



0000028687

BEFORE THE ARIZONA CORPORATION COMMISSION

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WILLIAM A. MUNDELL  
Chairman  
JIM IRVIN  
Commissioner  
MARC SPITZER  
Commissioner

Arizona Corporation Commission

DOCKETED

JAN 15 2002

DOCKETED BY *CP*

IN THE MATTER OF THE JOINT )  
APPLICATION OF TUCSON ELECTRIC )  
POWER COMPANY AND CITIZENS )  
COMMUNICATIONS COMPANY FOR A )  
CERTIFICATE OF ENVIRONMENTAL )  
COMPATIBILITY FOR A PROPOSED 345 KV )  
TRANSMISSION LINE SYSTEM FROM )  
TUCSON ELECTRIC POWER COMPANY'S )  
EXISTING SOUTH 345 KV SUBSTATION )  
IN SEC. 36, T.16S., R.13E, SAHUARITA, )  
ARIZONA, TO THE PROPOSED GATEWAY )  
345/115 KV SUBSTATION IN SEC. 12, T.24S., )  
R.13E., NOGALES, ARIZONA WITH A 115 KV )  
INTERCONNECTION TO THE CITIZENS )  
COMMUNICATIONS COMPANY'S 115 KV )  
VALENCIA SUBSTATION IN NOGALES, )  
ARIZONA, WITH A 345 KV TRANSMISSION )  
LINE FROM THE PROPOSED GATEWAY )  
SUBSTATION SOUTH TO THE INTER- )  
NATIONAL BORDER IN SEC. 13, T.24S., )  
R.13E. )

DOCKET NOS. L-00000C-01-0111  
L-00000F-01-0111

DECISION NO. 64356

The Arizona Corporation Commission ("Commission") has conducted its review, as prescribed by A.R.S. § 40-360.07. Pursuant to A.R.S. § 40-360.07(B), the Commission, in compliance with A.R.S. § 40-360.06 and in balancing the broad public interest, the need for an adequate, economical and reliable supply of electric power with the desire to minimize the effect thereof on the environment and ecology of this state:

The Commission finds and concludes that the Certificate of Environmental Compatibility ("CEC") issued by the Arizona Power Plant and Transmission Line Siting Committee is granted as modified and amended by this Order.

1 The Commission modifies Condition Number 6 as follows:

- 2 6. Applicants shall implement the mitigation measures and impact avoidance  
3 recommendations set forth in the Harris Report and those recommended in the  
4 additional Harris Report studies. Applicants shall also continue to completion those  
5 studies that are ongoing as identified in the Harris Report.

6 The Commission modifies Condition Number 8 as follows:

- 7 8. Applicants shall retain an archaeologist satisfactory to the State Historical  
8 Preservation Office (SHPO). The archaeologist is to be on site during construction  
9 activities to advise applicant in connection with any additional archeological and  
10 related studies that may be required and to manage cultural and historical  
11 preservation efforts for archaeological sites that may be affected by the construction  
12 of the Project transmission lines. The archaeologist shall meet and confer with  
13 representatives of local Native American Nations and local historical societies to  
14 determine any sensitive areas and determine if and how they can be avoided or  
15 mitigated.

16 The Commission modifies Condition Number 9 as follows:

- 17 9. Applicants shall retain a biologist satisfactory to the Arizona Game and Fish  
18 Department. The biologist is to be on-site during construction activities in  
19 connection with any additional biological and related studies that may be required  
20 and to advise Applicants in connection with mitigation efforts for any endangered,  
21 threatened and sensitive species that may be affected by the construction of the  
22 Project transmission line.

23 The Commission modifies Condition Number 11 as follows:

- 24 11. In the final design and construction of the transmission line, Applicants shall:  
25 (a) use structures of a non-reflective nature that are to the greatest extent possible  
26 consistent with the terrain and vegetation through which they are installed.  
27 (b) use non-specular conductors and dulled structures of a self-weathering  
28 material and color suitable to the terrain and vegetation

1 (c) use monopoles except in locations where use of lattice towers would  
2 minimize detrimental impacts upon the total environment.

3 (d) When making specific easement routing decisions as to the ultimate pathway  
4 to be followed for the construction of the transmission line, the applicant  
5 shall make the minimization of any detrimental impact upon the total  
6 environment the deciding factor as between different pathways within the  
7 corridor approved by this decision.

8 The Commission modifies Condition Number 16 as follows:

9 16. Applicants shall comply with the recommendations, mitigation measures, and actions  
10 to reduce or prevent environmental impact included in the EIS.

11 The Commission modifies the CEC to add the following two conditions:

12 29. The Applicants, their successor(s) or assignee(s) shall submit a self-certification letter  
13 annually, identifying which conditions contained in the CEC as amended, have been  
14 met. Each letter shall be submitted to the Utilities Division Director on August 1,  
15 beginning in 2002, describing conditions which have been met as of June 30.  
16 Attached to each certification letter shall be documentation explaining, in detail, how  
17 compliance with each condition was achieved. Copies of each letter, along with the  
18 corresponding documentation, shall also be submitted to the Arizona Attorney  
19 General and the Directors of the Arizona Department of Environmental Quality,  
20 Department of Water Resources, and Department of Commerce Energy Office.

21 30. The authority to construct facilities granted by this Commission Decision shall be  
22 revoked and the associated CEC rendered null and void in its entirety if (a) the  
23 Applicants, their successor(s) or assignee(s) legally challenge any condition herein,  
24 or (b) fail to comply with any condition herein as determined by the Commission.

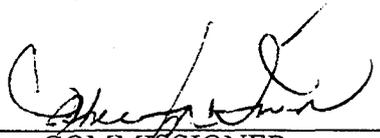
25 The Commission further modifies the CEC to add the following Ordering Paragraph:

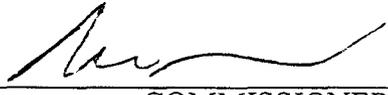
26 The preferred alternative central route, cited in the Application at page 12, section  
27 4.2.5.2, and the alternative eastern route, cited in the Application at page 13, section  
28 4.2.5.3 are hereby denied.

APPROVED AS AMENDED BY ORDER OF THE  
ARIZONA CORPORATION COMMISSION.

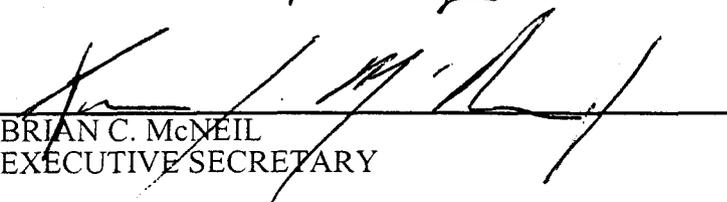
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CHAIRMAN

  
COMMISSIONER

  
COMMISSIONER

IN WITNESS WHEREOF, I, BRIAN C. McNEIL, Executive Secretary of the Arizona Corporation Commission, have hereunto set my hand and caused the official seal of the Commission to be affixed at the Capitol, in the City of Phoenix, this 15<sup>th</sup> day of January, 2002.

  
BRIAN C. McNEIL  
EXECUTIVE SECRETARY

DISSENT \_\_\_\_\_

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**BEFORE THE POWER PLANT AND TRANSMISSION  
LINE SITING COMMITTEE**

IN THE MATTER OF THE JOINT APPLICATION OF TUCSON ELECTRIC POWER COMPANY AND CITIZENS COMMUNICATIONS COMPANY, OR THEIR ASSIGNEE(S), FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY FOR A PROPOSED 345kV TRANSMISSION LINE SYSTEM FROM TUCSON ELECTRIC POWER COMPANY'S EXISTING SOUTH 345kV SUBSTATION IN SEC.36, T.16S., R.13E., SAHUARITA, ARIZONA, TO THE PROPOSED GATEWAY 345/115kV SUBSTATION IN SEC.12, T.24S., R.13E., NOGALES, ARIZONA, WITH A 115kV INTERCONNECT TO THE CITIZENS COMMUNICATIONS COMPANY'S 115kV VALENCIA SUBSTATION IN NOGALES, ARIZONA, WITH A 345kV TRANSMISSION LINE FROM THE PROPOSED GATEWAY SUBSTATION SOUTH TO THE INTERNATIONAL BORDER IN SEC.13, T.24S., R.13E.

Case No. 111

Docket No. L-00000C-01-0111  
L-00000F-01-0111

DECISION NO. 64356

**AMENDED CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY**

Pursuant to notice given as provided by law, the Arizona Power Plant and Transmission Line Siting Committee (the "Committee") held public hearings in Nogales, Arizona, on May 7 and 8, 2001, and in Phoenix, Arizona, on May 17, 2001, June 11, 2001, June 18, 2001, July 16, 2001, August 14, 2001 and October 4, 2001 in conformance with the requirements of Arizona Revised Statutes Sections 40-360, *et seq.*, for the purpose of receiving evidence and deliberating on the Joint Application of Tucson Electric Power Company ("TEP") and Citizens Communications Company ("Citizens") (collectively, "Applicants") for a Certificate of Environmental Compatibility in the above-captioned case (the "Application").

DECISION NO. 64356

1 The following members or designees of members of the Committee were present for the  
2 hearing on the Application:

3 Laurie A. Woodall, Esq., Chair	Designee for Arizona Attorney General Janet Napolitano
4	
5 Richard Tobin	Designee for the Arizona Department of Environmental Quality
6	
7 Mark McWhirter	Designee for the Director of the Energy Office of the Arizona Department of Commerce
8	
9 Ray Williamson	Arizona Corporation Commission ("ACC")
10	
11 A. Wayne Smith	Appointed Member
12	
13 Jeff McGuire	Appointed Member
14	
15 Sandie Smith	Appointed Member
16	
17 Mike Whalen	Appointed Member
18	
19 Michael Palmer	Appointed Member
20	
21 Margaret Trujillo	Appointed Member

22 Applicant TEP was represented by Raymond S. Heyman, Esq., of Roshka Heyman & DeWulf,  
23 PLC and Marcus G. Jerden, Esq. of the TEP Legal Department. Applicant Citizens was represented  
24 by Michael M. Grant, Esq., of Gallagher & Kennedy. There were sixteen (16) intervenors: (1) the City  
25 of Nogales, represented by Jose L. Machado, Esq., City Attorney; (2) Santa Cruz Valley Citizens Council,  
26 Inc., represented by Steven J. Duffy, Esq.; (3) Santa Cruz County, represented by Holly J. Hawn, Esq., and  
Martha S. Chase, Esq.; (4) Arizona Center for Law in the Public Interest, represented by Timothy M.  
Hogan, Esq.; (5) Public Service Company of New Mexico, represented by Thomas H. Campbell, Esq.;  
(6) Arizona Utility Investors Association;<sup>1</sup> (7) the Sonoita Crossroads Community Forum; (8) Sky Island

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<sup>1</sup> Intervenor Arizona Utility Investors Association did not retain counsel to represent it in these proceedings. Mr. Walter M. Meek, a member of the Arizona Utility Investors Association, participated in the proceeding, pro se.

1 Alliance; (9) Maricopa Audubon Society; (10) the Sierra Club - Rincon Group; (11) Noble E. Rose, on  
2 behalf of the Green Valley Community Coordinating Council;<sup>2</sup> (12) Marshall and Lucy Magruder; (13)  
3 William L. and Ellen L. Kurtz; (14) Emilio E. Falco, Ph.D., and Jean A. Titilah; (15) Jean England  
4 Neubauer; and (16) the Center for Biological Diversity. In addition, the ACC Utilities Division participated  
5 in this proceeding, represented by Teena Wolfe, Esq. and Janet Wagner, Esq.

6 At the conclusion of the hearing and deliberations, the Committee, having received and considered  
7 the Application, the appearances of Applicants and all intervenors, the evidence, testimony and exhibits  
8 presented by Applicants and all intervenors, the comments made by persons making limited appearances  
9 and the comments of the public, and being advised of the legal requirements of Arizona Revised Statutes  
10 Sections 40-360 to 40-360.13, upon motion duly made and seconded, voted to grant Applicants the  
11 following Certificate of Environmental Compatibility (Case No. 111):  
12

13 Applicants and their assignees are granted a Certificate of Environmental Compatibility authorizing  
14 the construction of (i) a double circuit, 345kV transmission line running from TEP's existing South  
15 Substation to the new TEP Gateway Substation; (ii) the Citizens/TEP 345kV interconnection; (iii) the new  
16 Citizens' Gateway 345/115kV Substation and approximately three miles of 115kV transmission line to  
17 complete the second line to Citizens' existing Valencia Substation; and (iv) approximately two miles of  
18 345kV transmission line to interconnect with the Comisión Federal de Electricidad ("CFE") transmission  
19 system at the United States/Mexico border as described more fully in Section 4.2 of the Application.

20 Applicants and their assignees are granted a Certificate of Environmental Compatibility for the  
21 preferred 345kV westerly route (the "Preferred Route"), which is described more fully in Section 4.2.5.1  
22 of the Application.  
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25 <sup>2</sup> At the telephonic procedural conference held on April 30, 2001, the Green Valley Community  
26 Coordinating Council withdrew its intervention.

1 Applicants and their assignees also are granted this Certificate of Environmental Compatibility for  
2 construction of Citizens' 115kV line in a 1,000 foot wide corridor on either side of the alignments described  
3 in the first two paragraphs of Section 4.2.5.4 of the Application together with an alternative to construct a  
4 parallel single-circuit line for the final approximately 0.4 miles of the Preferred Citizens' Route.

5 In addition, Applicants and their assignees are granted this Certificate of Environmental  
6 Compatibility for construction of the substation facilities, which are described more fully in Section 4.2.1.3  
7 of the Application.

8 The Certificate of Environmental Compatibility is granted upon the following conditions:

- 9 1. Applicants shall obtain all required approvals and permits necessary to  
10 construct the Project.
- 11 2. Applicants shall comply with all existing applicable laws, environmental  
12 control standards and regulations, ordinances, master plans and  
13 regulations of the United States, the State of Arizona, Pima and Santa  
14 Cruz Counties, the City of Nogales, the Town of Sahuarita, the Tohono  
15 O'Odham Nation, and any other governmental entities having jurisdiction.
- 16 3. As to the Preferred Route, Applicants shall construct the Project  
17 transmission lines only within the corridor more fully described in Exhibit  
18 1, attached hereto (the "Route Corridor").
- 19 4. Applicants shall meet and confer with landowners who are within or  
20 adjacent to the Route Corridor and other interested parties in order to  
21 develop a plan for specific pole locations that will mitigate the  
22 environmental and visual impact of the Project transmission lines within  
23 the Route Corridor.  
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5. Applicants shall, prior to construction of the Project transmission lines, conduct the studies recommended in the Report of The Harris Environmental Group, Inc. attached to the Joint Application as Exhibit C ("Harris Report") and attached hereto as Exhibit 2.
  6. Applicants shall implement the mitigation measures set forth in the Harris Report and those recommended in the additional Harris Report studies. Applicants shall also continue to completion those studies that are ongoing as identified in the Harris Report.
  7. Applicants shall file with the ACC, in this docket, the findings of the additional Harris Report studies.
  8. Applicants shall retain an archaeologist to be on site during construction activities to advise them in connection with any additional archaeological studies that may be required and any mitigation efforts for archaeological sites that may be affected by the construction of the Project transmission lines. The archaeologist shall meet and confer with representatives of local tribes and historical societies to determine sensitive areas and mitigation options.
  9. Applicants shall retain a biologist to be on site during construction activities in connection with any additional biological studies that may be required and to advise them in connection with any mitigation efforts for any species that may be affected by the construction of the Project transmission lines.

1 10. Applicants shall consult with the State Historic Preservation Office to  
2 advise them in connection with any mitigation efforts for any historical  
3 sites affected by the construction of the Project transmission lines and any  
4 historical sites identified and made known to them (any information on  
5 historical sites in the record of Case No. 111 is deemed known to the  
6 applicant).

7 11. In the final design and construction of the transmission line,

8 Applicants shall:

- 9
- 10 (a) use structures of a non-reflective nature that are to the greatest  
11 extent possible consistent with the terrain and vegetation through  
12 which they are installed.
- 13 (b) use non-specular conductors and dulled structures of a self-  
14 weathering material and color suitable to the terrain and  
15 vegetation.

16 12. Before construction on this project may commence, the Applicants must  
17 file a construction mitigation and restoration plan with ACC Docket  
18 Control. Applicants shall, within one year of completion of the Project,  
19 rehabilitate to its original state any area disturbed by construction of the  
20 Project, except for any road that may be necessary to access the  
21 transmission lines for maintenance and repair.

22 The goals of the Plan will be to:

- 23
- 24 • Avoid impacts where practical;
  - 25 • Where impacts are unavoidable, minimize impacts; and
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- Focus on site preparation to facilitate natural processes of revegetation.

Other key elements of the Plan are to:

- Emphasize final site preparation to encourage natural revegetation;
- Avoid (*i.e.*, reserve), where practical, mature native trees;
- Stipulate a maximum construction corridor width;
- Preserve topsoil and plant materials from the right-of-way before grading, and respread over the right-of-way after construction is complete;
- Imprint the restored right-of-way to provide indentations to catch seed and water;
- Implement best management practices to protect the soil;
- Apply restoration methods that have been shown to work in the desert environment;
- Prevent the spread of noxious weeds or other undesirable species; and
- Apply methods to discourage unauthorized off-highway-vehicle (OHV) use of right-of-way.

13. In connection with the Western Systems Coordinating Council review process, TEP shall provide to the ACC Utilities Division requested

1 technical information regarding any interconnection plans between TEP  
2 and CFE.

3 14. TEP shall notify the ACC Utilities Division, within thirty (30) days of  
4 execution, of the existence of any agreement between TEP and CFE and  
5 shall provide any technical studies performed to investigate the  
6 interconnection between TEP and CFE.

7 15. Applicants shall file with the ACC, in Docket no. L-00000C-01-0111; and  
8 L-00000F-01-0111, a copy of the federal Environmental Impact  
9 Statement ("EIS") and associated Records of Decision, when completed,  
10 for the Project.

11 16. Applicants shall comply with the recommendations of the EIS.

12 17. This authorization to construct the Project will expire three years from the  
13 date the Certificate of Environmental Compatibility is approved by the  
14 ACC. Applicants shall have the right to apply to the ACC for an  
15 extension of this time limitation.

16 18. All transmission structures shall be placed a minimum of 100 feet from the  
17 edge of existing gas pipeline right of way.

18 19. Common structures shall not be used to double circuit the new 115 kV  
19 transmission line approved herein with Citizens' existing 115 kV  
20 transmission line.

21 20. Distribution substation feeder tie lines shall not be attached to structures  
22 supporting the 115 kV lines approved herein. Applicants or their assigns  
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1 may apply to the ACC for a waiver of this condition in the event of future  
2 system expansion.

3 21. Citizens shall make necessary systems improvements to ensure continuity  
4 of service in the event of an outage on the new 115 kV transmission line  
5 approved herein and shall submit system improvement plans to the ACC  
6 Utilities Division six months from the date this Certificate of  
7 Environmental Compatibility is approved by the ACC.

8 22. Applicants shall participate as a consulting party with the lead federal  
9 agency, the State Historic Preservation Office ("SHPO"), and the state  
10 and federal land managing agencies in the federal compliance process (*i.e.*,  
11 36 C.F.R. 800) to reach a finding of the effect and to resolve adverse  
12 effects, if any.

13 23. Should federal involvement in any part or all of this project be removed  
14 or not occur, the Applicants shall continue to consult with SHPO in the  
15 state compliance process to reach a determination of impact and resolve  
16 impacts, if any.

17 24. The Applicants shall ensure consultation with Indian tribes regarding the  
18 potential impacts to historic properties, particularly traditional cultural  
19 places, that may be present within, or adjacent to, the proposed corridor,  
20 and resolve adverse effects, if any. Such consultation shall be done in a  
21 sensitive manner respectful of tribal sovereignty and concerns regarding  
22 confidentiality.  
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25. The Applicants shall include in the geographic area affected by the project (*i.e.*, area of potential effect), the final right-of-way and buffer zone, new and existing access roads, material source pits (if any), and equipment staging areas.

26. The Applicants shall sponsor the necessary studies to complete the historical site identification effort as part of the federal or state compliance process. This may include a cultural resources survey, archaeological testing, or ethnographic study performed under the direction of professionals that meet the Secretary of the Interior's qualification standards and permitting requirements of the appropriate land-managing entities.

27. If historic property cannot be avoided, Applicants shall sponsor the necessary studies or take the appropriate actions to lessen or mitigate the impacts as part of the federal or state compliance process. This may include archaeological data recovery (*i.e.*, excavations), archival research and structure documentation.

28. After construction, Applicants, in conjunction with the land-managing agency, if any, shall allow Arizona Site Stewards, a volunteer-staffed SHPO program, to periodically inspect the sites present within the corridor for vandalism or damage.

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GRANTED this 29<sup>th</sup> day of October 2001.

ARIZONA POWER PLANT AND  
TRANSMISSION LINE SITING COMMITTEE

By: Laurie A Woodall  
LAURIE A. WOODALL  
Chairman *by Paul A. Bull*



EXHIBIT 1

EXHIBIT 1

LEGAL DESCRIPTION

WESTERN ROUTE - GATEWAY 345-KV TRANSMISSION LINE

A strip of land two (2) miles in width and being located in Pima and Santa Cruz Counties, Arizona, the centerline of said strip of land being described as follows:

Beginning at the Southwesterly boundary of Tucson Electric Power Company's South Substation, located in the Northeast Quarter of Section 36, Township 16 South, Range 13 East, G&SRB&M, Pima County, Arizona, said point being located at Latitude 31°59'49.34"N, Longitude 110°58'02.01"W;

Thence Southerly 1,203 feet to point W02 located in the Northeast Quarter of Section 36 at Latitude 31°59'37.47"N, Longitude 110°58'02.01"W

Thence Westerly 5,618 feet to point W03 located in the Southeast Quarter of Section 35 at Latitude 31°59'36.60"N, Longitude 110°59'07.37"W;

Thence Southwesterly 1,065 feet to point W04 located in the Southwest Quarter of Section 35 at Latitude 31°59'29.13"N, Longitude 110°59'16.09"W;

Thence Southerly 1,799 Feet to point W04a on the North line of T17S at Latitude 31°59'11.38"N, Longitude 110°59'16.09"W;

Thence Southerly 4,900 Feet to point W05 located in the Southwest Quarter of Section 2, T17S, R13E, at Latitude 31°58'23.02"N, Longitude 110°59'16.08"W;

Thence Westerly 13,063 Feet to point W06 located in the Southwest Quarter of Section 4, at Latitude 31°58'21.41"N, Longitude 111°01'48.02"W;

Thence Southerly 5,002 Feet to point W07 located in the Southeast Quarter of Section 8, at Latitude 31°57'32.06"N, Longitude 111°01'47.15"W;

Thence Southwesterly 731 Feet to point W08 located in the Northwest Quarter of Section 16, at Latitude 31°57'26.47"N, Longitude 111°01'41.78"W;

Thence Southwesterly 5,569 Feet to point W09 located in the Northwest Quarter of Section 21, at Latitude 31°56'31.53"N, Longitude 111°01'40.48"W;

Thence Westerly 10,874 Feet to point W09a located on the East line of R12E at Latitude 31°56'31.05"N, Longitude 111°03'46.93"W;

Thence Westerly 10,373 Feet to point W10 located in the Northwest Quarter of Section 23, T17S, R12E, at Latitude 31°56'30.16"N, Longitude 111°05'47.54"W;

Thence Southwesterly 15,404 Feet to point W10a located on the North line of T18S, at Latitude 31°53'58.15"N, Longitude 111°05'46.43"W;

Thence Southerly 15,320 Feet to point W11 located in the Southwest Quarter of Section 14, T18S, R12E, at Latitude 31°51'26.99"N, Longitude 111°05'44.00"W;

WESTERN ROUTE - CONTINUED

Thence Southwesterly 22,045 Feet to point W12 located in the Southeast Quarter of Section 31, T18S, R12E, at Latitude 31°49'02.40"N, Longitude 111°08'55.32"W;

Thence Southerly 2,149 Feet to point W12a located on the North line of T19S at Latitude 31°48'41.20"N, Longitude 111°08'55.53"W;

Thence Southerly 31,183 Feet to point W12b located on the Pima/Santa Cruz County Boundary which is also the North line of T20S at Latitude 31°43'33.50"N, Longitude 111°08'56.59"W;

Thence Southerly 22,515 Feet to point W13 located in the Northeast Quarter of Section 30, T20S, R12E line at Latitude 31°39'51.32"N, Longitude 111°08'57.06"W;

Thence Southerly 9,324 Feet to point W13a located on the North Boundary of the Coronado National Forest which is also the North line of T21S, at Latitude 31°38'19.32"N, Longitude 111°08'56.36"W;

Thence Southerly 2,571 Feet to point W14 located in the Northeast Quarter of Section 6, T21S, R12E line at Latitude 31°37'53.95"N, Longitude 111°08'56.05"W;

Thence Southerly 25,890 Feet to point W15 located in the Northeast Quarter of Section 31, T21S, R12E line at Latitude 31°33'38.54"N, Longitude 111°09'02.70"W;

Thence Southerly 5,232 Feet to point W15a located in the South line of T21S, at Latitude 31°33'03.71"N, Longitude 111°09'47.42"W;

Thence Southwesterly 479 Feet to point W15b located Pima/Santa Cruz County boundary which is also the East line of R11E, at Latitude 31°33'00.35"N, Longitude 111°09'51.33"W;

Thence Southwesterly 6,497 Feet to point W16 located at Latitude 31°32'16.55"N, Longitude 111°10'46.25"W;

Thence Southerly 5,984 Feet to point W16a located on or near the "indefinite boundary" between Pima and Santa Cruz County at Latitude 31°31'17.50"N, Longitude 111°10'46.39"W;

Thence Southerly 2,866 Feet to point W17 located at Latitude 31°30'49.22"N, Longitude 111°10'46.26"W;

Thence Southerly 3,747 Feet to point W18 located at Latitude 31°30'12.25"N, Longitude 111°10'45.96"W;

Thence Southerly 13,651 Feet to point W19 located in the Southwest Quarter of Section 36, T23S, R11E, at Latitude 31°27'57.54"N, Longitude 111°10'45.23"W;

Thence Southerly 1,198 Feet to point W19a located on the North line of T23S, at Latitude 31°27'45.72"N, Longitude 111°10'45.13"W;

Thence Southerly 6,764 Feet to point W20 located in the Northwest Quarter of Section 12, T23S, R12E at Latitude 31°26'38.98"N, Longitude 111°10'45.37"W;

Thence Southeasterly 8,428 Feet to point W21 located in the Southwest Quarter of Section 13, T23S, R11E at Latitude 31°25'17.26"N, Longitude 111°10'27.25"W;

Thence Southeasterly 4,581 Feet to point W22 located on the West line of R12E at Latitude 31°24'45.16"N, Longitude 111°09'49.95"W;

WESTERN ROUTE - CONTINUED

Thence Southeasterly 7,114 Feet to point W23 located in the Southeast Quarter of Section 30, T23S, R12E at Latitude  $31^{\circ}23'55.44''$ N, Longitude  $111^{\circ}08'51.89''$ W;

Thence Southeasterly 6,002 Feet to point W24 located in the Northeast Quarter of Section 32, T23S, R12E at Latitude  $31^{\circ}23'09.00''$ N, Longitude  $111^{\circ}08'08.83''$ W;

Thence Southeasterly 5,045 Feet to point W25 located in the Southeast Quarter of Section 33, T23S, R12E at Latitude  $31^{\circ}23'00.65''$ N, Longitude  $111^{\circ}07'11.34''$ W;

Thence Northeasterly 5,073 Feet to point W26 located in the Northwest Quarter of Section 34, T23S, R12E at Latitude  $31^{\circ}23'07.62''$ N, Longitude  $111^{\circ}06'13.27''$ W;

Thence Southeasterly 3,602 Feet to point W27 located in the Southwest Quarter of Section 35, T23S, R12E, at Latitude  $31^{\circ}22'52.82''$ N, Longitude  $111^{\circ}05'35.42''$ W;

Thence Easterly 10,085 Feet to point W27a located on the West line of R13E, at Latitude  $31^{\circ}22'52.19''$ N, Longitude  $111^{\circ}03'38.85''$ W;

Thence Easterly 18,743 Feet to point W28 located in the Southeast Quarter of Section 34, T23S, R13E, at Latitude  $31^{\circ}22'51.85''$ N, Longitude  $111^{\circ}00'02.21''$ W;

Thence Southeasterly 1,569 Feet to point W28a located on the North line of T24S at Latitude  $31^{\circ}22'39.75''$ N, Longitude  $110^{\circ}59'50.90''$ W;

Thence Southeasterly 5,380 Feet to point W29 located in the Southeast Quarter of Section 2, T24S, R13E at Latitude  $31^{\circ}21'58.31''$ N, Longitude  $110^{\circ}59'12.02''$ W;

Thence Southeasterly 3,552 Feet to point W30 located in the Northeast Quarter of Section 11, T24S, R13E at Latitude  $31^{\circ}21'35.22''$ N, Longitude  $110^{\circ}58'41.13''$ W;

Thence Easterly 327 Feet to point W30a located on the Easterly boundary of the Coronado National Forest at Latitude  $31^{\circ}21'35.27''$ N, Longitude  $110^{\circ}58'37.35''$ W;

Thence Easterly 2,396 Feet to point W31 located in the Northwest Quarter of Section 12, T24S, R13E at Latitude  $31^{\circ}21'35.46''$ N, Longitude  $110^{\circ}58'09.67''$ W; said point being the point of terminus on or near the Westerly boundary of Tucson Electric Power Company's proposed Gateway Substation.

EXHIBIT 2



## 1. Introduction

We conducted a preliminary biological evaluation of Tucson Electric Power's (TEP) proposed transmission corridor between Tucson and Nogales to determine the presence or absence of potential habitat for rare and endangered species. The proposed corridor extends south approximately 48 miles from TEP's substation near Pima Mine Road and Interstate 19 to the International Border in Nogales, Arizona (Figure 1). The northern portion of the project area encompasses 2 alternate routes for the corridor (east & west). The eastern route passes between Green Valley and the Santa Rita Mountains and then continues along the east side of the Tumacacori Mountains. The eastern route also crosses the Santa Cruz River near Amado, Arizona. The western route passes west of ASARCO Inc.'s Mission Complex mine and then west of the Tumacacori Mountains. Both alternate routes recombine at the south end of the Tumacacori Mountains and extend southward along the eastern foothills of the Atascosa and Pajarito Mountains to Nogales, Arizona. The corridor varies in width along the route, from 2 to 3.2 miles wide. Land ownership within the project area includes private land, state land, Bureau of Land Management land, and U. S. Forest Service (Coronado National Forest) land.

## 2. Project Description

The proposed project consists of placing a 2-circuited, 345kV electrical transmission line from TEP's substation south of Tucson to Nogales, Arizona. This power line will be strung on steel poles, which will be installed by drilling holes and raw-setting the poles in the ground.

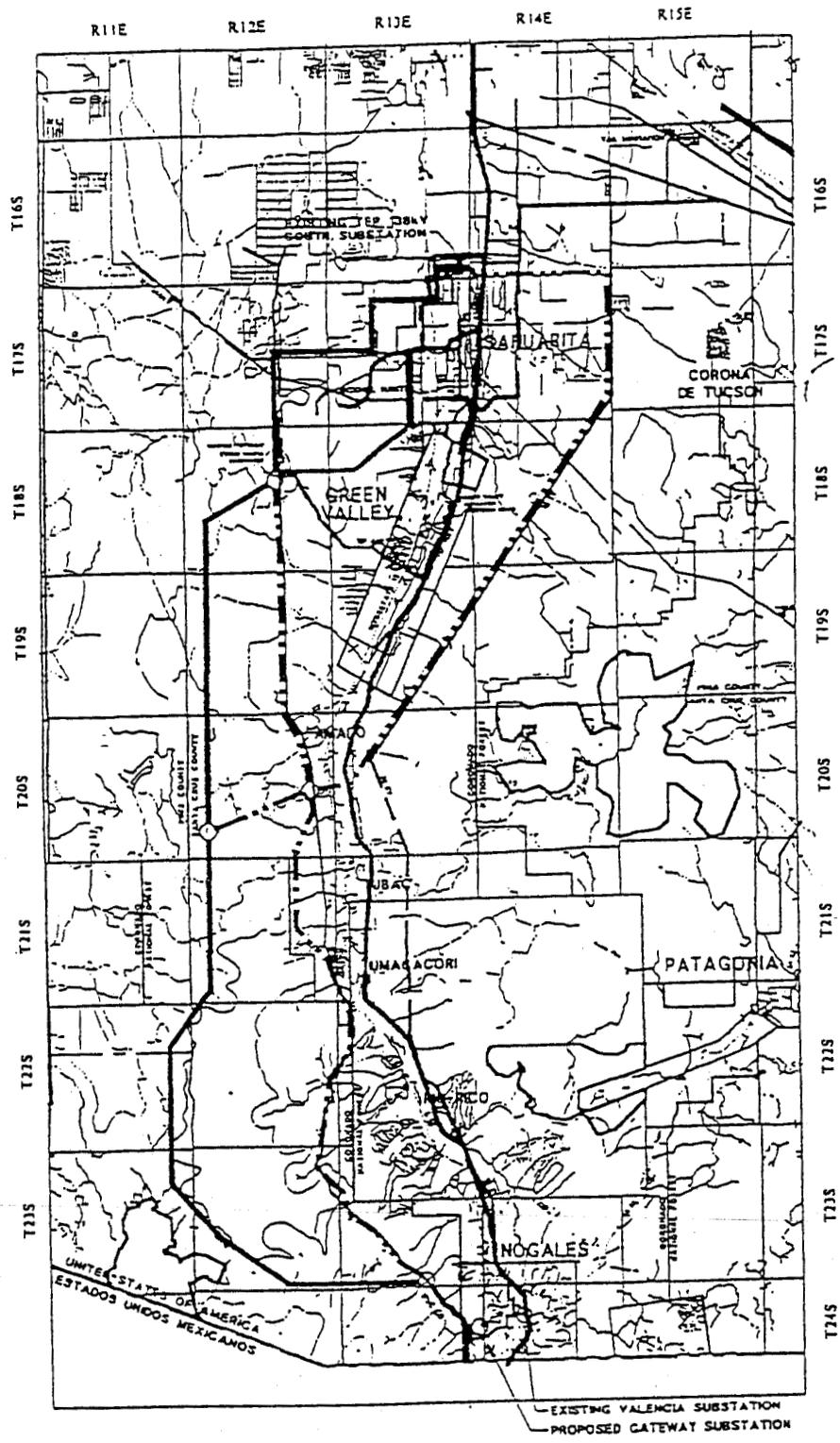


Figure 1. Proposed Transmission Corridor Routes from Tucson to Nogales, Arizona.



### 3. Project Area

Between Tucson and Nogales, the proposed corridor crosses 4 distinct biotic communities, or biomes, as described by Brown (1994). The northern end of the corridor contains vegetation characteristic of the Sonoran desertscrub biome. This biome is typically represented by saguaro (*Carnegiea gigantea*), cholla and prickly pear (*Opuntia* spp.) cacti, ocotillo (*Fouquieria splendens*), and mesquite (*Prosopis velutina*), acacia (*Acacia* spp.) and paloverde (*Cercidium* spp.) trees. Shrubs associated with this biome include creosote bush (*Larrea tridentata*), triangle-leaf bursage (*Ambrosia deltoidea*), and brittlebush (*Baileya multiradiata*).

The project area near Green Valley, Arizona crosses the semi-desert grassland biome. This area is dominated by grama (*Bouteloua* spp.), lovegrass (*Eragrostis* spp.), and three-awn (*Aristida* spp.) grasses, with low shrubs such as mesquite and acacia being locally co-dominant. Agave (*Agave* spp.) and yucca (*Yucca* spp.) plants are also common in this biome.

The higher elevations (above 3,500' above mean sea level) of the project area are within the madrean evergreen woodland biome. Representative plants of this biome within the project area include Mexican blue oak (*Quercus oblongifolia*) and emory oak (*Q. emoryi*) trees, side-oats grama (*B. curtipendula*) and little bluestem (*Schizachyrium scoparium*) grasses.

The 4<sup>th</sup> biome represented within the project area is the Sonoran deciduous riparian forest, which is located along parts of the Santa Cruz River which have perennial flow. The high water table in these areas supports large stands of cottonwood (*Populus fremontii*) and willow (*Salix* spp.) trees with canopy layers in excess of 50' in height.



#### 4. Species Identification

We contacted federal and state natural resource agencies, U. S. Fish and Wildlife Service (USFWS) and Arizona Game and Fish Department (AGFD), requesting information on possible rare and endangered species (sensitive, threatened and endangered species) that may exist on or near the project area. Rare and endangered species are plants and wildlife that are of concern because their populations are either in jeopardy of extinction or are declining in size.

In a letter dated 2 October 2000, David L. Harlow, Field Supervisor, USFWS, listed 32 federal threatened or endangered species and 8 federal candidate or proposed species that occur in Pima and Santa Cruz Counties, Arizona. Secondly, in a letter dated 9 October 2000, AGFD listed 75 rare and endangered species that are known to occur in the vicinity of the project area or may be expected to occur on the site if suitable habitat exists. The information listed in the letter was based on the Department's Heritage Data Management System. Agency responses are presented in Appendix A.

As some of the proposed corridor occurs on USDA Forest Service lands, we requested a meeting with Randall Smith, Coronado National Forest Natural Resource Staff Officer, to discuss potential impacts to sensitive species on Forest Service land. The Forest Service will consult on utility projects after a Memorandum of Understanding between all parties is completed. (Appendix A).

Based on the correspondence with the agencies, we reviewed aerial photographs of the proposed corridor for potential habitat for all 96 rare and endangered species listed in correspondence with the natural resource agencies. Based upon our photo-interpretation and knowledge of the area, we believe habitat for 65 of the 96 rare and endangered species may occur within the project area. Of these 65 species, we delineated



potential habitat polygons on the aerial photographs for 17 species. The habitat polygons delineated on the photographs were digitized and overlaid onto the proposed corridor route (Exhibit B-1). We did not delineate potential habitat for the remaining 48 species on the photographs because the preferred habitat was so widespread that delineation was impractical. We then conducted field visits to verify potential habitats within the project area.

### 5. Species Evaluation

The rare and endangered species identified by the AGFD's Heritage Data Management System and the USFWS as occurring within or near the project area are listed below, with those having federal protection under the Endangered Species Act of 1973 listed first. Thirty-one species included in the agency letters, but excluded from further evaluation are addressed in Appendix B. The federal and state status definitions are presented below.

Table 1. Federal and Arizona protected status definitions for rare and endangered species with potential habitat in the TEP Tucson/Nogales transmission corridor.		
STATUS	ABBREVIATION	DEFINITION
FEDERAL		
Listed Endangered	LE	Species identified by the USFWS under the Endangered Species Act as being in imminent jeopardy of extinction.
Listed Threatened	LT	Species identified by the USFWS under the Endangered Species Act as being in imminent jeopardy of becoming endangered.
Proposed Threatened	PT	Species proposed for listing by the USFWS as threatened under the Endangered Species Act.
Species of Concern	SC	The terms "Species of Concern" or "Species at Risk" should be considered as terms-of-art that describe the entire realm of taxa whose conservation status may be of concern to the USFWS, but neither term has official status (currently all former C2 species).
Sensitive	S	Those taxa occurring on USDA National Forests in Arizona which are considered sensitive by the Regional Forester.



Table 1 (continued). Federal and Arizona protected status definitions for rare and endangered species with potential habitat in the TEP Tucson/Nogales transmission corridor.

STATUS	ABBREVIATION	DEFINITION
STATE		
Wildlife of Special Concern in Arizona	WC	Species whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats or population declines, as described by the AGFD's listing of <i>Wildlife of Special Concern in Arizona</i> (WSCA, in prep.). Species included in WSCA are currently the same as those in <i>Threatened Native Wildlife in Arizona</i> (1988).
Highly Safeguarded	HS	Those Arizona native plants whose prospects for survival in this State are in jeopardy or are in danger of extinction, or are likely to become so in the foreseeable future, as described by the Arizona Native Plant Law (1993).
Salvage Restricted	SR	Those Arizona native plants not included in the Highly Safeguarded Category, but that have a high potential for theft or vandalism, as described by the Arizona Native Plant Law (1993).

### 1. Federally Listed Species

Cactus Ferruginous Pygmy-owl (LE, WC): The Arizona population of the cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*) was federally listed by the USFWS as endangered in March 1997 (USFWS 1997). In July 1999, 731,712 acres of riverine, riparian, and upland habitat in southern Arizona were designated as critical habitat for the pygmy-owl (USFWS 1999). The pygmy-owl nests in cavities of larger trees (typically defined as a tree with a trunk at least 6 inches in diameter, measured at breast height) or large columnar cactus. Cavities may be naturally formed (e.g. knotholes) or excavated by woodpeckers. Pygmy-owls do not construct their own nest holes. All currently known pygmy-owl nest sites in Arizona are in woodpecker-excavated holes in saguaros. Historically, the species also has been documented nesting in cottonwood, paloverde, and mesquite trees in Arizona. The majority of pygmy-owl sightings in Arizona identified between 1993 and 2000 were in, or peripheral to, dense desertscrub



thickets bordering dry desert washes. Dominant plants in these washes include paloverde, ironwood (*Olneya tesota*), mesquite, acacia, canyon ragweed (*Ambrosia ambrosioides*), various shrubs, as well as saguaro and/or organpipe cactus (*Stenocereus thurberi*).

We delineated potential habitat for the pygmy-owl within the project area in Sonoran desertscrub areas containing saguaro cacti and mesquite and paloverde trees in association with shrubs and groundcover. We also delineated potential habitat in riparian areas containing larger trees such as cottonwood, willow and mesquite trees.

The proposed TEP transmission corridor does not cross any designated critical habitat for the pygmy-owl. However, all of the project area within Pima County, Arizona, is within Survey Zone 2, which includes the current range of the pygmy-owl and those areas with a moderate potential for occupancy (USFWS 2000a). The USFWS recommends a 2-year survey protocol for commercial projects within Zone 2 that remove or disturb suitable habitat. This protocol requires 2 years of surveys with 3 separate survey passes conducted between 1 January and 30 June of each survey year. The survey passes must be at least 15 days apart, with at least 1 survey pass completed between 15 February and 15 April, when the owl is most active. Survey results are valid from the last survey of the second year until 31 December of that same calendar year. After 1 January, additional surveys are recommended if suitable pygmy-owl habitat is still present and is proposed for removal or disturbance. [Where the final corridor alignment passes through potential pygmy-owl habitat, we recommend conducting surveys in accordance with the 2000 USFWS approved survey protocol.]

In addition, all of the project area within Santa Cruz County, Arizona, is within Survey zone 3, which includes those areas within the historic range of the pygmy-owl and a low potential of occupancy (USFWS 2000a). For any land-clearing activities in



Zone 3 which affect suitable pygmy-owl habitat and have a federal nexus (projects that involve federal funds or authorizations), consultation under Section 7 of the ESA may be required and the USFWS may recommend that surveys be conducted in Zone 3 (USFWS 2000a). See the Recommended Guidance for Private Landowners Concerning the Cactus Ferruginous Pygmy-Owl (Appendix C) for further information regarding survey zones.

**Southwestern Willow Flycatcher (LE, S, WC):** The southwestern willow flycatcher (*Empidonax traillii extimus*) breeds in dense riparian habitats along rivers, streams, or other wetlands. The vegetation may be dominated by dense growths of willows or other shrubs and medium-sized trees. There may be an overstory of cottonwood, tamarisk (*Tamarix aphylla*), or other large trees, but this is not always the case. Almost all southwestern willow flycatcher breeding habitats are within close proximity (less than 20 yards) of water or very saturated soil.

We delineated potential habitat for the southwestern willow flycatcher within the project area along the Santa Cruz River where suitable riparian vegetation existed. If the final corridor alignment crosses this habitat, we recommend conducting surveys for the southwestern willow flycatcher following the USFWS approved survey protocol (USDI 1997). This protocol requires a minimum of 3 surveys, 1 during each survey period (Survey 1; 15-31 May; Survey 2; 1-21 June; Survey 3; 22 June – 10 July), with at least 5 days between each survey.

**Lesser Long-nosed Bat (LE, S, WC):** The lesser long-nosed bat (LLNB) (*Leptonycteris curasoae yerbabuena*) occurs from the southern United States to Northern Mexico and is typically associated with its primary food source: flower nectar and fruit of columnar cacti and flower nectar of certain agave plants. Because of the seasonal nature of their food source, they must migrate to follow the flowering and fruiting of these plants. In



addition to food availability, there must be suitable roosting within commuting distance of the food source.

While we did not delineate specific habitat, the LLNB may use portions of the project area for foraging habitat. We recommend conducting surveys for agave plants and saguaro cacti along the final corridor alignment. In areas where these plants are identified, specimens should be salvaged and transplanted outside of the construction area.

**Pima Pineapple Cactus (LE, HS):** Populations of the Pima pineapple cactus (*Coryphantha scheeri* var. *robustospina*) are known to occur in southern Arizona, south of Tucson in the Altar and Santa Cruz valleys, with the highest known densities occurring around Green Valley, Arizona. The plant is found in open patches within the semi-desert grasslands and Sonoran desertscrub plant communities (Brown 1994). They are typically found on flat alluvial bajadas that are comprised of granitic material and are most abundant within the ecotone between the grassland and desert scrub biomes (Roller 1996). All areas with elevation levels between 2,300' and 4,500' above mean sea level are potential habitat for this cactus. We recommend conducting surveys for the Pima pineapple cactus where the final corridor alignment crosses these elevations. Surveys for Pima pineapple cacti are conducted by establishing multiple, criss-crossing belt transects across identified potential habitat with each surveyor covering a 4-6 meter swath.

**Gila Topminnow (LE, WC):** Gila topminnows (*Poeciliopsis occidentalis occidentalis*) historically occupied headwater springs, vegetated margins and backwater areas of intermittent and perennial streams and rivers. This species prefers shallow warm water in a moderate current with dense aquatic vegetation and algae mats (AGFD 1995). We delineated potential habitat for the Gila topminnow within the project area along the



Santa Cruz River. [If the final corridor alignment crosses this habitat, we recommend conducting surveys for the Gila topminnow.]

**Huachuca Water Umbel (LE):** The Huachuca water umbel (*Lilaeopsis schaffneriana recurva*) is an herbaceous, semi-aquatic perennial that occurs in cienegas, perennial low-gradient streams, and wetlands between 3,500 and 6,500 feet in elevation. We delineated potential habitat for the Huachuca water umbel within the project area along the Santa Cruz River. If the final corridor alignment crosses this habitat, we recommend conducting surveys for this species.

**Nichol's Turk's Head Cactus (LE):** The Nichol's Turk's head cactus (*Echinocactus horzonthalonius* var. *nicholii*) is a blue-green to yellowish-green columnar cactus that reaches approximately 18" in height. They are usually found on dissected alluvial fans at the foot of limestone mountains and on inclined terraces and saddles on limestone mountainsides between 2,400' and 4,100' in elevation in Pima County, Arizona. We did not delineate habitat for this species within the project area, as its preferred habitat is widespread within the Pima County portion of the project area. We recommend conducting surveys for this species if the final corridor alignment crosses its habitat.

**Mexican Spotted Owl (LT, S, WC):** The Mexican spotted owl (*Strix occidentalis lucida*)

**Chiricahua Leopard Frog (PT, S, WC):** The Chiricahua leopard frog (*Rana chiricahuensis*) is a highly aquatic frog inhabiting riparian pools, permanent springs and stock tanks between 3500' and 8000' in elevation. We delineated habitat for the chiricahua leopard frog within the project area. If the final corridor alignment crosses this habitat, we recommend conducting surveys for this species.



2. Federal Species of Concern

We delineated potential habitat within the project area for the federal Species of Concern (SC) listed in Table 2. Species of concern are those species whose conservation status may be of concern to the USFWS, but the designation has no official status. We recommend conducting surveys for these species in areas where the final corridor alignment crosses their preferred habitats.

COMMON NAME	STATUS	SCIENTIFIC NAME	PREFERRED HABITAT
Desert Sucker	SC, S	<i>Catostomus clarki</i>	Rapids and flowing pools of streams & rivers below 6560' elevation.
Gila Chub	SC	<i>Gila in. ermedia</i>	Pools, springs, cienegas, and streams between 2000' and 3500' elevation.
Longfin Dace	SC, S	<i>Agosia chrysogaster</i>	Relatively small, intermittent low-desert streams below 4900' elevation.
Lowland Leopard Frog	SC, S, WC	<i>Rana yavapaiensis</i>	Permanent pools, streams and stock tanks between 800' and 5500' elevation.
Mexican Garter Snake	SC, S, WC	<i>Thamnophis eques megalops</i>	Desert cienegas, near water in grasslands and lower oak woodlands below 8500' elev.
Northern Gray Hawk	SC, S, WC	<i>Asturina nitida maxima</i>	Inhabits tall cottonwood/willow, riparian woodlands.

We did not delineate potential habitat for the federal Species of Concern listed in Table 3. Potential habitat for each of these species does exist within the project area, however, their preferred habitats were so widespread that delineation was impractical. We recommend conducting surveys for these species in areas where the final corridor alignment crosses their preferred habitats.

COMMON NAME	STATUS	SCIENTIFIC NAME	PREFERRED HABITAT
American Peregrine Falcon	SC, S, WC	<i>Falco peregrinus anatum</i>	Requires cliffs and steep terrain near permanent water.
Bartram Stonecrop	SC, S, SR	<i>Gratiopetalum bartramii</i>	Cracks in rocky outcrops in shrub live-oak/grasslands between 3900' and 6700' elev.
Beardless Chinch Weed	SC, S	<i>Pectis imberbis</i>	Open areas in oak/grasslands between 4000' and 5000' elevation. Adapted to disturbance.



Table 3 (Continued). Federal Species of Concern with widespread habitat within the TEP Tucson to Nogales, Arizona, Transmission Corridor.

COMMON NAME	STATUS	SCIENTIFIC NAME	PREFERRED HABITAT
California Leaf-nosed Bat	SC, S, WC	<i>Macrotus californicus</i>	Inhabits desertscrub and riparian associations. Roosts in mines and caves. Occurs throughout AZ.
Cave Myotis	SC, S	<i>Myotis velifer</i>	Inhabits desertscrub. Roosts in mines and caves. Occurs throughout southwestern Arizona.
Giant Spotted Whiptail	SC, S	<i>Cnemidophorus burti stictogrammus</i>	Found in dense shrubby vegetation, often near rocks near permanent or intermittent streams below 4500' elevation.
Large-flowered Blue Star	SC, S	<i>Amsonia grandiflora</i>	Canyon bottoms in oak woodlands between 3900' and 4500' elevation.
Lemmon Cloak Fern	SC	<i>Motholaena lemmonii</i>	Limestone cliff crevices between 3000' and 5000' elevation.
Mexican Long-tongued Bat	SC, S, WC	<i>Choeronycteris mexicana</i>	Found in mines, caves and rock crevices. Feeds on nectar of agave and saguaro cacti.
Pale Townsend's Big-eared Bat.	SC	<i>Plecotus townsendii pallescens</i>	Insectivorous, roosts in mines and caves from desertscrub up to coniferous forests. Most commonly found above 3000' elevation.
Pima Indian Mallow	SC, S, SR	<i>Abutilon parishii</i>	Occurs in canyons among rocks and in canyon bottoms between 3000' and 4700' elevation.
Santa Cruz Star Leaf	SC, S	<i>Choisya mollis</i>	Canyon bottoms and slopes in pine-oak woodlands between 3500' and 5000' elevation.
Santa Cruz Striped Agave	SC, S, HS	<i>Agave parviflora parviflora</i>	Prefers gravelly soils on rounded ridge-tops where grasses and shrubs are sparse and soil is bare. Occurs between 3900' and 4800' elevation.
Sonoran Desert Tortoise	SC, WC	<i>Gopherus Agassizii</i> (Sonoran Population)	Primarily in rocky foothills, less often on lower bajadas and grasslands below 3000' elevation.
Supine Bean	SC, S, SR	<i>Macroptilium supinum</i>	Ridge tops and gentle slopes of grasslands and grassy areas in oak-juniper woodlands between 3600' and 4900' elevation.
Wiggins milkweed vine	SC, S	<i>Metastelma mexicanum</i>	Open slopes within open oak woodland on granitic soils between 3500' to 5100' elevation.
Yellow-nosed Cotton Rat	SC	<i>Sigmodon ochrognathus</i>	Grassy, dry, rocky slopes in or near oak woodland belt between 3000' and 8500' elevation.

### 3. U. S. Forest Service Sensitive Species

Plants and animals that are classified as "Sensitive (S)" by the Regional Forester when occurring on lands managed by the U. S. Forest Service (USFS) are listed in Table 4. We did not delineate potential habitat for any USFS Sensitive species. However potential habitat for each of these species does exist within the project, but their preferred habitats were so widespread that delineation was impractical. We recommend conducting surveys for these species where the final corridor alignment crosses their preferred habitats on Forest Service lands.



Table 4. USFS Sensitive species with widespread habitat within the TEP Tucson to Nogales, Arizona, Transmission Corridor.

COMMON NAME	STATUS	SCIENTIFIC NAME	PREFERRED HABITAT
Arid Throne Fleabane	S	<i>Erigeron arisolinus</i>	Grassy openings in oak woodlands, often in moist areas, between 4200' and 5400' elevation.
Chihuahuan Sedge	S	<i>Carex chihuahuensis</i>	Wet soil in streambeds, wet meadows, cienegas between 3600' and 6700' elevation.
Alamos Deer Vetch	S	<i>Lotus alamosanus</i>	Restricted to stream banks in canyons. Wetland obligate. Found between 3500' and 5500' elev.
Arizona Giant Sedge	S	<i>Carex ultra</i>	Moist soil near perennially wet springs and streams between 2000' and 6000' elevation.
Broad-leaf Ground Cherry	S	<i>Physalis latiphysa</i>	Shaded microhabitats in desert and grassland washes between 3000' and 4500' elevation.
Catalina Beardtongue*	S, HS	<i>Penstemon discolor</i>	Rock outcrops and bedrock openings in chaparral or pine-oak between 4100' and 7600' elevation.
Chiltepin	S	<i>Capsicum annuum</i> var. <i>glabriusculum</i>	Canyon and slopes in Oak woodlands. Known populations on Tumacacori Peak and Rock Corral Canyon in Tumacacori Mtns.
Chiricahua Mountain Brookweed	S	<i>Samolus vagans</i>	Streamsides, wet meadows and seeps between 3000' and 7000' elevation.
Five-striped Sparrow	S	<i>Aimophila quinquestrata</i>	Rocky hillsides and canyon slopes.
Lumholtz Nightshade	S	<i>Solanum lumholtzianum</i>	Washes and along streambanks between 3000' and 4600' elevation. Often found in disturbed areas.
Mock Pennyroyal	S	<i>Hedeoma dentatum</i>	Oak woodland, oak-pine forest between 4000' and 8200' elevation.
Nodding Blue-eyed Grass	S	<i>Sisyrinchium cernuum</i>	Along streams in partial shade and canyon bottoms between 3300' and 8000' elevation.
Santa Cruz Beehive Cactus*	S, HS	<i>Coryphantha recurvata</i>	Alluvial soils in grassland and oak woodlands between 4000' and 6000' elevation. Often in rock crevices where runoff occurs.
Sonoran Noseburn	S	<i>Tragia laciniata</i>	Along streams and canyon bottoms on shaded hillsides or open oak woodlands between 3500' and 5600' elevation.
Southern Pocket Gopher	S	<i>Thomomys umbrinus intermedius</i>	Rocky slopes in open oak woodlands between 4500' and 9000' elevation.
Superb Beardtongue	S	<i>Penstemon superbus</i>	Rocky canyons, dry hillsides, and along washes between 3100' and 5500' elevation.
Thurber Hoary Pea	S	<i>Tephrosia Thurberi</i>	Dry, rocky slopes in pine-oak woodlands between 3500' and 7000' elevation.
Thurber's Morning Glory	S	<i>Ipomoea Thurberi</i>	Rocky hillsides and canyon slopes in oak woodlands and semi-desert grasslands between 3800' and 5200' elevation.
Tumamoc Globeberry*	S, SR	<i>Tumamoca macdougallii</i>	Occurs in shade of nurse plants along sandy washes below 3000' in elevation.
Weeping Muhly	S	<i>Muhlenbergia xerophila</i>	Rocky canyon slopes and cliff crevices in oak and riparian woodlands between 3500' and 6000' elevation.
Wooly Fleabane	S	<i>Laennecia eriophylla</i>	Gravelly soil in grasslands and oak woodlands between 4200' and 5600' elevation.

\*These plants also are protected under the Arizona Native Plant Law when not on USFS land.

#### 4. Arizona Sensitive Species

Wildlife of Special Concern in Arizona (WC) are those species whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats



or population declines. We delineated potential habitat within the project area for the WC species listed in Table 5. We recommend conducting surveys for these species in areas where the final corridor alignment crosses their preferred habitats.

Table 5. Wildlife of Special Concern in Arizona with potential habitat delineated in the TEP Tucson to Nogales, Arizona, Transmission Corridor.

COMMON NAME	STATUS	SCIENTIFIC NAME	PREFERRED HABITAT
Black-bellied Whistling Duck	WC	<i>Dendrocygna autumnalis</i>	Locally uncommon summer resident in ponds and riparian pools in Santa Cruz Valley.
Great Plains Narrowmouth Toad	WC	<i>Gastrophryne olivacea</i>	Mesquite semi-desert grassland to oak woodland, in the vicinity of streams, springs and rain pools.
Thick-billed Kingbird	WC	<i>Tyrannus crassirostris</i>	Occur along low-elevation, deciduous riparian forests, usually with sycamores and cottonwoods.
Tropical Kingbird	WC	<i>Tyrannus melancholicus</i>	Open woodlands and riparian groves.
Western Red Bat	WC	<i>Lasiurus blossevillii</i>	Broad-leaf riparian forests and woodlands between 2400' to 7200' elevation.
Western Yellow-billed Cuckoo	WC, S	<i>Coccyzus americanus occidentalis</i>	Streamside cottonwood, willow groves, and larger mesquite bosques. Also documented in pecan groves near Sahuarita, Arizona.

We did not delineate potential habitat for the WC species listed in Table 6.

Potential habitat for each of these species does exist within the project, however their preferred habitats were so widespread that delineation was impractical. We recommend conducting surveys for these species in areas where the final corridor alignment crosses their preferred habitats.

Table 6. Wildlife of Special Concern in Arizona with widespread habitat within the TEP Tucson to Nogales, Arizona, Transmission Corridor.

COMMON NAME	STATUS	SCIENTIFIC NAME	PREFERRED HABITAT
Black-capped Gnatcatcher	WC	<i>Poliptila nigriceps</i>	Rare visitor to streamside thickets in extreme southern Arizona
Elegant Trogon	WC	<i>Trogon elegans</i>	Pine-oak woodland, mainly in riparian areas with sycamore, Arizona cypress and Chihuahuan pine.
Mexican Vine Snake	WC	<i>Oxybelis aeneus</i>	Brush covered hillsides and stream bottoms with sycamore, oak, walnut between 3000' and 5800' elevation.
Western Barking Frog	WC, S	<i>Eleutherodactylus augusti cactorum</i>	Rocky hillsides of canyons in woodland vegetation between 3800' and 7000' elevation. Permanent water not necessary.



5. Arizona Native Plant Law

Plants protected under the Arizona Native Plant Law (NPL) are listed in Table 7. These plants cannot be removed from any lands – whether a private individual owns them or they are managed by a government agency – without permission and a permit from the Arizona Department of Agriculture. We did not delineate potential habitat for any NPL protected species. While potential habitat for each of these species does exist within the project, their preferred habitats were so widespread that delineation was impractical. We recommend conducting surveys for these species where the final corridor alignment crosses their preferred habitats.

Table 7. Plants protected under the Arizona Native Plant Law that may occur within the TEP Tucson to Nogales, Arizona, Transmission Corridor.

COMMON NAME	STATUS	SCIENTIFIC NAME	PREFERRED HABITAT
Crested Coral Root	SR	<i>Hexalectris spicata</i>	In moist shady soil on stream banks in grassy woodlands and canyons.
Mexican Lobelia	SR	<i>Lobelia laxiflora</i>	Among rocks and under trees, along streams and seeps.
Whisk Fern	HS	<i>Psilotum nudum</i>	In swamps and low wet woodlands, usually on tree trunks or among rocks.

In addition, all construction activities within Pima County, Arizona, must adhere to the county's Native Plant Protection Ordinance. The purpose of this ordinance is to promote the preservation of individual plants and plant communities of protected and primarily upland plant species native to Pima County, Arizona (Pima County Code, Chapter 18, Section 72).

6. **Impact Avoidance Recommendations**

As required by the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321 et seq.), a Biological Assessment (BA) of this project will be conducted



once the final preferred route is determined. The BA will determine whether the proposed action is likely to: (1) adversely affect listed species; (2) jeopardize the continued existence of species that are proposed for listing; or (3) adversely modify proposed critical habitat. Prior to beginning the BA, TEP may choose to enter into "Informal Consultation" with the USFWS. During this process, the Service encourages applicants to explore, in advance, ways to modify the action to reduce or remove adverse effects to species and habitats. Therefore, we recommend the following actions be implemented during construction of the transmission line to minimize impacts:

- Helicopters should be used to string power lines, especially over sensitive habitats, in order to minimize ground impacts
- Power lines and other electrical current-carrying apparatus should be insulated near each power pole to reduce the occurrences of raptor electrocution.
- Final alignment and location of power poles should be adjusted as necessary so as to avoid impacting riparian areas or sensitive habitats.
- When accessing pole installation sites, ground vehicles should use existing roads when available. Where existing roads do not exist, routes that impact the least amount of vegetation should be chosen and all vehicles should follow the same route. Circumnavigating riparian areas and sensitive habitats is preferred to driving through them. In certain areas, vehicles may need to backtrack to the nearest established road and then drive to another access road for the next pole installation site.



- A designated construction zone should be fenced at each pole installation site to prevent unnecessary vehicular traffic from degrading the surrounding habitat. The size and shape of this construction zone should be based on the minimum area needed to accommodate the maneuvering and installation of construction vehicles and equipment.

## 7. Conclusion

We conducted a preliminary biological evaluation of the proposed TEP Tucson to Nogales transmission corridor to determine the presence or absence of potential habitat for rare and endangered species. The corridor, which ranges from 3 to 8 miles wide, extends south from TEP's substation near Pima Mine Road and Interstate 19, approximately 48 miles to the International Border in Nogales, Arizona. The project consists of 2 alternate corridor routes (east & west) which combine into 1 corridor south of the Tumacacori Mountains. This single corridor then passes southward along the eastern foothills of the Atascosa and Pajarito Mountains into Nogales, Arizona. Because of the size and extent of the project, rare and endangered species from 4 distinct biomes were considered in our evaluation. These included the Sonoran desertscrub, semi-desert grassland, madrean evergreen woodland, and Sonoran riparian deciduous forest.

We contacted federal and state natural resource management agencies for information on rare and endangered species that may occur near or within the project area. Based upon our correspondence with these agencies, photo-interpretation, and our professional knowledge of the area, we believe potential habitat for 65 rare and endangered species may exist within the project area. We recommend conducting



surveys for these rare and endangered species where the final corridor alignment crosses their specific habitats. We delineated potential habitat for 17 of these species on aerial photographs of the project area. We determined that habitat for the additional 48 species may exist within the project area, but delineation of these habitats was impractical because they were so widespread. We also determined that habitat for 31 rare and endangered species listed in the agency correspondence does not exist within the project area.

We recommend actions designed to reduce the impact of the transmission line on sensitive species and habitats. These actions include helicopter stringing of power lines, insulation of electrical apparatus at power poles, use of existing access roads, and fencing of construction zones at pole installation sites.

#### LITERATURE CITED

- Arizona Game and Fish Department. 1995. Gila Topminnow (*Poeciliopsis occidentalis occidentalis*). Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. 5 pp.
- Brown, David E., Ed. 1994. Biotic communities: Southwestern United States and Northwestern Mexico. University of Utah Press, Salt Lake City, UT. 342pp.
- Roller, P. S. 1996. Distribution, growth, and reproduction of Pima pineapple cactus (*Coryphantha scheeri* Kuntz var. *robustispina* Schott). M.S. Thesis, Univ. Ariz., Tucson. 83pp.
- U. S. Department of Interior. 1997. A Southwestern willow flycatcher natural history summary and survey protocol. Technical Report NPS/NAUCPRS/NRTR-97/12. 42 pp.
- \_\_\_\_\_, and U. S. Fish and Wildlife Service. 1995. Recovery plan for the Mexican spotted owl: Vol. I. Albuquerque, New Mexico. 172 pp.



U. S. Fish and Wildlife Service. 1993. Endangered and threatened wildlife and plants; final rule to list the Mexican spotted owl as a threatened species. Federal Register 58:14248-14271.

\_\_\_\_\_. 1997. Determination of endangered status for the cactus ferruginous pygmy-owl in Arizona. Federal Register 62:10730-10747.

\_\_\_\_\_. 1999. Endangered and threatened wildlife and plants; Final Rule: designation of critical habitat for the cactus ferruginous pygmy-owl. Federal Register 64:37419-37440.

\_\_\_\_\_. 2000a. Recommended guidance for private landowners concerning the cactus ferruginous pygmy-owl; and the cactus ferruginous pygmy-owl survey protocol. Federal Register 65:14999-15000.

\_\_\_\_\_. 2000b. Endangered and threatened wildlife and plants; proposed designation of critical habitat for the Mexican Spotted Owl. Federal Register 65:45336-45353.



Appendix A.

NATURAL RESOURCE AGENCIES CORRESPONDENCE.

1. U. S. Fish and Wildlife Service, dated 2 October 2000.
2. Arizona Game and Fish Department, dated 9 October 2000.
3. Record of Contact with U. S. Forest Service, dated 3 November 2000.



Appendix B. Rare and Endangered Species in Pima and Santa Cruz Counties, Arizona, excluded from further consideration.

COMMON NAME	SCIENTIFIC NAME	STATUS	HABITAT	EXCLUSION JUSTIFICATION
PLANTS				
Canelo Hills ladies' tresses	<i>Spiranthes delitescens</i>	Endangered	Requires finely grained, highly organic, saturated soils of cienegas.	No habitat present
Kearney's blue star	<i>Amsonia kearneyana</i>	Endangered	Known only from the Baboquivari Mountains.	Outside of known range.
Goodings onion	<i>Allium gooddingii</i>	Conservation Agreement	Occurs in forested drainage bottoms and on moist north facing slopes of mixed conifer and spruce forests	No habitat present
Acuna cactus	<i>Echinomastus erectocentrus acunensis</i>	Candidate	Prefers well-drained knolls and gravelly ridges in Sonoran Desertscrub.	No habitat present
Arizona manihot	<i>Manihot davisiae</i>	USFS - Sensitive	Dry rocky slopes in Baboquivari and Santa Rita Mountains.	Outside of known range.
Foetid passionflower	<i>Passiflora foetida</i>	USFS - Sensitive	Rocky, sandy soil on Bartlett Mountain.	Outside of known range.
Gentry indigo bush	<i>Dalea tentaculoides</i>	USFWS - Species of Concern	Occurs in disturbance prone floodplains. Known from Sycamore Canyon in Atascosa Mtns.	Outside of known range.
Lemmon milkweed	<i>Asclepias lemmonii</i>	USFS - Sensitive	Canyons and open woodlands above 5500' elevation in Santa Rita Mountains.	Outside of known range.
Needle-spined pineapple cactus	<i>Echinomastus erectocentrus var erectocentrus</i>	USFWS - Species of Concern	Alluvial fans and hills along San Pedro River and Cienega Creek.	Outside of known range.
Prigle hawkweed	<i>Hieracium pringlei</i>	USFWS - Species of Concern	Mixed conifer/deciduous forests above 6000' elev.	Outside of known range.
Saiya	<i>Amoreuxia gonzalezii</i>	USFWS - Species of Concern	Southwest facing, limestone hillsides in Santa Rita Mountains.	Outside of known range.



Appendix B. Rare and Endangered Species in Pima and Santa Cruz Counties, Arizona, excluded from further consideration.

COMMON NAME	SCIENTIFIC NAME	STATUS	HABITAT	EXCLUSION JUSTIFICATION
<b>ANIMALS</b>				
San Xavier talussnail	<i>Sonorella eremita</i>	Conservation Agreement	Requires deep, limestone rockslide areas with outcrops of limestone and decomposed granite	No habitat present
Huachuca springsnail	<i>Pyrgulopsis thompsoni</i>	Candidate	Requires aquatic areas or small springs with vegetation and slow to moderate water flow.	No habitat present
Loach minnow	<i>Tiaroga cobitis</i>	Threatened	Requires perennial streams with swift water over cobble or gravel	No habitat present
Desert pupfish	<i>Cyprinodon macularius</i>	Endangered	Requires shallow springs, small streams or marshes	No water/habitat present
Speckled dace	<i>Rhinichthys osculus</i>	USFWS – Species of Concern	Small to medium rivers above 6500' elevation.	No habitat present.
Spikedace	<i>Meda fulgida</i>	Threatened	Requires perennial streams with swift velocities over sand and gravel	No habitat present
Sonora chub	<i>Gila ditaenia</i>	Threatened	Found only in southern Arizona's Sycamore Creek	No habitat present
Northern aplomado falcon	<i>Falco femoralis septentrionalis</i>	Endangered	Prefers grasslands and savannas.	No habitat present. No recent confirmed reports in AZ.
Mexican gray wolf	<i>Canis lupus baileyi</i>	Endangered	Prefers chaparral, woodland, or forested habitats.	No habitat present
Ocelot	<i>Felis pardalis</i>	Endangered	Prefers humid tropical & sub-tropical habitats; typically found at higher elevations.	No habitat present
Sonoran pronghorn	<i>Antilocapra americana sonoriensis</i>	Endangered	Grassy desertscrub in northwestern Sonora and adjacent Arizona borderlands, mainly Yuma Co.	No habitat present



Appendix B. Rare and Endangered Species in Pima and Santa Cruz Counties, Arizona, excluded from further consideration.

COMMON NAME	SCIENTIFIC NAME	STATUS	HABITAT	EXCLUSION JUSTIFICATION
Bald eagle	<i>Haliaeetus leucocephalus</i>	Threatened	Requires large trees or cliffs near water.	No habitat present
Mexican spotted owl	<i>Strix occidentalis lucida</i>	Threatened	Montane forests and woodlands and canyon bottoms generally above 6,000-ft. elevation	No habitat present
Masked bobwhite	<i>Colinus virginianus ridgewayi</i>	Endangered	Only known Arizona population has been re-introduced on Buenos Aires Natl. Wildl. Refuge	Outside of known range.
Sonora tiger salamander	<i>Ambystoma tigrinum stebbinsi</i>	Endangered	Requires stock tanks and impounded cienegas	No habitat present
Sonoyta mud turtle	<i>Kinosternon sonoriense longifemorale</i>	Candidate	Requires ponds and streams.	No water/habitat present
Mountain plover	<i>Charadrius montanus</i>	Candidate	Wading bird and grassland nesting species; known from near Springerville, Apache County.	No habitat present
Stephan's heterelmis riffle beetle	<i>Heterelmis stephani</i>	USFWS - Species of Concern	Known only from Madera Canyon, Santa Rita Mountains.	Outside of known range.
Crested caracara	<i>Carcara plancus</i>	Wildlife of Special Concern in Arizona	Rare and Local resident in desert scrub in southwest Pima County.	Outside of known range.
Osprey	<i>Pandion haliaetus</i>	Wildlife of Special Concern in Arizona	Typically restricted to large rivers, lakes and reservoirs with abundant fish populations.	No habitat present.

**Status Definitions:**

Endangered: Imminent jeopardy of extinction.

Threatened: Imminent jeopardy of becoming endangered.

Candidate: Species for which USFWS has sufficient information on biological vulnerability and threats to support proposals to list as Threatened or Endangered.

USFWS Species of Concern: Species whose conservation status may be of concern to the USFWS (currently all former C2 species).

USFWS Sensitive: Those taxa occurring on National Forests in Arizona which are considered sensitive by the Regional Forester.

Wildlife of Special Concern in Arizona: Species whose occurrence in Arizona is or may be in jeopardy.



APPENDIX C.

RECOMMENDED GUIDANCE FOR PRIVATE LANDOWNERS CONCERNING THE CACTUS  
FERRUGINOUS PYGMY-OWL, MARCH 2000.