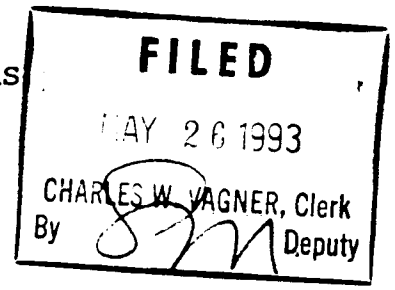
UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
MIDLAND/ODESSA DIVISION



SIERRA CLUB, Plaintiff, GUADALUPE-BLANCO RIVER AUTHORITY, ET AL. Plaintiff-Intervenors, V. BRUCE BABBITT, in his official capacity as Secretary, Department of Interior, and THE UNITED STATES FISH AND WILDLIFE SERVICE, Defendants, DANNY McFADIN, TOMMY WALKER, CARL MUECKE, ET AL. Defendant-Intervenors.	§ §	MO-91-CA-069

AMENDED FINDINGS OF FACT AND CONCLUSIONS OF LAW

On February 1, 1993, this Court filed its Judgment and separate Findings of Fact and Conclusions of Law in the above-captioned cause. On limited remand from the U.S. Court of Appeals for the Fifth Circuit, this Court now has under consideration the Federal Defendants' and Plaintiffs' Joint Motion to Clarify the Judgment and Findings. This Court finds that such motion is well taken and that it should be GRANTED.

IT IS THEREFORE ORDERED that the Federal Defendants' and Plaintiffs' Joint Motion to Clarify the Judgment and Findings is hereby GRANTED, and the Court's February 1, 1993 Findings of Fact

407

and Conclusions of Law are hereby amended pursuant to Rules 60 and 52(b) of the Federal Rules of Civil Procedure to read as set forth herein.

BEFORE THIS COURT came the above-captioned cause for bench trial in Midland, Texas on November 17-19, 1992. The case at bar involves three groups of parties. Group I, aligned as Plaintiffs: Plaintiff SIERRA CLUB; Plaintiff-Intervenors: (1) GUADALUPE-BLANCO RIVER AUTHORITY ("GBRA"); (2) CITY OF SAN MARCOS (3) CITY OF NEW BRAUNFELS and NEW BRAUNFELS UTILITIES; (4) BEXAR METROPOLITAN WATER DISTRICT ("BMWD"); (5) GREEN VALLEY WATER SUPPLY CORPORATION ("GVWSC") and ATASCOSA RURAL WATER SUPPLY CORPORATION ("ARWSC").

Group II, aligned as Defendants: Defendants MANUEL LUJAN, JR., and THE UNITED STATES FISH AND WILDLIFE SERVICE ("USFWS"); Defendant-Intervenors: (1) STATE OF TEXAS [TEXAS WATER COMMISSION ("TWC"), TEXAS PARKS AND WILDLIFE DIVISION (the "TPWD"), TEXAS DEPARTMENT OF AGRICULTURE (the "TDA")]; (2) CITY OF SAN ANTONIO, TEXAS; (3) UNITED SERVICES AUTOMOBILE ASSOCIATION ("USAA"), REDLAND STONE PRODUCTS COMPANY ("REDLAND"), SOUTHWEST RESEARCH INSTITUTE ("SOUTHWEST RESEARCH"), USAA REAL ESTATE COMPANY ("USAA REALCO"), and SOUTHWEST FOUNDATION FOR BIOMEDICAL RESEARCH ("SOUTHWEST FOUNDATION") (collectively, "INDUSTRIAL WATER USERS" or "IWU"); (4) GREATER SAN ANTONIO BUILDERS ASSOCIATION ("BUILDERS ASSOCIATION"); DANNY McFADIN, TOMMY WALKER, and CARL MUECKE; (6) LIVING WATERS ARTESIAN SPRINGS, LTD. ("THE CATFISH FARM").

Group III, Aligned as *AMICI CURIAE*: (1) EDWARDS UNDERGROUND WATER DISTRICT ("EUWD"); (2) UNION CARBIDE CHEMICALS and PLASTICS COMPANY, INC., OCCIDENTAL CHEMICAL CORP., E.I. DuPONT De NEMOURS & COMPANY, INC., CENTRAL POWER & LIGHT, CO., THE CARBON/GRAPHITE GROUP, INC., and BP CHEMICALS (collectively, "INDUSTRIAL WATER USERS ON THE LOWER GUADALUPE RIVER ASSOCIATION" ("IWUA")); (3) THELMA AREA NEIGHBORHOOD CORPORATION ("TANC"). Parties and their counsel appeared and announced ready for trial. All jurisdictional prerequisites necessary for the maintenance of the claims of the parties are fulfilled. *See* 28 U.S.C. §§ 1331, 1343; *see also* 28 U.S.C. § 1402(b). After considering all the pleadings, the summary judgment evidence, the evidence presented at trial, and the testimony of live witnesses, the deposition transcripts and summaries, the copious proffered exhibits, the arguments of counsel, creative and otherwise, the controlling legal authorities, post-trial briefs, and proposed findings of fact and conclusions of law, this Court hereby enters its Findings of Fact and Conclusions of Law in accordance with Rule 52 of the Federal Rules of Civil Procedure.

TABLE OF CONTENTS

Endangered Species Act Introduction

1. Notwithstanding the existence of simple innuendos to possible far-reaching impacts, the case *sub judice* specifically concerns the duties of the Secretary of the United States Department of the Interior (the "Secretary") and the United States Fish and Wildlife Service (the "USFWS") (collectively, the Federal Defendants) to protect certain endangered and threatened species and their ecosystems, the Comal Springs, the San Marcos Springs, and the Edwards Aquifer (the "Edwards").

2. The United States Supreme Court observed the Endangered Species Act (the "ESA") as "the most comprehensive legislation for the preservation of endangered species ever enacted by any nation." *Tennessee Valley Authority v. Hill*, 437 U.S. 153, 180 (1978). Beyond any doubt, "Congress intended endangered species to be afforded the highest of priorities." *Id.* at 174. "The plain intent of Congress in enacting this statute was to halt and reverse the trend toward species extinction, whatever the cost." *Id.* at 184. The ESA reflects "an explicit Congressional decision to require agencies to afford first priority to the declared national policy of saving endangered species" and "a conscious decision by Congress to give

endangered species priority over the 'primary missions' of federal agencies." *Id.* at 185.

3. Quoting from a House Committee report, the Supreme Court echoed Congress' concern both about the unknown uses endangered species might have and about the unforeseeable place such species may have in the chain of life on the earth:

> "As we homogenize the habitats in which these plants and animals evolved and as we increase the pressure for products that they are in a position to supply (usually unwillingly) we threaten their -- and our own -- genetic heritage.
>
> "*The value of this genetic heritage is, quite literally, incalculable.*
>
> . . . .
>
> "From the most narrow possible point of view, *it is in the best interest of mankind to minimize the losses of genetic variations*. The reason is simple: they are potential resources. They are keys to puzzles which we cannot solve, and they provide answers to questions which we have not yet learned to ask.
>
> "To take a homely, but apt example: one of the critical chemicals in the regulation of ovulations in humans was found in a common plant. Once discovered, and analyzed, humans could duplicate it synthetically, but had it never existed -- or had it been driven out of existence before we knew of its potentialities -- we would never have tried to synthesize it in the first place.
>
> "Who knows, or can say, what potential cures for cancer or other scourges, present or future, may lie locked up in the structures of plants which

> may yet be undiscovered, much less analyzed? . . . Sheer self interest impels us to be cautious."

Id. at 178 (quoting H.R. Rep. No. 93-412, 87th Cong., at 4-5 (1973)) (emphasis added by Supreme Court).

4. The requirements of the various endangered and threatened species are extremely complex; unfortunately, the earthlings' collective knowledge on these issues is still in the infant stages. Accordingly, any permitted deviations from the natural conditions granting the known requirements should be assumed to harm the endangered and threatened species.

The Edwards Aquifer System

5. The Edwards is a 175 mile long underground conduit and covers an expanse of about 3,600 square miles. (Fed. Def. Consol. Answer at ¶ 10). Although challenged, the Texas Water Commission ("TWC") declared the Edwards to be an underground river. (PX-171). Water enters the Edwards mainly (75%) from surface streams as they cross its recharge area. (Thornhill Testimony; PX-189 at p. 6; P-36 [San Marcos Recovery Plan]). Unless intercepted by human withdrawals, water in the Edwards flows west to east, then northeast, and discharges naturally at springs, especially Comal Springs in New Braunfels and San Marcos Springs in San Marcos. *(Id.)*. Water is removed

from the Edwards by withdrawal from wells, interformational movement, and by discharge through spring openings.

6. Although also challenged, the TWC determined the Edwards manifests all the characteristics of a surface watercourse; therefore, the water in the Edwards is owned by the State of Texas in trust for the benefit of the public. (PX-171).

7. The underground formation generally falls in elevation from west to east. (Thornhill Testimony; PX-189 at p. 5). The formation also generally dips toward the Gulf of Mexico. (Thornhill Testimony; PX-189 at p. 5). The piezometric surface of the water (that is, the water level) in the Edwards generally decreases from the west to the east. (Thornhill Testimony; PX-2). The Edwards has two adjacent sub-areas -- a shallower outcrop area where recharge occurs and a deeper artesian area. (Thornhill Testimony).

8. The Edwards is porous and complexly faulted with numerous fractures and solution cavities. The movement of water through the aquifer, except in general terms, is largely undefined. The Edwards Aquifer exists because of the Balcones Fault Zone and to its limestone and dolomite composition. Dissolution of the rock and faulting have created pathways for the water of the Edwards to flow through. Springs, the

natural spill points of the Edwards Aquifer, are all located along major faults. (Thornhill Testimony).

9. A large variability is present in the type and size of the openings in the Edwards Aquifer. The openings range in size from microscopic to large caverns. Many large openings in the subsurface have been encountered while drilling wells. They range from less than a foot to nearly 100 feet; a 90-foot opening has been reported in one well drilled in San Antonio. The relatively large openings are one of the many reasons the Edwards is important and unique. (Thornhill Testimony).

10. Most of the water in the Edwards comes from the flows of surface streams that feed it. (Thornhill Testimony; PX-25; PX-26; PX-189). These streams are located in the upper portion of the Nueces River Basin, the upper portion of the San Antonio River Basin, and a part of the upper portion of the Guadalupe River Basin (the "Contributory Watershed"). (PX-1). Almost all of the base flows and large parts of the flood flows of these streams naturally flow underground to the Edwards through its recharge area. (Thornhill Testimony).

11. The lateral boundaries of the Edwards are: on the north, the northern boundary of the recharge area; on the south, the boundary south of just where the water moves at rates of flow considered insignificant as compared to flow rates north of

the boundary (the boundary is approximated by the "bad-water" line, which separates water containing less than 1000 milligrams per liter of total dissolved solids ("TDS") from water containing more 1000 milligrams per liter of TDS). On the west, the divide near Brackettville in Kinney County separates underground flow toward the Comal and San Marcos Springs from underground flow to the Rio Grande Basin. On the east, the divide northeast of Kyle in Hays County separates underground flow toward the Comal and San Marcos Springs from underground flow to the Colorado River Basin. (PX-189 at p. 5).

12. Water along and south of the "bad-water" line contains much higher concentrations of minerals and is typically charged with hydrogen sulfide. (PX-171; PX-184 at p. 1). Generally, the Edwards is not nearly as porous and permeable south of the "bad-water" line and the water there moves at rates that are insignificant compared to flow rates north of the line. (PX-185 at pp. 19-21).

13. The lower boundary of the Edwards is the underlying Glen Rose Formation. (Thornhill Testimony; PX-189). The upper boundary of the artesian area is the Del Rio Clay. (Thornhill Testimony; PX-189).

14. Water levels at various parts of the Edwards differ, and no *single* well reflects the overall and exact Edwards level. (See Thornhill Testimony).

15. The Edwards is a unique ecosystem, which is home to several unique species. (PX-189 at p. 6). Among these is the Texas Blind Salamander, which is listed by the Federal Defendants as endangered. (Shull Testimony; PX-248; DX-20).

16. The Edwards is the major source of water supply for over one million residents of the Edwards region. The Aquifer was designated as the major source aquifer under the Safe Drinking Water Act. *See* 42 U.S.C. § 300f-300g-6. (Aceves Testimony; Moreno Testimony).

17. The Edwards Aquifer supplies the water needs of municipalities, irrigated agriculture, industry, domestic and livestock uses, and several military installations through wells drilled into the aquifer. (Thornhill Testimony; Aceves Testimony).

18. Unquestionably, the Edwards is a natural resource vital to the economies of the aquifer region. (Perryman Testimony). Therefore, the Edwards should be protected.

19. Two groundwater districts have been created under Texas law to manage the Edwards. *Amicus curiae* Edwards Underground Water District ("EUWD") has authority within Bexar, Comal, and Hays

Counties to conserve, preserve, protect and increase the recharge of and prevent the waste and pollution of the aquifer's waters. EUWD is empowered to develop, implement, and enforce drought management plans in order to minimize, as far as practicable, the drawdown of the water table, or the reduction of artesian pressure or spring flow. The EUWD has adopted rules, effective since 1991, requiring pumping reductions of 10% to in excess of 30%, varying with drought conditions. The EUWD has constructed a number of recharge enhancement structures in the Edwards region. The Medina County Underground Water District has authority within Medina County to permit nonexempt wells, limit pumpage, encourage conservation, and prohibit waste of the aquifer's waters and has adopted rules aimed at achieving these goals. (Masters Testimony; DX-8; DX-9; DX-10).

The Comal Springs and San Marcos Springs

20. The rate of spring flow at San Marcos and Comal Springs is generally related to levels of water in the Edwards, although spring flow at San Marcos is somewhat influenced by local recharge. (See Thornhill Testimony).

21. The primary natural surface outlets of the Edwards, however, are the multiple, natural spring openings of the two largest

springs in Texas and the entire southwest United States: the Comal Springs at New Braunfels (PX-4; PX-5; PX-7; PX-18) and the San Marcos Springs at San Marcos. (PX-6; PX-19; PX-20). Both of these springs are in the Guadalupe River Basin. (Thornhill Testimony).

22. Spring Lake overlies natural spring openings at San Marcos Springs. (Thornhill Testimony). Landa Lake overlies the lower natural spring openings at the Comal Springs. (Thornhill Testimony).

23. Some of the spring openings at Comal Springs are at a higher elevation than Landa Lake. Springflows from these spring openings flow down spring runs (stream channels) into Landa Lake. (Thornhill Testimony).

24. The Comal Springs are a unique ecosystem. The largest springs in the Southwest, the Comal Springs, are home to one of the only two wild populations of the Fountain Darter, which is listed by the Federal Defendants as an endangered species. (Hubbs Testimony; Shull Testimony; Whiteside Testimony; PX-36). The Comal Springs are also home to a species of salamander which may be the San Marcos Salamander, federally listed as threatened, or the salamander may be a unique species. (Hillis Testimony; Whiteside Testimony; PX-36, PX-248). The Comal Springs are also home to certain species

of invertebrates, which the Federal Defendants have under consideration for listing as endangered or threatened. (Shull Testimony; PX-248; DX-63).

25. The San Marcos Springs are a unique ecosystem, being the second largest springs in the Southwest. The San Marcos Springs are home to one of the only two wild populations of the Fountain Darter which is listed by the Federal Defendants as an endangered species. (Hubbs Testimony; Shull Testimony; Whiteside Testimony; Thornhill Testimony; PX-36). The San Marcos Springs and the San Marcos River downstream of those springs are also home to the San Marcos Salamander, federally listed as threatened, the Texas Wild-rice, federally listed as endangered, and the San Marcos Gambusia, federally listed as endangered. (Hillis Testimony; Shull Testimony; Hubbs Testimony; Power Testimony; Whiteside Testimony; PX-36, PX-248). The San Marcos Gambusia may in fact be extinct, but it has not yet been officially declared extinct by the Federal Defendants. (Hubbs Testimony; PX-41; PX-85).

26. The endangered or threatened species living either at or downstream of the Comal and San Marcos Springs or in the Edwards rely upon adequate and continuous natural flows of fresh water through the Edwards and exiting from the natural

spring openings as an environment for their survival. (Admitted, Fed. Def. Consol. Answer at ¶ 123).

The Threats Posed by Pumping of the Edwards

27. Recharge of the Edwards is highly variable, ranging from 46,000 acre feet per year ("ac-ft/yr") to 2 million ac-ft/yr. (Thornhill Testimony; PX-11).

28. But for human withdrawals, natural discharge from the Edwards at the Comal and San Marcos Springs would likely be stable. (Thornhill Testimony).

29. Water lost from the Edwards by well discharge, interformational movement, or spring discharge could be replenished by surface recharge. The quantity of recharge of the Edwards is dependent upon the amount, rate, and location of rain falling in the aquifer's watershed and recharge areas. Limited structures capturing rainfall and runoff enhancing the recharge have been constructed since recovery efforts for the listed species began. (Thornhill Testimony; Masters Testimony).

30. Pumping from the Edwards rose from about 30,000 ac-ft/yr at the turn of the century to over 500,000 ac-ft/yr in recent years. In dry seasons, pumping is expectedly higher,

especially spring, summer, and drought years. (Thornhill Testimony; PX-10; PX-248).

31. The Comal Springs dried up only once, in 1956, for five months, in the worst year of the "drought of record." (Thornhill Testimony; PX-13).

32. The Comal Springs would not have dried up in the drought of record but for human withdrawals from the Edwards. In the absence of such pumping, the Comal Springs would have flowed at a rate of not less than 150 cubic feet per second ("cfs) on the worst day of 1956. (Thornhill Testimony).

33. During the drought of record in 1956, springflow at the San Marcos Springs slowed to 46 cfs. (PX-15). In the absence of human withdrawals from the Edwards, the San Marcos Springs could flow at a rate of not less than 100 cfs on the worst day of the worst year of the drought of record. (Thornhill Testimony).

34. Pumping from the Edwards, during the ten years up to and including 1956, averaged 219,000 ac-ft/yr and peaked at 321,000 ac-ft/yr in 1956. (PX-10). Pumping during the last 10 years averaged 468,000 ac-ft/yr, peaking in 1989 at 542,000 ac-ft/yr.

35. As a result of pumping, the Comal Springs threatened to dry up in 1984, 1989 and 1990. (Thornhill testimony; PX-34 at p. 1).

These three years were years of droughts having an expected severity of approximately once per decade. (Bomar Testimony).

36. If current levels of withdrawals from the Edwards are allowed to continue without control or additional water supply, both the Comal and San Marcos Springs potentially will cease to flow for years during either a repeat of the drought of record or a worse drought. Further, both springs will cease to flow during milder droughts with a shorter duration than the drought of record. (Thornhill Testimony; PX-171; DX-169 at pp. 2, 3, 5-1, 5-67).

37. If current levels of withdrawals are allowed to continue without reduction, endangered and threatened species will be taken, damaged, or destroyed; their designated critical habitat destroyed or adversely modified; and their continued existence severely jeopardized during dry periods or relatively mild droughts. (Thornhill Testimony; PX-34; PX-35; PX-36; PX-171; DX-169).

38. Dry periods and relatively mild droughts occur with some frequency in Texas. (Thornhill Testimony; Bomar Testimony).

39. Pumping from the Edwards has been and remains effectively unregulated. (Hall Testimony; Spear Testimony; Aceves Testimony). Although the Board of Directors of the EUWD did adopt a Demand Management Plan, with concomitant rules

implementing the plan, and a Edward-Balcones Fault Zone Aquifer (the "Aquifer Management Plan").

40. The Edwards is overdrafted; meaning, more water is withdrawn every year than its "firm yield" in the drought of record. (Thornhill Testimony; Spear Testimony; Masters Testimony; Aceves Testimony).

41. Without some regulation of pumping, the Comal and San Marcos Springs will have cyclical drying-up periods, with the potential of permanently drying up. (*See* Thornhill Testimony; PX-36; DX-169).

42. The TWC noted, "overdrafting of the Aquifer itself may allow the intrusion of highly mineralized water from underground water adjacent to the [Edwards] otherwise held in check because of the hydrostatic pressure of the Aquifer." (PX-189 at p. 8).

43. A 1986 study published by the United States Geological Society ("USGS") estimated, under conditions of the "worst case" during a repeat of the drought of record, the bad-water would migrate 0.2 miles into the fresh water of the Edwards. Consequently, 11,300 acre-feet of bad water and 76,900 tons of pollutants would be discharged into the fresh water each year. (PX-250).

44. Under the "worst case" estimate in the 1986 USGS report, there would be 22,400 acres of land overlying the Edwards (0.2 miles multiplied by 175 miles), within which existing and future wells supplying water for domestic, municipal, industrial, and irrigation uses would be jeopardized. (PX-250).

45. Under the "worst case" estimate in the 1986 USGS report, 3.7 billion gallons of bad-quality water would be discharged into the fresh water each year. (PX-250).

46. Under the "worst case" estimate in the 1986 USGS report, 154 million pounds of pollutants would be discharged into the fresh water each year. (PX-250).

47. The TWC was advised of the high likelihood the "worst case n estimate made in the 1986 USGS Report *may not be* the worst case. (*See* PX-162). However, the TWC made no determination on this issue. (Masters Testimony, Aceves Testimony; *see* PX-189).

48. In addition to the threat of contamination from the discharge of bad-quality water from south of the bad water line, there also appear to be areas of bad-quality water within the fresh-water portion of the Edwards. These areas presumably exist because there is minimal flow of water in these areas. If the Edwards is drawn down to historical lows, presumably there

will be discharge of bad-quality water from these areas into fresh water. (Thornhill Testimony).

49. Hydrogen sulfide is one of the pollutants in the bad water, both south of the bad water line and in the isolated areas of bad water within the fresh water zone. (Thornhill Testimony). Hydrogen sulfide is a hazardous substance as defined under federal law. *See* 16 U.S.C. § 1261; 40 C.F.R. § 302.4, Table 302.4.

50. A recent study conducted by the EUWD shows the bad water line is much closer to the Comal and San Marcos Springs than was previously assumed. In fact, the study shows the bad water line is located directly beneath the Springs. (PX-184). Bad water has been withdrawn from a well located approximately 300 feet from major spring openings at the San Marcos Springs. (Thornhill Testimony).

51. The USFWS is concerned about threat the movement of bad water, due to overdrafting of the Edwards, may pose to endangered and threatened species. (PX-34, PX-132).

52. If the Comal Springs ceases to flow, there is a risk the bad-quality water containing a hazardous substance will move into fresh water near the spring openings and be discharged out the spring openings when the aquifer levels rise. (Thornhill Testimony; PX-34, PX-132).

53. The surest and most prudent method of ensuring the inexistence of significant adverse water quality impacts, due to pumping from the Edwards, is to limit pumping to the extent necessary to maintain adequate, continuous natural springflows from the Comal Springs at all times. Uncertainties of human knowledge prevent reducing the Edwards level any lower. (*See* Thornhill Testimony).

54. The Texas Department of Water Resources ("TDWR"), the TWC, the EUWD and the City of San Antonio agree: if the Edwards were pumped down too far (presently an unquantifiable figure), movement of bad water could permanently and irreversibly ruin the Edwards. (Thornhill Testimony; Hall Testimony; Masters Testimony; Aceves Testimony; PX-75; PX-189; PX-132 (3/91 letter); PX-171; DX-169).

Endangered Species Act Specifics

55. The ESA promulgates the Federal Defendants as the lucky leading Federal agency-in-charge of protecting endangered and threatened species. *See* 16 U.S.C. § 1531, *et seq*.

56. Pursuant to the ESA, 16 U.S.C. § 1533(a)(1), the Secretary *is required* to determine whether any species is an endangered or threatened species because of any of the following factors:

(a) the present or threatened destruction, modification or curtailment of its habitat or range; (b) over-utilization for commercial, recreational, scientific, or educational purposes; (c) disease or predators; (d) the inadequacy of existing regulatory mechanisms; or (e) other natural or man made factors affecting its continued existence.

57. Under 16 U.S.C. § 1533, the Secretary must determine which species are the endangered or threatened species "solely on the basis of the best scientific and commercial data available to him after conducting a review of the status of the species and after taking into account those efforts, if any, being made by any state or foreign nation, or any political subdivision of the state or foreign nation, to protect such species, whether by predator control, protection of habitat and food supply, or other conservation practices, within any area under its jurisdiction, or on the high seas."

58. Under 16 U.S.C. § 1533(c), the Secretary is required to publish in the Federal Register a list of all species determined by either the Secretary of the Interior or the Secretary of Commerce to be an endangered or threatened species.

59. Under 16 U.S.C. § 1532(6), "the term 'endangered species' means any species which is in danger of extinction throughout

all or a significant part of its range other than the species of the Class Insecta determined by the Secretary to constitute a pest whose protection under the provisions of this chapter would present an overwhelming and overriding risk to man."

60. Under 16 U.S.C. § 1532(20), "the term 'threatened species' means any species which is likely to become an endangered species within the foreseeable future throughout all or a significant part of its range."

61. Region 2 of the USFWS, which includes, Texas, New Mexico, Arizona, and Oklahoma, has responsibility for the endangered and threatened species at issue in this lawsuit. (Spear Testimony; DX-19 at cover page).

62. The species at issue currently listed under the ESA and the geographical areas occupied by these species are described below:

    a. **Fountain Darter** (*Etheostoma fonticola*), which is listed in 50 C.F.R. § 17.11 (1988) as endangered. The State of Texas recognized the Fountain Darter (*Etheostoma fonticola*) as an endangered species. 31 Tex. Admin. Code Ann. § 65.183 (1989). The entire known world population of the Fountain Darter in the wild is found at Comal Springs (in the spring runs above Landa Lake, in Landa Lake, and in a segment of the Comal River downstream of Landa Lake) and at San Marcos Springs (in Spring Lake and a segment of the San Marcos River downstream of Spring Lake). The Fountain Darter commonly sinks to the bottom of the river channel due to its small swim bladder. *(See* Whiteside Testimony; Schenck Testimony; PX-23; DX-10 at P. 41).

b. San Marcos Gambusia (*Gambusia georgei*), which is listed in 50 C.F.R. § 17.11 (1988) as endangered. The State of Texas recognizes the San Marcos Gambusia (*Gambusia georgei*) as an endangered species. 31 Tex. Admin. Code Ann. § 65.183 (1989). The entire known world population of the San Marcos Gambusia in the wild was found in a segment of the San Marcos River downstream of Spring Lake. None have been found in the wild since 1985. Although uncertain, the San Marcos Gambusia's disappearance is possibly attributable to the application of herbicide on banks of the river or maybe hybridization. (*See* Hubbs Testimony; PX-24; DX-21; DX98).

c. Texas Wild-rice (*Zizania texana*), which is a member of the plant family *Poaceae*, Texas Wild-rice, listed in 50 C.F.R. § 17.12 (1988) as endangered. The State of Texas recognizes Texas Wild-rice (*Zizania texana*) as an endangered species. Tex. Parks and Wild. Code Ann. § 88.002 (Vernon Supp. 1990). The entire known world supply of Texas Wild-rice in the wild is found in Spring Lake and a segment of the San Marcos River downstream of Spring Lake. (*See* Power Testimony; Shull Testimony; PX-21; PX-32; DX-10 at p.41).

d. San Marcos Salamander (*Eurycea nana*), which is listed in 50 C.F.R. § 17.11 (1988) as threatened. The State of Texas recognizes the San Marcos Salamander (*Eurycea nana*) as a threatened species. 31 Tex. Admin. Code Ann. § 65.173 (1988). The entire known world population of the San Marcos Salamander in the wild is found at natural spring openings of the San Marcos Springs, and possibly also at natural spring openings of the Comal Springs, and in the gravels and immediate spring runs associated with the openings. (*See* PX-22; *cf.* Hillis Testimony; DX-21; DX-98).

e. Texas Blind Salamander (*Typhlomolge rathbuni*). This species is listed by the federal government as endangered at 50 C.F.R. § 17.11 (1988). The State of Texas recognizes the Texas Blind Salamander (*Typhlomolge rathbuni*) as endangered. 31 Tex. Admn. Code Ann. § 65.183 (1989). The entire known world population of the Texas Blind Salamander in the wild is found underground in the Edwards in a

relatively small segment of the Edwards near the San Marcos Springs. *(See* PX-30).

63. Recently, two new, rare and possibly endangered species have been discovered in the Comal Springs. (PX-228). The new discoveries include the dryopid beetle, which is also a genus; meaning, the beetle is unique and deserves its own classification. Comal Springs is thought to be the only place in the world where the dryopid beetle is found. A species of the riffle beetle, found in the Comal Springs, was described as endemic to the Comal system. Each of these species has been proposed for listing under the ESA. (Shull Testimony; PX-248).

64. Section 4 of the ESA provides, the Secretary "shall develop and implement" what is known as a "recovery plan" for each endangered species, unless he finds that it "would not promote the conservation" of the species to do so. 16 U.S.C. § 1533(f).

65. Some agency actions are exempt from judicial review "as actions committed to agency discretion by law." (Fed. Def. Br. at p. 4). However, an action is "committed to agency discretion" where there is "no law for the court to apply." *Heckler v. Chaney,* 470 U.S. 821, 830 (1985). In the case at bar, a statute commands the agency to act, "there is law to apply"

and this Court "may review whether the agency acted in accordance with Congress' wishes." *Thomas Brooks Chartered v. Burnett*, 920 F.2d 634, 642 (10th Cir. 1990); *see also Brock v. Pierce County*, 476 U.S. 253, 260 n.7 (1986) (where statutory command is that agency "shall" act, complainant adversely affected by failure to act can bring an action in District Court). Section 4 of the ESA commands the Secretary to "develop" and "implement" recovery plans.

66. The Administrative Procedures Act (the "APA") standard to which Federal Defendants refer does not limit the Court to review for "arbitrary and capricious" agency action or inaction. The APA permits the Court to correct agency action considered an abuse of discretion, otherwise not in accordance with law, or without observance of procedures required by law. *Friends of Endangered Species, Inc. v. Jantzen*, 760 F.2d 976, 981-82 (9th Cir. 1985). And the court is free to subject the agency's action to "thorough probing, in-depth review." *Citizens to Preserve Overton Park v. Volpe*, 401 U.S. 402, 415 (1971). An abuse of discretion occurs when an agency which Congress mandates "shall develop and implement a recovery plan" refuses to act on the behalf of species the USFWS knows were in "imminent peril" in 1989 and 1990.

67. The Federal Defendants claim Plaintiffs have "no legal basis" for asserting the Federal Defendants have a nondiscretionary duty under ESA § 4 to identify and communicate the Comal and San Marcos species' springflow requirements. (Fed. Def. Br. at p. 14). To the contrary, § 4 of the ESA provides the USFWS shall determine what species are endangered or threatened and list them; shall designate their critical habitat; and "shall develop and implement" what are known as "recovery plans" -- plans for the "conservation and survival" of listed species. 16 U.S.C. § 1533. Priority is to be given to species whose survival is in conflict with economic activities, such as withdrawals of water from the Edwards. 16 U.S.C. § 1533(f).

68. The "conservation" § 4 recovery plans seek is defined by statute as "to bring any endangered and threatened species to the point at which the measures provided pursuant to [the ESA] are no longer necessary." 16 U.S.C. § 1532(3).

69. In the circumstances of this case, the ESA § 4 duty to develop and implement a plan is mandatory, not discretionary. The ESA says that he "shall" develop and implement such recovery plans. 16 U.S.C. § 1533(f). There is one stated exception: Unless he finds that such a plan will not promote the conservation of the [endangered] species. *Id.* The Federal Defendants have never claimed that this exception applies to

the present case. The Secretary's failure to develop and implement recovery plans permit this Court to review whether the USFWS has acted in accordance with Congress' wishes.

70. Both the Federal Defendants and the Defendant-Intervenors argue the Secretary has discretion to set priorities and determine whether recovery plans will conserve the species. (Fed. Def. Br. at p. 15; Def. Int. Br. at p. 17) (citing *National Wildlife Fed'n v. National Parks Serv.*, 669 F. Supp. 384 (D. Wyo. 1987)). *National Wildlife Fed'n* stands the proposition that, if there exists sufficiently clear justification arising out of facts developed after completion of a recovery plan, the Secretary can temporarily delay implementation of a recovery plan. 669 F. Supp. at 387 (Secretary decided to delay decision on closing campground, pending results of environmental impact statement due to be released within year and which used "the most sophisticated methods to date" to measure human impact on Grizzly Bears).

71. The facts in the instant are markedly different. For eight years, the Federal Defendants failed to implement the existing San Marcos Recovery Plan, and they failed to develop a plan for Comal Springs. They never identified the necessary springflow requirements of the species. The Federal

Defendants argue that "particularly in light of the severe budget constraints" their duty to develop and implement a recovery plan should be discretionary. (Fed. Def. Br. at p. 16). This Court refuses to legislate a new exception reading: "the Secretary shall develop and implement a recovery plan *unless* he claims, or suspects, that "tight budget constraints" make develop or implementation of a recovery plan inconvenient or difficult to reconcile with the needs of other species, in which case he may or may not develop and implement a plan, when and if he pleases. Moreover, under the case law, the argument that budget constraints make the duty to plan discretionary is without merit. *See Northern Spotted Owl v. Lujan*, 758 F. Supp. 621, 629 (W.D. Wash. 1991) (budgetary excuse insufficient to justify continued inaction even though the facts proved "prodigious resources" and a "truly remarkable effort" had already been made by the Forest Service).

72. The plans are supposed to spell out what is biologically required to prevent extinction and permit recovery of endangered species. (Shull Testimony).

73. Priority is to be given to species whose survival is in conflict with economic activities, such as withdrawal of water from the Edwards. 16 U.S.C. § 1533(f).

74. Section 9 of the ESA prohibits "any person" from "taking" a member of any endangered species without a permit. 16 U.S.C. § 1538(a). "Take" as used in § 9 includes not only "kill" but also "harm or harass." 16 U.S.C. § 1532(19). "Harm" and "harass" are defined to mean "disrupt[ing] or significantly impair[ing]" behavioral patterns including "breeding, feeding and sheltering." 50 C.F.R. § 17.3.

75. Section 7(a)(1) of the ESA requires all Federal agencies to "utilize their authorities in furtherance of the purposes of [the ESA] by carrying out programs for the conservation of endangered species and threatened species." 16 U.S.C. § 1536(a)(1).

76. Section 7(a)(2) of the ESA requires every Federal agency, in consultation with the Secretary, to "insure that any action authorized, funded or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of any [designated critical habitat]." 16 U.S.C. § 1536(a)(2). "Jeopardize the continued existence of" means "to engage in an action that reasonably would be expected directly or indirectly to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers or distribution of that species." 50 C.F.R. § 402.02.

"Destruction or adverse modification" means "a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical." 50 C.F.R. § 402.02.

77. Section 9(a)(2) of the ESA makes it unlawful for "any person to damage or destroy any [listed plant] species . . . in knowing violation of any law or any regulation of any State or in the course of any violation of a State criminal trespass law." 16 U.S.C. § 1538(a)(2).

78. In order to deal with conflicts between the survival requirements of endangered species and their habitats, on the one hand, and human economic activity, on the other hand, § 10(a) of the ESA allows the Federal Defendants to issue "incidental take permits." The incidental take permits allow the death, harm, or harassment of individual members of an endangered species, even substantial numbers of such individuals, as long as (1) this is an unintentional result of an otherwise lawful activity, such as pumping groundwater; (2) the species' survival is not jeopardized; and (3) measures are taken to "minimize and mitigate the impact of such

taking." (16 U.S.C. § 1539(a); Spear Testimony; PX-34; PX-35).

79. In order to deal with severe and unavoidable conflicts between the survival requirements of endangered species, on the one hand, and actions of regional or national significance whose benefits clearly outweigh the benefits of every alternative course of action consistent with conserving the species, on the other hand, § 7(h) of the ESA allows a special, high-level committee to authorize the extinction of an endangered species under certain circumstances. 16 U.S.C. § 1536(h).

80. The endangered or threatened species, at or downstream of the Comal and San Marcos Springs, rely on adequate and continuous natural flows of fresh water through the Edwards and exiting from the natural spring openings of those springs as an environment for their survival. The endangered species living in the Edwards similarly rely upon adequate water levels in the Edwards and adequate and continuous flows of fresh water through the Edwards to the Comal and San Marcos Springs as an environment for their survival. (Admitted. Fed. Def. Consol. Answer at ¶ 123).

Takes of and Jeopardy to Fountain Darters

81. Pursuant to the following discussion, by the time springflow at Comal Springs declines to approximately 100 cfs, "harm," constituting "take," occurs to the endangered Fountain Darter.

82. In the letter of March 26, 1992, the USFWS notified the TWC that by the time Comal springflow has declined to 100 cfs, harm to Fountain Darters, "which likely constitutes 'take,' has occurred to endangered species," specifically the Fountain Darter. (PX-34 at p. 3).

83. The March 26, 1992 USFWS letter and attached comments to the TWC represented the USFWS' best professional judgment with regard to the application of §§ 7, 9, and 10 of the ESA to the protection of endangered and threatened species at Comal Springs. (Admission No. 2; Spear Testimony). The March 26, 1992 USFWS letter and comments were based upon the expert opinions of USFWS staff biologists and hydrologist (Admission No. 3, Spear Testimony, Shull Testimony), together with the views of others with whom USFWS consulted, including Texas Parks and Wildlife Department ("TPWD") biologist Randy Moss. (Shull Testimony).

84. By the time the springflows at Comal Springs have dropped to approximately 100 cfs, the upper spring run (known as "Spring Run J" or "Spring Run 1" and hereinafter referred to as "Spring Run J") has dried up. (Thornhill Testimony; PX-17;

PX-34, comments at p. 3). The normal flowing Spring Run J provides suitable habitat for the Fountain Darters living in Spring Run J. (Whiteside Testimony; Hubbs Testimony; Moss Testimony; PX-16; PX-244). As Spring Run J dries up, Fountain Darters lose the vegetation on which they depend. (Whiteside Testimony; PX-34, comments at p. 3; PX-244). As Spring Run J dries up, Fountain Darters are trapped in isolated pools and either die of lack of oxygen or are eaten by predators. (Whiteside Testimony; Moss Testimony; PX-34, comments at p. 3; PX-244).

85. In the summer of both 1989 and 1990, Fountain Darters were harmed or killed. (Whiteside testimony). Fountain Darters died due to declining water levels in Spring Run J in the summers of 1989 and 1990. (Moss testimony). If the upper springs runs dry up, Fountain Darters could be stranded in pools, if pools form. (PX-244). Isolated pools were formed in 1989 and 1990 as Spring Run J dried up. (Thornhill Testimony; Whiteside Testimony; Moss Testimony; PX-17; TPWDX-4). Dr. Whiteside and Dr. Brandt collected Fountain Darters as part of a rescue operation. They were recorded as "thin," due to interference with their feeding habitat. (Whiteside Testimony; PX-139; PX-244).

86. Comal Springs dropped below 100 cfs for 99 days in 1989, to a low of 46 cfs. Comal Springs dropped below 100 cfs for 28

days in 1990, to a low of 67 cfs. (Thornhill Testimony; PX-205).

87. Considering the discussion below, the Court reasonably finds that the absence of knowledge, by private entities and Federal, State, regional and local governmental entities, of the minimum springflow requirements of the species, caused or allowed takings of, and caused risk or jeopardy to, the Fountain Darter in the dry years of 1989 and 1990.

88. By the time Comal Springs cease flowing completely, jeopardy to the endangered Fountain Darter has occurred. There has been an appreciable reduction in the likelihood of both the survival and recovery of the Fountain Darter in the wild, by reducing its reproduction, numbers, and distribution. This result is clearly contrary to the purpose and goals of the Endangered Species Act. *(See* FF 80 through 84, below).

89. In the March 26, 1992 USFWS letter and comments, the USFWS told the TWC: "By the time Comal Springs cease flowing completely, jeopardy [within the meaning of § 7 of the ESA] has occurred." (PX-34 at p. 2). Further: "By the time Comal Springs cease to flow completely, there has been an appreciable reduction in the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, and distribution of the species. This

result is clearly contrary to the purpose and goals of the [ESA]." (*Id.*, comments at pp. 2-3). The March 26, 1992 USFWS letter and attached comments represent the USFWS' best professional judgment, based on the views of experts on its staff and outside experts with whom they consulted.

90. As the USFWS advised the TWC on March 26, 1992: "[A]ll activities [of Federal agencies, or of State, local or private entities to the extent Federal activities authorize, fund or carry them out] must ensure that the Comal Springs are maintained at or above [the jeopardy] level." (PX-34 at p. 2).

91. Maintaining springflow at Comal Springs is essential to preventing jeopardy because "it is hard to have an aquatic ecosystem without any water." (Whiteside Testimony). As the Defendant-Intervenors' own Fountain Darter expert acknowledged, "we would have slipped up big-time" if Comal and San Marcos Springs ceased flowing. (Schenk Testimony).

92. Essential to the conservation and survival of the Fountain Darter is the maintenance of both wild populations, the population at Comal Springs and the population at San Marcos Springs. If only one wild population exists, the Fountain Darter is at much greater risk of extinction due to a single catastrophic event (such as an accidental oil or chemical

spill) or a deliberate poisoning (such as the poisoning of Treaty Oak in Austin). (Spear Testimony; Shull Testimony; Hubbs Testimony). Except in a drought so severe that the springs would dry up with no pumping, Comal Springs could not go dry without jeopardy occurring. (Spear Testimony).

93. "Jeopardy" is inherently a matter for determination by the exercise of professional judgment. (Shull Testimony; PX-245).

94. The USFWS has not yet exercised its best professional judgment to determine where, above 100 cfs, Fountain Darters at Comal Springs first began to be taken or where, above 0 cfs, jeopardy to the Fountain Darter has occurred. (Spear, Shull Testimony; PX-34).

95. According to the USFWS, Fountain Darter habitat begins to be lost in Spring Run J as Comal Springflow drops to about 150 cfs. (PX-34, comments at p. 3). TPWD biologist Randy Moss testified the decreasing springflow at Comal Springs leads to harm and harassment, and likely to death, of Fountain Darters as the depth of water drops to between four and six inches in Spring Run J. (Moss Testimony). Dr. Whiteside testified the decreasing springflow at Comal Springs significantly reduces Fountain Darter habitat on Spring Run J as the depth of water drops below four inches. Dr. Hubbs testified harm begins to be significant as the depth of flow in Spring Run J drops to twelve inches. Paul Thornhill testified, based on surveys of

Spring Run J and hydrological models, he can promptly convert a given depth of flowing water the biologists say is required in Spring Run J to a Comal Springs flow rate in cfs and an Edwards level at index well J-17. (Thornhill testimony; PX-7; PX-226). Four inches and twelve inches of water in Spring Run J immediately upstream of the footbridge are equivalent to 118 cfs and 385 cfs, respectively. *(Id.)*.

96. Comal Springs came perilously close to drying up in both 1989 and 1990. (Thornhill Testimony; PX-34 at p. 1). As the rains of 1992 repressed any drought concerns, in 1989 and 1990, unusual mid-summer rains saved the springs. (Whiteside Testimony; Bomar Testimony).

97. The direct human cause of low springflows at Comal Springs and resulting takes of and jeopardy or near jeopardy to Fountain Darters in 1989 and 1990 was excessive pumping from the Edwards. (Thornhill Testimony, Spear Testimony).

Takes of and Jeopardy to Other Animal Species at Comal and San Marcos Springs and in the Edwards

98. The USFWS never determined, nor stated its best professional judgment of, the "minimum continuous natural springflow rates" at San Marcos Springs which jeopardize the Fountain Darter, the San Marcos Salamander, and the likely extinct San Marcos Gambusia, if found at San Marcos springs. If it came forth

with these springflow rates, that would allow private entities and Federal, State, regional and local governmental entities to take the actions necessary to avoid jeopardizing these species or the candidate species found there. (Shull Testimony; Spear Testimony; Masters Testimony; Aceves Testimony; Admission 8).

99. The USFWS has never determined, nor stated its best professional judgment of, the minimum continuous natural springflow rates at Comal Springs which would jeopardize the San Marcos Salamander, if found at Comal Springs. If it came forth with these springflow rates, that would allow private entities and Federal, State, regional and local governmental entities to take the actions necessary to avoid jeopardizing the possible new species of salamander found there, or the candidate species found there. (Shull Testimony, Spear Testimony, Masters Testimony, Aceves Testimony; Admission 8).

100. The USFWS has never determined, nor stated its best professional judgment of, the minimum continuous natural springflow rates at Comal and San Marcos Springs, or the minimum Edwards levels, which would jeopardize the Texas Blind Salamander, if found at Comal and San Marcos Springs. If it came forth with these springflow rates, that would allow private entities and Federal, State, regional and local governmental entities to take the actions necessary to avoid

jeopardizing the Texas Blind Salamander or the candidate species found there. (Shull Testimony, Spear Testimony, Masters Testimony, Aceves Testimony; Admission 8.).

Destruction or Adverse Modification of Critical Habitat of Texas Wild-rice. Damage to or Destruction of Texas wild-rice, and Jeopardy to Texas Wild-rice

101. The USFWS never determined, nor stated in its best professional judgment, the minimum continuous springflow rates at San Marcos Springs at which destruction or adverse modification of critical habitat of Texas Wild-rice, damage to or destruction of Texas Wild-rice, or jeopardy to Texas Wildrice, begin to occur. (Shull Testimony, Spear Testimony, Masters Testimony, Aceves Testimony, Power testimony; Admission 8).

102. Adverse modification of the critical habitat of Texas Wild-rice, and damage to or destruction of Texas Wild-rice, have occurred by the time the depth of flowing water where established stands of Texas Wild-rice grow in the San Marcos River at Transect 12 has fallen to 1.5 feet. (Power Testimony). Transect 12 is a cross-section of the San Marcos River uninfluenced by dams, upstream from the sewage treatment plant. (PX-231).

103. As the San Marcos springflow drops, by the time springflow has dropped to 100 cfs, the depth of water in the San Marcos River

at which one or more established stands of Texas Wildrice exist has dropped to 1.5 feet or less. (Power Testimony; Thornhill Testimony; PX-230).

104. During the ten-year period from 1981 through 1990, springflow at the San Marcos Springs dropped below 100 cfs in three years: 1984, 1989, and 1990. (Thornhill Testimony; PX-15; PX-206).

105. Springflow from the San Marcos Springs was below 100 cfs on 169 days in 1984, 140 days in 1989, and 85 days in 1990. (Thornhill Testimony; PX-15; PX-206).

106. One or more established stands of Texas Wild-rice growing in the bed of the San Marcos River were damaged or destroyed, and their critical habitat was adversely modified, in 1984, 1989, and 1990, due to low springflows. (Power Testimony).

107. Texas Wild-rice grows in the wild only in Spring Lake and in the bed of the San Marcos River in a segment of the river downstream of Spring Lake. (Power Testimony).

108. Although *obiter dictum*, the Court is of the opinion the bed of the San Marcos River downstream of the natural spring openings is owned by the State of Texas. Because the grant from the sovereign expressly did not include the stream, the State retained title to the stream bed. *See, e.g., Heard v. Town of*

Refugio, 103 S.W.2d 728, 731 (Tex. 1937)) *(See* PX-200; PX-201; PX-202; PX-203; PX-234).

109. The water in Spring Lake and the water flowing in the San Marcos River downstream of Spring Lake was judicially determined to be owned by the State of Texas in trust for the benefit of the public. (PX-234).

110. Although *obiter dictum*, the Court is of the opinion the Texas Wild-rice growing in the bed of the San Marcos River is owned by the State of Texas. (PX-200; PX-201; PX-202; PX-203; PX-234).

Critical Importance of Developing and Implementing Recovery Plans

111. Increasingly, recovery plans are the fundamental tool the USFWS uses to protect endangered species. (Spear Testimony).

112. Timely development and implementation of recovery plans is critical to many specific recovery actions, including designing and funding required studies and securing cooperation from other federal, state, regional, and local governmental and private entities. (Spear Testimony; PX-66).

113. As the USFWS told the United States Congress in December of 1990, "perhaps the most essential ingredient for the development and implementation of an effective recovery program" is "[c]oordination among Federal, State and local

agencies, academic researchers, cooperation organizations, private individuals, and major land users . . . ," with the USFWS being the "coordinator." (PX-198 at p. 3).

114. In the case of the Comal and San Marcos ecosystems and listed species, the most basic purpose of recovery planning is to establish a baseline flow condition -- flows prohibited from reduction by human activities -- and disseminate the requirements necessary for the protection of the baseline flows. (Spear Testimony).

Failure to Develop a Recovery Plan for the Comal Springs Ecosystem and Species

115. The Federal Defendants failed to develop any recovery plan or plans to secure the survival and recovery of any of the species at issue explicitly through protection of the Comal Springs. (Admitted. Fed. Def. Consol. Answer at ¶ 169).

116. While the existing San Marcos Recovery Plan contains references to Comal Springs, it addresses the protection of the San Marcos ecosystem, not the Comal Springs ecosystem. (Shull Testimony; PX-36).

117. The USFWS does not claim a recovery plan explicitly addressing protection of the Comal Springs ecosystem would "not promote the conservation of the species" of Comal Springs. (Spear Testimony).

118. For more than three years, the USFWS has had under consideration the revision of the San Marcos Recovery Plan to explicitly address protection of the Comal Springs. (Shull Testimony; PX-2; PX-39; PX-248). Meanwhile, Comal Springs twice reached a dire situation in which the springs nearly dried up. (Whiteside Testimony; PX-34; PX-97; PX-244).

Failure to Develop a Recovery Plan for the Texas Blind Salamander

119. Neither the San Marcos Recovery Plan nor any other recovery plan addresses the conservation and survival as the Texas Blind Salamander. (Admission 18; Shull Testimony; PX-36).

120. Federal Defendants claim the Secretary made a finding that a recovery plan for the Texas Blind Salamander will not promote the conservation and survival of the species. (Federal Defendants' Memorandum in Opposition to Plaintiffs' Motion for Summary Judgment and in Support of Federal Defendants' Cross-Motion for Summary Judgment at p. 31).

121. The evidence does not support the Federal Defendants' claim. The earliest relevant document, a December 1990 report to Congress, says only the only possible recovery measure for the Texas Blind Salamander was to "continue efforts to protect Edwards Aquifer from drawdown and pollution." (PX-198). A May 1991 document prepared by the regional herpetologist for the USFWS is entitled "Recovery Outline, Texas Blind

Salamander," and states the Texas Blind Salamander is "under threat by water use practices" and that "a recovery plan has yet to be written." (PX-131). A February 19, 1992 memorandum from Regional Director Spear to USFWS Director Turner states: the "status" of the Texas Blind Salamander "unknown"; the only place the Texas Blind Salamander "is known to occur is in the Edwards Aquifer underground"; and "[u]ntil additional information is available, the preparation of a recovery plan will be held in abeyance." (PX-199). On May 7, 1992, the Federal Defendants admitted "that FWS has not 'developed' [a] recovery plan that explicitly address[es] the Texas Blind Salamander, but avers that development of such a recovery plan is under consideration by the [USFWS]." (Admission No. 18). A May 18, 1992 USFWS briefing memorandum prepared for Director Turner stated the "new plan will better address the Comal Springs ecosystem and will also include the Texas Blind Salamander." (PX-248). Dr. Brandt of the USFWS never heard anyone say a recovery plan for the Texas Blind Salamander is not needed. (Brandt Testimony).

122. The Federal Defendants demonstrated no rational basis for a finding that a recovery plan for the Texas Blind Salamander "would not promote the conservation of the species." The usual basis for such a finding is that a recovery plan identifying the locations where, for example, an endangered

plant is found would expose it to collectors. Salzman, *Evolution and Application of Critical Habitat Under the Endangered Species Act*, 14 Harv. Env. L. Rev. 311, 334 (1990); *see also Endangered Species Act Amendments of 1978; House Report of Merchant Marine and Fisheries Committee*, 95th Cong., 2d Sess. 17 (1978). The basis does not apply to the Texas Blind Salamander. The USFWS considers the status and location of the Texas Blind Salamander unknown, but under threat due to water-use practices. (PX-131; PX-199). The threats to which the Texas Blind Salamander are exposed in its underground habitat include being drawn up wells, and do not apply to the other species at issue. They also include threats, such as lowering of the Edwards level and movement of bad water, which may apply differently to the Texas Blind Salamander than to the other species.

Failure to Implement Essential Features of the San Marcos Recovery Plan Dealing with the Greatest Threat

123. The USFWS failed or refused to implement practices recognized in its own documents, including the San Marcos Recovery Plan, as critical to save the species at issue from extinction.

124. In the early 1980s, with the aid of the San Marcos Recovery Team composed of scientists chosen by the USFWS, the USFWS developed the San Marcos Recovery Plan, and adopted it in

1985. (Spear Testimony; Shull Testimony; PX-36; PX-55; PX-66).

125. The San Marcos Recovery Plan correctly states, the "most serious threat to the continued existence of the San Marcos River ecosystem" and the biota comprising the system is "the cessation of flow of thermally constant clear, clean water from the San Marcos Springs due to overdrafting of the groundwater from the Edwards Aquifer." (PX-36). The USFWS maintains this view. (Spear Testimony). The same threat exists for the Comal ecosystem. (Spear Testimony). "The listed species will become extinct unless an aquatic habitat with appropriate volume, flow and quality characteristics is maintained in the Comal and San Marcos Ecosystems." (Shull Decl. at p. 11; attached to Fed. Defs. Summary Judgment Papers.).

126. The San Marcos Recovery Plan states, the species at San Marcos can be downlisted to threatened "when it is assured that flow in the San Marcos River will continue within its natural cycle of variation." (PX-36). Until December 1989, the Federal Defendants took no action to assure the quantity of flow in the San Marcos River would continue within its natural cycle of variation. (Admitted; Fed. Def. Consol. Answer at ¶ 69).

127. The San Marcos Recovery Plan identifies several "major steps" needed for protection of the San Marcos species and their ecosystem. (PX-36).

Define Minimum Springflow

128. One "major step" was "identify requirements," including flow and habitat requirements. (PX-36 at p. 69). The San Marcos Recovery Plan explained the requirements were not well understood. *(Id.* at p. 69).

129. After the instant suit was filed, the Federal Defendants took some steps to identify the minimum continuous springflow requirements of any of the endangered and threatened species relevant to this lawsuit. (Admissions 26(c), 27(c)). As recently as May, 1992, the USFWS had neither funded, nor requested anyone else to voluntarily and at their own expense to perform, any studies to determine such minimum continuous springflow requirements. (Admission 9). Since suit was filed, the USFWS has not determined any of the minimum springflow requirements of any of the species at issue at either springs except the Fountain Darter at Comal Springs to the limited extent reflected in the March 26, 1992 USFWS letter and comments to the TWC. (PX-34).

130. While the EUWD maintains the USFWS acted reasonably in prioritizing its efforts to enforce the ESA and to protect

endangered species in light of budgetary constraints and the large number of endangered species it is charged to protect, the fact the USFWS has not acted as required remains.

131. Knowledge of the minimum springflow requirements of the species is vital to any Federal, State, regional, or local government or private entity which wishes to take action to protect the species at issue from the greatest threat they face. These entitities seek to avoid action adding to the threat, or wish to avoid the consequences of the "blunt axes" of Federal intervention forged by Congress under ESA §§ 7 and 9 to protect the species. (Spear Testimony; Shull Testimony; Specht Testimony; Masters Testimony; Aceves Testimony; Hall Testimony).

132. The EUWD claims authority to regulate pumping from the Edwards, and to have protection of endangered species habitat as one of the goals of such regulation. (Masters Testimony). One goal of the EUWD is new "Demand Management Plan for the Edwards-Balcones Fault Zone Aquifer" is to "ensure an adequate level of springflow" to "protect habitats within the District dependent on the Edwards Aquifer." (EUWDX-6). However, the EUWD does not know what quantity of minimum springflows at the Comal or San Marcos Springflows needs to be protected. (Masters Testimony). The EUWD on May 10, 1991 made a formal request to Regional Director Spear for a declaration of the

minimum springflows the USFWS will accept as adequate under the ESA to protect the species and their habitat at San Marcos Springs. (PX-132). The USFWS has not answered the EUWD's request. (Spear Testimony; Shull Testimony; Masters Testimony).

133. The United States Department of the Air Force ("USAF") was "unable to determine" whether its activities in pumping Edwards water would affect the endangered species, and requested the USFWS' assistance in evaluating whether its pumping would affect the species. (Plaintiffs' Summary Judgment Exhibit 46). The USFWS responded to the request by stating "specific studies relating to water withdrawal input on listed species are not readily available." (PX-98).

134. In order to develop an adequate State plan, the TWC, City of San Antonio, and the Texas Legislature need to know the minimum continuous springflows required for compliance with the ESA. (Hall Testimony; Masters Testimony; Aceves Testimony; PX-34).

Consultation

135. One of the tools available to the USFWS for protection of endangered species is consultation under § 7 of the ESA. (PX-36 at p. 95).

136. The San Marcos Recovery Plan called for "vigorous pursuit" of a "systematic procedure" of such consultations. (PX-36 at pp. 76-77).

137. Consultation is potentially a powerful, albeit disruptive, tool because it can result in a Court order cutting off all Federal funds and other Federal actions that directly or indirectly authorize, fund, or otherwise carry out pumping from the Edwards to the extent necessary to prevent jeopardy. (Spear Testimony; PX-85; PX-113; PX-68).

138. After adopting the San Marcos Recovery Plan, the Federal Defendants did not vigorously pursue any systematic procedure of consultations concerning minimum springflow quantities. (Admission 26(f)). Until February 21, 1992, the Federal Defendants did not request consultation concerning any Federal activity by any Federal agency that may affect minimum springflow quantities through effects on withdrawals from the Edwards. (Admission 27(g)).

139. In a letter dated February 21, 1992, the USFWS informed the United States Environmental Protection Agency ("EPA") that the new demand placed on the Edwards by the catfish farm artesian well -- a well that shoots a column of water over twenty-five

feet in the air from a thirty-inch diameter pipe (PX-27) -- could appreciably reduce the water supply for the endangered species at issue during low flow periods. (PX-37). The USFWS requested the EPA determine whether granting an application for a National Pollution Discharge Elimination System ("NPDES") permit for the catfish farm well, which would allow the catfish farm to withdraw over 43 million gallons of Edwards water per day, would affect the Fountain Darter and the Texas Wild-rice. *(Id.)*. The USFWS also requested the EPA to review all other NPDES permits authorizing discharges from "major users" of Edwards water -- those discharging more than 1 million gallons per day. *(Id.)*.

Establish Groundwater Controls

140. The species in question are threatened with possible extinction, unless effective controls are objectively established on withdrawals from the Edwards. (Spear Testimony). At a minimum, the objective requires pumping controls to "avoid jeopardy to the species by maintaining an aquifer level which assures a minimum spring flow at Comal Springs." (PX-34 at p. 3).

141. The San Marcos Recovery Plan called for establishing pumping controls, recognizing the plan would require cooperation with State and local authorities. (Ex. 36).

142. Not until after the first notice of intent to sue was filed in this case did the USFWS take any step to encourage any State or local agency to establish controls on the pumping of groundwater from the Edwards. (Admission 26(f)). In response to this lawsuit, the USFWS made certain limited efforts to encourage the State of Texas to establish groundwater pumping controls over the Edwards. (Shull Testimony; PX-34 at p. 1). These efforts consisted largely of jawboning, without specifics. (PX-35; PX-94; PX-101; PX-107; PX-113; PX-117; PX-126).

143. This instant lawsuit was a "key factor" in the emergency action taken and proposed permanent rules announced by the TWC on 4/15/92 to regulate withdrawals from the Edwards. (PX-184 at pp. 2-3).

Contingency Plan

144. The San Marcos Recovery Plan called for development of a contingency plan to rescue members of the endangered species and put them in refugia (aquariums) if springflows drop to low

levels. (PX-36 at p. 72). While the refugia method is advocated as a viable recovery method, refugia is not a recovery measure but an emergency tool to be used in dire emergencies if recovery measures cannot be completed in time. *Id.* (Spear Testimony; Shull Testimony; PX-119; Admission 39).

145. The Federal Defendants did not begin to prepare a contingency plan until after the Comal Springs was on the brink of drying up. (Admissions 34, 35). Federal Defendants did not complete and approve the plan until July 18, 1990, when the Comal Springs nearly dried up again. (Admission 37; PX-83; PX-115; PX-119).

146. The contingency plan was prepared using the voluntary, unpaid assistance of experts who are not employees of the USFWS. (Admission 38).

147. The contingency plan identifies, using the USFWS' best professional judgment, critical aquifer levels and springflow rates at which members of the listed species should be removed to refugia. (Shull Testimony; Whiteside Testimony; Moss Testimony; PX-119). The contingency plan was developed without any prior multi-year Instream Flow Incremental Methodology ("IFIM") or other complex studies. (Shull Testimony; Whiteside Testimony).

148. The contingency plan was relied on to establish critical levels at which "last-ditch" efforts were made to "salvage" Fountain Darters at Comal Springs in the summer of 1990. (Shull Testimony; Whiteside Testimony; Brandt Testimony; PX-119).

Springflow Augmentation

149. The San Marcos Recovery Plan provides, "wells to maintain the natural flow variation regimens below Spring Lake can be a temporary means to achieve continual flow in the San Marcos River." (PX-36). The San Marcos Recovery Plan recognizes that springflow augmentation cannot protect against a "catastrophic loss" of the San Marcos Salamander which lives in the spring openings and that augmentation "will not constitute a recovery action." (PX-36 at p. 74).

150. The TDWR, predecessor of the TWC, evaluated streamflow augmentation in 1983 at the request of the EUWD, which was participating in the development of the San Marcos Recovery Plan. The TDWR advised the EUWD of the substantial risk that movement of "bad water" would "seriously degrade" both the species' habitat and human water supplies if the Edwards were pumped down as proposed. (PX-75).

151. The Federal Defendants, the EUWD, TPWD, the Southwest Texas State University Aquatic Station, the City of New Braunfels, the City of San Marcos, the Edwards Research and Data Center and the Office of State Senator Cyndi Krier at meeting in 1990 concluded: it is "not possible to design an augmentation feasibility study at this time because of the paucity of relevant ecological and physiological data on the endangered species." (PX-132 at p. 3 of the 3/19/91 letter from EUWD to City of San Antonio). The required factual information "is prohibitively deficient." *(Id.)*. "Further," the EUWD stated, "the study design team could not conceive of a practical means for simulating natural springflow." *(Id.)*. Because "the San Marcos Salamander makes its home in the numerous spring orifices collectively called the Comal and San Marcos springs," the meeting concluded that "[s]imply pumping water from Edwards Aquifer wells into Comal and San Marcos rivers is not a solution." *(Id.)*.

152. In the March 26, 1992 USFWS letter to the TWC, the USFWS stated the following about "springflow augmentation":

> Spring flow augmentation studies are not likely to represent a productive use of time and resources. From an endangered species point of view, the Service suggests such proposals be considered extremely unlikely to produce acceptable conditions for endangered species. Even worse, *they divert attention and resources from the hard choices that must be made*.

(PX-34 at p. 3) (emphasis added).

153. In the comments attached to the March 26, 1992 USFWS letter to the TWC, USFWS stated the following about "springflow augmentation":

> Based upon current information, we do not believe that spring flow augmentation is likely to be an acceptable means of ensuring protection of endangered species and their ecosystems in Comal or San Marcos Springs. We are not aware of any evidence that flow augmentation is technically feasible or that it would provide for the biological needs of the species. To make such a determination with a sufficient degree of certainty would require the springs to first dry up. Allowing the Springs to cease flowing for <u>any</u> period of time, even under drought conditions, would pose an unacceptable risk to the continued existence of the listed species, contrary to the ESA.
>
> In addition, it is our understanding that augmenting at Comal Springs would draw the aquifer level down faster at San Marcos. Augmentation at San Marcos Springs cannot be done in a way that would ensure protection of the San Marcos Salamander.
>
> The Service is also concerned about intrusion of bad water at both Comal and San Marcos Springs as aquifer levels decrease. Both springs are very close to the "bad water" line.
>
> We believe springflow augmentation studies would *divert attention and resources from the hard choices that must be made*.

(Comments attached to PX-34 at pp. 5-6.) (underline in original, but emphasis added).

154. Springflow augmentation is not likely to be an acceptable means of ensuring protection of endangered species. (Shull Testimony; PX-34). The USFWS is not aware of evidence establishing springflow augmentation is either technically feasible or provides for the biological needs of the species. (Spear Testimony; PX-34). To make such a determination with a sufficient degree of certainty would require the springs to first dry up, which would pose an unacceptable risk to the continued existence of the species. (PX-34, comments at pp. 5-6). Springflow augmentation "cannot be done in a way that would ensure protection of the San Marcos Salamander" or other endangered species that live in the springs themselves. *(Id.;* PX-132). "Both springs are very close to the 'bad water' line," (Thornhill Testimony; PX-34, comments at p. 6; PX-184), and augmentation worsens the risk of "bad water" intrusion. (Thornhill Testimony).

<u>The Federal Defendants Have Unlawfully Refused or Unreasonably Delayed Implementing Recovery Measures to Protect Minimum Springflow Quantities</u>

155. As the San Marcos Recovery Plan was being finalized in 1984, the Comal Springs nearly dried up. (Thornhill Testimony).

156. When Regional Director Spear sent the San Marcos Recovery Plan to Washington, D.C. for top-level USFWS approval in 1985, he stated the USFWS' major recommendations, including achievement of pumping controls, would be "quite difficult" and "controversial." (PX-55).

157. The USFWS did not convene a meeting of the San Marcos Recovery Team between July 20, 1984 and March 29, 1989. (Admission 14).

158. USFWS biologist Tom Brandt worked in 1986-1988 on keeping Fountain Darters in refugia. This study was not aimed at establishing minimum continuous flow requirements. Dr. Brandt performed this study because he, his superiors at the National Fish Hatchery in San Marcos, and their superiors at the Region 2 office of the USFWS in Albuquerque, New Mexico knew there were going to be problems with the Fountain Darter in the future, due to pumpage of Edwards groundwater and lack of rainfall. (PX-244).

159. In March 1989, Professor Whiteside warned the USFWS about the potentiality the "Comal might go dry again this summer. (PX-42).

160. In the summer of 1989, Alisa Shull, the USFWS scientist in charge of the San Marcos Recovery Plan, recommended the USFWS send letters to Federal agencies requesting consultation on measures to reduce the threat to the springs posed by Edwards

withdrawals and to pumpers, warning them of the potential for takes if pumping is not reduced. (Shull Testimony; Spear Testimony). The letters were drafted. (PX-61; PX-62; PX-63). Mr. Spear and the Federal Defendants at the Washington level decided not to use the "blunt axe" of Federal intervention but *to request the State to establish pumping controls "quickly" on a voluntary basis*. (Spear Testimony). Three years later, the State has *still not established meaningful pumping controls*. (Spear Testimony; Shull Testimony).

161. Defining minimum springflows is a matter that is "long overdue." (Spear; Hubbs Testimony). Even the USFWS now agrees, if Texas does not establish adequate pumping controls in the next regular session of the Texas Legislature, which began in January of 1993, the "blunt axe" must fall. *(Id.)*.

162. Those who withdraw water from the Edwards need to know the minimum springflows at the Comal Springs below which takings begin to occur, so they can restrict withdrawals to the extent necessary to avoid any takings, and so they can seek an incidental take permit to authorize such takings. (Spear Testimony; Shull Testimony; Masters Testimony; Hall Testimony).

163. To date, the Federal Defendants have failed or refused to determine the minimum springflow at the Comal Springs below which takes in violation of ESA § 9 begin to occur.

164. The Federal Defendants were formally advised of takes of Fountain Darters at Comal Springs by Plaintiff-Intervenor GBRA's first Notice of Violations dated June 15, 1989, and they were further advised of their failures to develop and implement recovery plans to prevent takes of and jeopardy to the listed species by the subsequent Notices of Violations by Plaintiff-Intervenor GBRA and the Sierra Club, dated February 17, 1990 and April 12, 1990, respectively (DX-31; DX-32; DX-33).

165. Unauthorized takings of Fountain Darters at the Comal Springs occurred in the summer of 1990, after the Federal Defendants received all of the Notices of Violation.

166. EUWD argues the USFWS does not have the resources necessary to enforce the San Marcos Recovery Plan, to implement and enforce recovery plant of the Texas Wild-rice and the San Marcos Salamander, and to implement and enforce a recovery plan for the Fountain Darter at Comal Springs. However, lack of funding does not excuse the Federal Defendants' failures or refusals to implement key provisions of the San Marcos Recovery Plan responsive to the most serious threat,

overdrafting of the Edwards. The key measures require little cash outlays by the USFWS. Federal Defendants can use existing USFWS and National Fish Hatchery employees. The measures can be done by competent, willing volunteers paid by others (for example, the TPWD), and working out of dedication to the species (for example, the San Marcos Recovery Team members who prepared the contingency plan). (Spear Testimony).

167. The Federal Defendants failed to take timely action to implement key steps in the San Marcos Recovery Plan, critical to the survival of the species, including: define minimum continuous springflows, encourage establishment of pumping controls, prepare the contingency plan, and vigorously pursue a systematic procedure of consultation.

168. The Court does not conclude the Federal Defendants must, without exception, immediately implement every step in every recovery plan. The Court concludes, however, the Federal Defendants may not arbitrarily, for no reason or for inadequate or improper reasons, choose to remain idle. Inaction eviscerates the recovery planning provisions of the ESA and amounts to an abdication of the Federal Defendants' statutory responsibility to plan for the survival and

recovery, not the extinction, of endangered and threatened species.

Danny McFadin, et al. Cross-Claim

169. Under § 4 of the ESA, the Federal Defendants may procure the services of appropriate public and private entities to assist in recovery planning. U.S.C. § 1533(f)(2).

170. The San Marcos Recovery Team members, like the members of other recovery teams, were chosen by the USFWS for their expertise and interest in the relevant species and ecosystems. (Spear Testimony; Admission 12).

171. The San Marcos Recovery Team members are volunteers who are reimbursed for travel and meal expenses, but not otherwise paid by USFWS for their work on the San Marcos Recovery Plan. (Spear Testimony; Shull Testimony; Admission 13).

172. Ms. Power was paid $2,000 by the Plaintiff-Intervenor GBRA for field work on transects of the San Marcos River where Texas Wild-rice stands occur. (Power Testimony). The Court is of the opinion there is no evidence the payments affected Ms. Power's professional judgment.

173. The USFWS asked Ms. Power to become a member of the recovery team in the spring of 1992 with knowledge she was already serving as a consultant to Plaintiff-Intervenor GBRA. (Shull Testimony; Power Testimony).

174. Recovery team members' views of what should be done to secure the survival and recovery of endangered species are not binding on the USFWS, and USFWS' views of what should be done are not binding on recovery team members. Strong disagreements between recovery team members and USFWS are not unprecedented or improper. (Spear Testimony).

175. The USFWS investigated Danny McFadin et al.'s claim regarding the disqualification of certain San Marcos Recovery Team members from working as team members because they served as either consulting experts or, in the case of Ms. Power and Professor Whiteside, testifying experts for the Plaintiff-Intervenor GBRA. The USFWS concluded the disqualification of these San Marcos Recovery Team members is unnecessary and inappropriate. (Spear Testimony).

176. The USFWS determination to continue to use the nonbinding free advisory services of recovery team members, including those who are consultants to or (in the case of the Texas Parks & Wildlife Department) employees of parties to this litigation, is rational.

Standing

177. Plaintiff Sierra Club gave timely and appropriate notice of intent to sue. (DX-33). The suit was duly authorized.

(PX-229; PX-243). Plaintiff-Intervenor GBRA gave timely and appropriate notice of intent to sue. (DX-31; DX-32). No challenge has been made to whether the GBRA's decision to sue was duly authorized. Plaintiff-Intervenor GBRA is a political subdivision of the State of Texas empowered and charged by the State to conserve the waters of the Guadalupe River Basin for protection of water supplies, protection of water quality, and all other useful purposes. (Specht Testimony). The waters of the Comal and San Marcos Springs are waters of the Guadalupe Basin. (Thornhill Testimony; Specht Testimony). The survival and recovery of wild populations of endangered and threatened species is a useful purpose under the ESA. The same minimum springflows, essential to the survival of the endangered and threatened species, make up 30% of the normal base flow of the Guadalupe and more than 70% of its flow during drought; therefore, it is important for Plaintiff-Intervenor GBRA to conserve and protect minimum springflows for protection of water supplies, protection of water quality, as well as for protection of endangered species. (Specht Testimony; Thornhill Testimony).

178. The Defendants and Defendant-Intervenors argue Plaintiffs did not inform the Secretary or the USFWS of the contention the USFWS violated § 9 by taking listed species. (Fed. Def. Br.

at pp. 5-6). This assertion rests on a hypertechnical reading of the GBRA and Sierra Club notices. Both the Sierra Club and GBRA gave notice of violations "of the [§] 9 prohibitions against the taking of any listed wildlife species" and "of the [§] 9 prohibition against removal, damage, or destruction of any listed endangered species of plant." (*See* GBRA's Notice at 13). While Plaintiff and Plaintiff-Intervenors concede these complaints were specifically directed at "Upstream Diverters" (those people withdrawing waters from the Edwards and upstream from the Edwards), these notices were sent to the Secretary in part in order to give him a chance to develop and implement a plan and to take whatever actions are necessary against these Upstream Diverters. Moreover, the USFWS was listed as an Upstream Diverter, 80 it received direct notice it could be sued under § 9 of the ESA. (GBRA's Notice DX-B at p. 29). The purpose of the notice provisions is "to give administrative agencies an opportunity to enforce environmental regulations." *Hallstrom v. Tillamook County*, 110 S.Ct. 304, 308 (1989) (dealing with notice provision of Resource Conservation and Recovery Act ("RCRA"), but Supreme Court noted ESA notice provision and RCRA notice provision were patterned after the same notice provision).

179. Thus, Plaintiff and GBRA gave notice of § 9 takings due to excessive withdrawals from the Edwards, and gave notice that the Federal Defendants had failed to prevent excessive withdrawals by failing to perform their non-discretionary duties under the ESA. After receiving that notice, the Federal Defendants still did nothing.

180. Defendants argument that some of the Plaintiff-Intervenors in the case are not proper parties because they did not give their own notices under the ESA is without merit. (*See* Fed. Def. Br. at pp. 5-6; Def. Int. Br. at p. 29). The purposes of the notice provision were served by the GBRA and Sierra Club notices: to call the violations of the ESA to the attention of the Federal Defendants and to give the Federal Defendants 60 days to remedy the violation.

181. Individual Sierra Club members live in Austin, San Antonio, San Marcos, or New Braunfels. They have visited the springs many times to enjoy the ecosystems and the species, intend to continue doing so, and can readily do so if the springs are not allowed to dry up or species are not extirpated. (Kramer Testimony). Sierra Club member Dr. Clark Hubbs, University of Texas Professor Emeritus of Biology, lives in Austin. He has visited the springs for these purposes as recently as September 1992. (Hubbs Testimony). The Lone Star Chapter of

the Sierra Club organized group trips to the springs for similar purposes, intends to continue to do so, and can readily do 80 if the springs are not allowed to dry up or species are not extirpated. (Kramer Testimony).

182. The economies of Plaintiff-Intervenor the City of San Marcos and Plaintiff-Intervenor the City of New Braunfels are directly and significantly dependent on tourism and research associated with the springs and with the endangered and threatened species who live in those ecosystems. (PX-220; PX-223). The cities foster and encourage studies of the San Marcos and Comal ecosystems, including the endangered species, by professionals, students, and interested lay persons.

183. The Federal Defendants's violations of § 4 deprived the Plaintiff and Plaintiff-Intervenors, Defendant-Intervenors, *amici*, and non-parties of information essential to the protection of the spring-runs, Aquifer levels, and associated species; that is, the minimum quantities of springflows and Aquifer levels which the ESA requires be protected. (Spear Testimony; Specht Testimony; Masters Testimony; Aceves Testimony; Hall Testimony; Hubbs Testimony). The information is essential to the efforts of Federal (USAF), State (TWC), regional (EUWD), and local (San Antonio) entities to devise an adequate plan or plans to regulate pumping and otherwise

protect both the endangered and threatened species and the human economic interests threatened by excessive pumping.

184. Both the USFWS and the TWC concede this instant lawsuit prompted long-overdue efforts to determine and to protect minimum springflows for those spring-dependent species. The Federal Defendants' violations of § 4 of the ESA delayed efforts to develop and to implement measures to determine and protect minimum continuous springflows.

Avoiding or Minimizing Harm

185. Mr. Spear would be "delighted" if the Court were to encourage the Texas legislature and affected parties to solve the Edwards problem by ordering the USFWS to state minimum continuous springflows promptly, and communicate them to all concerned. (Spear Testimony).

186. In wading through the turbid pool of information and alleged negotiations generated by the instant case, no harm to USFWS would result from an order requiring the USFWS to use its best professional judgment to determine minimum continuous springflows within forty-five (45) days. (Spear Testimony). The USFWS would remain free to conduct, or to request others to conduct, such scientific studies as it wishes, on such schedules as it wishes, and to modify its judgments if, as, and when those studies generate different and better

information. Indeed, under 50 C.F.R. § 402.16(b) and *Sierra Club v. Yeutter*, 926 F.2d 429 (5th Cir. 1991), the USFWS would be obligated to update its judgments when necessary, in light of subsequent materially different information.

187. No harm to anyone else, and much benefit, would flow from an order requiring the USFWS to make prompt best professional judgments of minimum springflow and Aquifer levels and communicate them to all entities concerned with Edwards issues. The Texas Legislature, the TWC, the EUWD, and the City of San Antonio would benefit by knowing the minimum springflows that an adequate State plan must protect if it is to avoid the "blunt axe" of Federal intervention pursuant to the ESA. (Spear Testimony; Shull Testimony; Aceves Testimony; Masters Testimony; Hall Testimony; Specht Testimony).

188. The economic consequences feared by Defendant-Intervenors the City of San Antonio, the Industrial Water Users, and the Builders Association will not result from USFWS compliance with this Court's order requiring prompt determinations of the minimum springflows to be protected under the ESA. (Aceves Testimony, Perryman Testimony).

189. If such economic consequences ever result at all, it will be due to failure of State and local authorities and regional water users to take prompt and appropriate actions to develop

pumping controls and reduce dependence on the Edwards before the "blunt axes" of Federal intervention under ESA §§ 7 and 9 fall. These actions are independently required by the threat of bad water movement and because the Edwards is badly overdrafted, as well as by the threat of Federal intervention under §§ 7 and 9. (Spear Testimony; Aceves Testimony; Masters Testimony; Hall Testimony; Perryman Testimony).

190. The ESA provides mechanisms to allow the State of Texas substantial time to reduce withdrawals from the Edwards in an orderly and nondisruptive manner. One of those mechanisms is a § 10(a) incidental take permit. The Federal Defendants are willing to grant the State a § 10(a) permit if, but only if, an adequate State plan for pumping controls is adopted and its implementation reasonably assured. (Spear Testimony; PX-34; P-35). *The sooner Texas adopts an adequate plan and obtains a § 10(a) permit, the better.* (Spear Testimony; Shull Testimony; Aceves Testimony; Masters Testimony; Hall Testimony).

191. The serious water supply problem associated with rapid increases in population and municipal, industrial, and agricultural water demand and exclusive dependence on the Edwards by the City of San Antonio has been recognized for over thirty-five years. *See Board of Water Engineers v. City of San Antonio*, 283 S.W.2d 722, 723 (Tex. 1955).

192. The City of San Antonio is blessed with a rare source of water. Unfortunately, the Edwards is currently the City of San Antonio's "sole source" of water because the City of San Antonio failed to develop adequate water supplies from other sources to reduce their reliance of the Edwards.

193. The relatively brief and mild drought of 1984 and associated pumping posed a serious threat to the San Antonio region's water supplies. (DX-112 at p. 1). In response, San Antonio and the EUWD sponsored a 1986 multi-volume *San Antonio Regional Water Resources Study*. (DX-169). For water supply and economic development purposes, as well as to protect the endangered species dependent on springflow, the study shows alternative water supplies using a combination of surface water and wastewater reuse is required. The costs are feasible. *(Id.* at pp. 1-13). Assuming the worst case, "San Antonio would go from being a low-water cost city to a moderate-cost city." *(Id.* at p. 13).

194. Almost four decades of negotiations among the affected parties have failed to yield a resolution of the disputes regarding the proper management of the Edwards. (Specht Testimony; PX-190 at p. 4). *Continuing failure risks Federal intervention to protect*

endangered species. (PX-190 at pp. 4-5). The danger is adequately understated as imminent. (Spear Testimony).

195. The negotiations failed in significant part because those who benefit by unregulated pumping do not believe pumping will be limited to protect endangered species, do not understand what limits are required, or because it is not politically feasible for them to agree to the limits required, absent a Court order. (Spear Testimony; Specht Testimony; Hall Testimony; Aceves Testimony; Masters Testimony; PX-134).

196. *The next session of the Texas legislature offers the last chance for adoption of an adequate state plan before the "blunt axes" of Federal intervention have to be dropped*. (Spear Testimony). There is a debate about the adequacy of the TWC State plan to protect minimum continuous natural springflows and Aquifer levels, which cannot be resolved until the USFWS determines the take and jeopardy levels required to be protected under the ESA. (Thornhill Testimony; Spear Testimony; Specht Testimony; Hall Testimony; Aceves Testimony; Masters Testimony).

197. In order to obtain injunctive relief under the ESA, "the Plaintiffs must establish four facts: (1) actual success on the merits, (2) a substantial threat of irreparable harm absent an injunction, (3) that the irreparable harm threatened is greater than that caused by the injunction, and (4) the

public interest would be served by the injunction." *Sierra Club v. Lyng*, 694 F. Supp. 1260, 1277 (E.D. Tex. 1988) (citing *Tubwell v. Griffith*, 742 F.2d 250, 251 (5th Cir. 1984)). Defendants contend Plaintiffs failed to demonstrate a real and immediate threat of irreparable harm to any of the species at issue is the case *sub judice*.

198. In light of all the findings and contrary to Defendants' assertions, irreparable harm to endangered and threatened species, and to human interests dependent on Edwards and Comal and San Marcos Springs, is likely to occur if the USFWS does not promptly determine and communicate the minimum springflows and Aquifer levels required to be protected under the ESA.

199. Continuous springflows from the Comal Springs can be maintained at all times during a repeat of the drought of the 1950's if pumping were limited to something slightly less than approximately 219,000 acre-feet per year during the 1950's drought. Limiting pumping to an average of roughly 200,000 acre-feet per year during the drought would provide some minimal continuous daily Comal springflows. (Thornhill Testimony).

200. Even if the needs of endangered species were disregarded entirely, there is a water-quality floor below which the level

of water in the Edwards should not be allowed to drop, solely for water supply purposes. (Thornhill Testimony; Aceves Testimony; Hall Testimony; Masters Testimony). The water-quality floor should be defined in part based on known water quality impacts in the Aquifer itself caused by pumping-induced drawdowns and springflow depletion. The water-quality floor should be set high enough to avoid any appreciable risk of significant water-quality harm, taking into account the unknowns and the potential serious consequences accompanying the unknowns. (Thornhill Testimony).

201. The surest and most prudent method of ensuring there will be no significant adverse water quality impact due to pumping from the Edwards is to limit pumping to the extent necessary to maintain adequate continuous natural springflows from the Comal Springs at all times. The evidence demands, until reliable information is garnered stating otherwise, the prohibition of any other limitation. (Thornhill Testimony).

202. The "firm yield" of the Edwards, assuming protection of just minimal continuous daily springflows from the Comal Springs, is on the order of roughly 200,000 acre-feet per year during a repeat of the drought of record. (Thornhill Testimony).

203. The "firm yield" of the Edwards is not 350,000 acre-feet per year. Pumping 350,000 acre-feet per year throughout a repeat

of the drought of the 1950's will cause the Edwards to drop to levels far below the historic low of 612.51 feet mean sea level, dry up the Comal Springs for years and San Marcos Springs for substantial periods of time, contaminate the Edwards by movement of bad quality water into the fresh water, and risk other environmental harm. (Thornhill Testimony).

204. Withdrawals in excess of 200,000 acre-feet per year can be allowed during normal and wet years; especially in years similar to 1992. However, it would be imprudent to rely upon and plan for the Edwards to supply the region 350,000 acre-feet of water per year during a repeat of the drought of the 1950's. (Thornhill Testimony).

205. If the City of San Antonio would seriously and immediately develop additional supplies of water, implement conservation programs and mandates (like minimal lawn watering and credits for native landscaping), reuse water, and seek alternative sources of water, the City of San Antonio is likely to obtain substantial additional water supplies within five to ten years. (Thornhill Testimony; Specht Testimony).

206. If the region is fortunate enough to miss a major drought within the next five to ten years, the only significant economic impact on San Antonio and the region resulting from satisfying the requirements under the ESA to maintain minimum

springflows at the Comal and San Marcos Springs would be the cost of obtaining additional supplies of water within the period of time. (Aceves Testimony; Perryman Testimony).

207. Approximately the same cost would have to be borne by San Antonio and the region, even if the needs of endangered species were disregarded entirely; adequate and continuous natural springflows are needed from the Comal and San Marcos Springs at all times to avoid the risk of significant adverse water quality impacts, solely for water supply purposes. (Aceves Testimony, Perryman Testimony).

208. If the region experiences a major drought within the next five to ten years, and if severe economic harm otherwise results from satisfying the requirements under the ESA (and to avoid water quality risks for water supply purposes) by maintaining minimum continuous natural springflows at the Comal and San Marcos Springs, exemptions can be sought to allow takings, destruction of critical habitat, jeopardy, and even extinction of species during such a crisis, pursuant to §§ 10(a) and 7(h) of the ESA. 16 U.S.C. §§ 1536(h), 1539(a).

209. Destruction of critical habitat, jeopardy, and extinction of species may also be allowed pursuant to § 7(j) of the ESA if necessary for reasons of national security. 16 U.S.C. § 1536(j).

Timing

210. The Court is satisfied Plaintiffs met their burden proving the necessary facts in order to obtain injunctive relief under the ESA; thus, timing is the remaining issue for discussion. The Edwards can fall from record highs to levels at which Comal Springs is below 100 cfs, takes are occurring, and jeopardy is imminent, in less than two years. (Thornhill Testimony; PX-189, PX-190).

211. The Edwards fell from a then-record high in late 1987 to levels at which Comal Springs nearly dried up in the summer of 1989. (PX-207).

212. The Edwards can even fall to levels at which the Comal Springs are imperiled in less than one year. (Thornhill Testimony; PX-248).

213. The Comal Springs in theory could be in danger of drying up again by the summer of 1993 or by the summer of 1994. (Thornhill Testimony; PX-248).

214. The 1984, 1989, and 1990 droughts were once-a-decade drought events. (Bomar Testimony). The risk of Comal Springs drying up again soon is considerable.

215. Once the Edwards has fallen to levels at which Comal Springs has fallen to 100 cfs, it can fall further to levels at which

Comal Springs dries up completely in less than one month. Based on historical experiences in 1956, 1984, 1989, and 1990, the Comal Springs could fall from 100 cfs to 0 cfs in two to three weeks. (Thornhill Testimony).

216. The Federal Defendants' current Flow and Habitat Requirements study addresses only the minimum Comal flow requirements of the Fountain Darter and an invertebrate proposed for listing. (DX-63). It does not address the minimum flow or Aquifer level requirements of any of the other species at issue. (Shull Testimony). This study will take more than one year to complete, and Ms. Shull believes it cannot be completed until Comal Springs have once more dropped to low levels. *(Id.)*. She does not know how low Comal Springs must drop for purposes of this study. *(Id.)*.

217. If the USFWS is allowed to wait until Comal Springs again falls below 100 cfs before determining and communicating the real jeopardy level, above 0 cfs, takes of the Fountain Darter will certainly occur and it is very likely Federal or Court intervention will be too late to save the endangered species from jeopardy through the drying up of Comal Springs.

218. The USFWS can and does determine minimum springflows required for protection of endangered species using best professional judgment, without waiting on the results of multi-year

scientific studies. The USFWS did so in 1990 when it adopted the contingency plan and critical Aquifer and springflow levels at which it would authorize last-ditch removal of endangered species. (PX-119). The USFWS did so again on March 26, 1992, when it advised the TWC of Comal springflow levels below which takes of and jeopardy to the Fountain Darter have already occurred. (PX-34).

219. The Court considers it is feasible for the USFWS to use its best professional judgment to determine, within forty-five (45) days, the minimum Comal and San Marcos springflow levels at which takes of and jeopardy to the Fountain Darter first began to occur, and at which damage to or destruction of or adverse modification of the critical habitat of the Texas wildlife begin to occur. (Whiteside Testimony; Moss Testimony; Hubbs Testimony; Power Testimony; Thornhill Testimony).

220. Springflow and aquifer level determinations made by FWS pursuant to the requirements of this Judgment may be modified by FWS, in the course of ESA Section 7(a)(2) consultations with other federal agencies to insure that actions authorized, funded, or carried out by such agencies are not likely to jeopardize the continued existence of any of endangered or threatened species or result in the destruction

or adverse modification of critical habitat of such species, based upon the best scientific and commercial data available at the time of such consultations. No such consultations have yet occurred.

221. Whenever the FWS modifies any springflow or aquifer level determination that FWS had previously made pursuant to the requirements of this Judgment, whether such modification is made pursuant to ESA Section 7(a)(2) consultations or otherwise, the previous determination made by FWS is not entitled, by reason of the requirement to make the determinations imposed upon FWS by this Judgment, to any presumption of correctness in any subsequent judicial review of the modified determination.

IN ACCORDANCE WITH the foregoing Findings of Fact and Conclusions of Law, the Court will enter its Judgment in the above-captioned cause in favor of Plaintiff and Plaintiff-Intervenors.

SIGNED this 26th day of May, 1993.

Lucius D. Bunton

HONORABLE LUCIUS D. BUNTON, III
SENIOR DISTRICT JUDGE