroyo toad, as 80% does not appear justified by the evidence.
3. Apportion the costs of developing and implementing HCPs between baseline and incremental costs.
4. Re-interview the managers of wholesale and retail water agencies, and use the findings to better model the complexities of water delivery in Southern California. More specifically:
 - a. Move the water supply impacts from the baseline to the incremental costs. There is little to no evidence of water agencies making the suggested special management measures prescribed in the study in the years since the listing of the arroyo toad as an endangered species, so any changes will flow from CHD.
 - b. Listen to where the managers of SDCWA and MWD say they would seek replacement water for losses caused by special management measures for the arroyo toad. At a minimum, adjust the cost of replacement water to match the current and projected costs they will furnish (\$690/AF rising to \$1,634 in 2025). However, it is likely that replacement water will have to come from the least costly next alternative source of new water, raising the cost of replacement water even further.
 - c. Eliminate or reduce to 10% the assumption that 50% of lost water can be made up with operational flexibility, at least until a firm estimate can be made based on the interviews with water managers.
 - d. Incorporate the impacts on planned new water developments identified by water agency managers, such as 156,000 acre-feet of additional storage in San Vincente Reservoir currently under construction.
5. Require the biologists to rank the biological contribution of the different habitat areas on some subjective scale, e.g., High, Medium, Low, and Very Low. This may lead to dividing some habitat areas into smaller segments in order to differentiate biological contribution.
6. Compare the biological contribution to the economic cost of CHD and develop a decision rule for consideration of exclusion from CHD in the 4(b)(2) report.

7. Evaluate each candidate area for exclusion on the relative benefits versus costs of inclusion. Exclude the highest cost and lowest biological value areas and find the least-cost combination of critical habitat that will conserve the arroyo toad.

It is important to remember that the goal of the economic study is to provide a logical framework for discovering the least-cost combination of habitat areas that will conserve the arroyo toad. The WUWC believes that, given the high economic costs already identified by this study and the increases in cost that will come with study revision, and with the assumption that there are variations in the quality of toad habitat between areas, the Service should be able to achieve significant savings in costs to society through the application of the WUWC principles, and that therefore a significant amount of acreage (including much of the area associated with urban water supply projects) should be excluded.

Thank you for providing the opportunity to comment on the DEA. If you have any questions about these comments, please contact me or Don Baur at (202) 628-6600.

Very truly yours,



Guy R. Martin

Attachments

References

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