

APPENDIX F

Fossil Creek Riparian Habitat

The riparian habitat along Fossil Creek varies in species composition and density from the upper-most reach on the rim to the confluence with the Verde River. For descriptive purposes, the riparian habitat along Fossil Creek can be divided into five distinct zones (Overby and Agyagos 2000).

Zone 1 comprises the portion of Fossil Creek upstream of Fossil Springs. This zone is characterized by Goodwin (1980) and Burbridge and Story (1974) as having a rocky channel with intermittent flows except for several small pools that are permanent during most years. Riparian trees are sparse and low in diversity with sycamore dominating but generally show good age class diversity. The understory is sparse and comprised of upland species. Zone 1 is outside the project area.

Zone 2 consists of the riparian area from Fossil Springs downstream to the Fossil Springs diversion dam. A key element of this zone is a diverse, well-developed riparian area, approximately 23 acres in size that is associated with Fossil Springs (Goodwin 1980) and is designated as the Fossil Springs Botanical Area in the Coconino Forest Plan and as a Natural Area in the Tonto Forest Plan. The basal area, crown density, and species diversity of the riparian tree species are high with good age class representation (Goodwin 1980, Burbridge and Story 1974, Sayers 1998). Compared to below the diversion dam, Zone 2 has a higher proportion of understory vegetation including grasses, ferns, and shrubs (Sayers 1998). Zone 2 is outside the project area.

Zone 3 consists of the channel between the Fossil Springs diversion dam and Irving Power Plant. Substrate type in Zone 3 shifts to more bedrock, especially where the canyon is narrow and straight walled (Sayers 1988, Goodwin 1980, Medina 1998). Sayers (1998) reports that although there is coarse alluvium where the canyon is wider, overall there is little soil to support understory vegetation. The primary vegetative difference compared to Zone 2 is a change in overstory dominance to Arizona sycamore (Goodwin 1980). This section also shows a change in age class distribution where mature trees represent the majority of the cover type and shrubs species are few to absent (Goodwin 1980, Sayers 1998, and Forest Service 1989). Stream renovation is proposed for Zone 3.

Zone 4 consists of the channel between the Irving Power Plant and the downstream extent of the narrows. Vegetation is quite sparse, except for localized development in association with springs (Goodwin 1980). Substrate consists primarily of bedrock, but small, localized areas with sand bars support cottonwood reproduction (Goodwin 1980). Existing large woody vegetation in this reach likely is supported by groundwater rather than stream flows (Medina 1998). The narrows, which occur below "The Pocket," consist of a narrow canyon with sheer walls and deep pools where little to no stream bank results in limited riparian vegetation (Goodwin 1980). Barrier construction and stream renovation would affect the reach of Zone 4 upstream of the narrows.

Zone 5 encompasses the remaining 3-mile segment of stream to the confluence with the Verde River. The canyon becomes wider and less steep below the narrows (Goodwin 1980, Sullivan and Richardson 1993). The broadening of the flood plain within 0.5 miles of the Fossil Creek/Verde confluence increases the potential for overbank flooding (Sullivan and Richardson 1993). The riparian community is poorly developed and becomes more depauperate and the overstory becomes sparser closer to the Verde River (Goodwin 1980). No activity is proposed in Zone 5.

Understory components (emergent vegetation, herbaceous species and shrubs) are very limited in Fossil Creek in Zones 3, 4, and 5 (APS 1992, Sayers 1998, Medina 1998, Sullivan and Richardson 1993). Tree species diversity is good throughout, but differences in overstory dominant species are found (Goodwin 1980, Sayers 1998), and reflect a riparian community adapted to different regimes (Medina 1998).

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