

**BIOLOGICAL ASSESSMENT**

**WORKING LANDS FOR WILDLIFE**  
**SOUTHWESTERN WILLOW FLYCATCHER**

**NATURAL RESOURCES CONSERVATION SERVICE**

This is a revised Biological Assessment (BA) to reinitiate the July 2012 Biological Opinion (Ref #02E0000-2012-F-0013) for Working Lands for Wildlife – Southwestern Willow Flycatcher. The revised BA adjusts the original by incorporating the following changes:

1. Some listed species were inadvertently left out of the previous BA/BO. We request to add the species listed in the table below.

<b>Common Name</b>	<b>Scientific Name</b>	<b>Status</b>
Apache trout	<i>Oncorhynchus apache</i>	T
Amargosa nitrewort	<i>Nitrophila mohavensis</i>	E
Ash Meadows Amargosa pupfish	<i>Cyprinodon nevadensis mionectes</i>	E
Ash Meadows gumplant	<i>Grindelia fraxinoprattensis</i>	T
Ash Meadows naucorid	<i>Ambrysus amargosus</i>	T
Ash Meadows speckled dace	<i>Rhinichthys osculus nevadensis</i>	E
Ash Meadows sunray	<i>Enceliopsis nedicaulis var. corrugate</i>	T
Bonytail chub	<i>Gila elegans</i>	E
California tiger salamander	<i>Ambystoma californiense</i>	E
Dwarf bear-poppy	<i>Arctomecon humilis</i>	E
Hiko White River springfish	<i>Crenichthys baileyi grandis</i>	E
Holmgren milkvetch	<i>Astragalus holmgreniorum</i>	E
La Graiosa thistle	<i>Cirsium loncholepis</i>	T
Moapa dace	<i>Moapa coriacea</i>	E
Mohave Desert Tortoise	<i>Gopherus agassizii</i>	T
Narrow headed gartersnake	<i>Thamnophis rufipunctatus</i>	PT
Navajo Sedge	<i>Carex specuicola</i>	T
Pahrnagat roundtail chub	<i>Gila robusta jordani</i>	E
Pecos River Sunflower	<i>Helianthus paradoxus</i>	T
Slender-horned spineflower	<i>Dodecahema leptoceras</i>	E
Spring-loving centaury	<i>Centaurium namophilum</i>	T
Sonoran Desert Tortoise	<i>Gopherus morafkai</i>	C
Tidewater goby	<i>Eucyclogobius newberryi</i>	E
Warm Springs pupfish	<i>Cyprinodon nevadensis pectoralis</i>	E
White River Springfish	<i>Crenichthys baileyi baileyi</i>	E

2. The NRCS requests the Service determine level of Incidental Take (IT) and expected tracking mechanisms for all species covered by these actions, including clarification of previously identified IT for the Southwestern willow flycatcher. We request IT be determined programmatically and aggregately by resource effect (see Table 3) rather than by conservation practice.

3. NRCS requests to add the following conservation practices: Pumping Plant (NRCS Code 533), Critical Area Planting (342), Irrigation System-Microirrigation (441), Mulching (484), and (576) Livestock Shelter Structure. These are listed in the revised table 1 and described in Appendix IV of the revised Biological Assessment.
4. NRCS (in partnership with the Service) revised Table 1- Estimated extent and/or frequency of covered conservation.
5. We request to delete conservation measure #17 (*This practice will not be used in cases where habitat currently meets all minimum occupation requirements of SWFL and greater than 50% of nesting canopy cover consists of tamarisk*) because it limits opportunities for habitat restoration. The Conservation Measures are renumbered in the Revised BA to account for this deletion. Individual states can opt for the more restrictive criteria in the original BA.
6. We request to delete the additional practice specific conservation measures listed for Water Well (642) as they would defeat the purpose of supplying water for livestock outside of riparian areas.
7. We request to delete the yearly requirement of completing Wildlife Habitat Evaluation Guides (WHEG) as indicated in the BO on page 10, paragraph 3. The purpose of the WHEG is to establish initial habitat deficiencies and evaluate for habitat changes that occur over a longer period such as the 15-year minimum lifespan of tree planting. Additionally, the Service and NRCS agreed to utilize the USGS Willow Flycatcher GIS and satellite image model for long-term monitoring. This eliminates the need for repeating the WHEG evaluation unless the participant decides to return to baseline, in which case an appropriate WHEG will be completed. The SWFL habitat evaluation procedure is further outlined in Section 2.2.8.1
8. We modified the Monitoring section (2.2.5) to specify five monitoring levels:
  - a. Practice implementation oversight by NRCS
  - b. Operation and Maintenance periodic monitoring
  - c. USGS model performed by NRCS
  - d. Landowner monitoring using photo points and other specified methods
  - e. Monitoring of Grazing in riparian pastures during the growing season
9. We request to clarify that the return to existing condition is not available to the participant until all of the contracted conservation practice life spans have expired. Alternatively, the participants can choose to enter a SHA developed with the Service.
10. Over the last few years, the Service and NRCS have consulted on many programmatic efforts to address conservation planning effects on federally listed species. These efforts emphasize the NRCS' Resource Management System planning criterion that addresses all resource concerns on the landusers operation. Recently, the NRCS released a revised National Planning Procedures Handbook which outlines acceptable Progressive Planning procedures that allow planning to address as few as one resource concern on a given land unit. To meet the focus of addressing Southwestern willow flycatcher recovery and follow the spirit of previous consultations, the NRCS proposes that planning through WLFW-SWFL **with predictability coverage** will follow RMS level planning within the riparian zone (within the land user's control).
11. NRCS added to the Biological Assessment an Administrative Management Features (Section 6) that addresses the following:
  - a. An annual meeting between the Service and NRCS to discuss and evaluate the progress of the WLFW-SWFL, with an extensive review every five years.
  - b. Updating of practice standards or name changes
  - c. One NRCS yearly report by SWFL Recovery Unit by state
12. A proposal to include State and other non-federal lands in the WLFW program. (Section 7).
13. NRCS requests additional features of returning to original existing conditions such as shifting requirements, reductions and responsibility due unforeseen events, as stated in Section 6.4.
14. We request all species within this consultation to have the same level of predictability as the southwestern willow flycatcher.
15. We modified Section 2.2.7- Training to include discussion of Qualified Working Lands for Wildlife Planner Criteria

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## 1.0 INTRODUCTION

On March 8, 2012, the Secretaries of Agriculture and Interior jointly announced a collaborative partnership on private lands eligible to receive Farm Bill technical and financial assistance that is expected to achieve the following objectives: (i) Restore populations of declining wildlife species. (ii) Provide farmers, ranchers, and forest managers with regulatory certainty that conservation investments they make today help sustain their operations over the long term. (iii) Strengthen and sustain rural economies by restoring and protecting the productive capacity of working lands. The partnership is collectively known as the **Working Lands for Wildlife (WLFW) Project** identifying seven species across the United States in targeted program allocations. The Southwest Willow Flycatcher was one of the selected species for this partnership.

The NRCS works with private landowners through conservation planning and assistance designed to benefit the soil, water, air, plants, and animals that result in productive lands and healthy ecosystems. The NRCS's conservation programs help people reduce soil erosion, enhance water supplies, improve water quality, increase wildlife habitat, and reduce damages caused by floods and other natural disasters. Public benefits include enhanced natural resources that help sustain agricultural productivity and environmental quality while supporting continued economic development, recreation, and scenic beauty. All conservation programs are voluntary and offer technical assistance and may offer financial incentives for implementing conservation systems.

The NRCS is neither a regulatory nor a land management agency, and its role in farm and range management issues is largely advisory at the invitation of individual clients. Technical advice and planning alone do not constitute a federal nexus, as the NRCS has no control over the conservation plan and the client is the decision maker for the conservation plan. However, beginning with the 2002 Farm Bill clients can now obtain financial assistance directly from NRCS to implement their conservation plan, establishing a federal nexus for the agency. Most financial assistance programs consist of a term contract between a client and the NRCS where the client agrees to install and maintain a suite of conservation practices to improve natural resource management, and receive a reimbursement of a portion of the cost as an incentive for completing each practice to NRCS standards and specifications. When the term of the contract expires, the federal nexus for NRCS also expires, as this is the end of the action authorized, funded, or carried out by NRCS. However, the contract recipient agrees to maintain the conservation practices for their expected lifespan.

### 1.1 Conservation Planning Process

Local NRCS conservation planners develop conservation plans for clients that address environmental resource concerns on private, non-Federal, or Tribal lands. NRCS conservationists help individuals and communities to take a comprehensive approach to planning the proper use and protection of natural resources on these lands through a nine-step planning process described in the NRCS "National Planning Procedures Handbook" and described in more detail in **Appendix I**.

## 2.0 Proposed Action

The WLFW Project involves a five-step process:

- Joint review and conditioning of NRCS conservation practices capable of benefiting the species and removing threats;
- Identification of priority target areas for habitat restoration and easement programs;
- Design of ranking criteria to deliver project funding where it will do the most good;
- Development of a monitoring program to measure species and habitat outcomes; and
- Put in place innovative mechanisms and approaches that provide improved regulatory predictability to landowners.

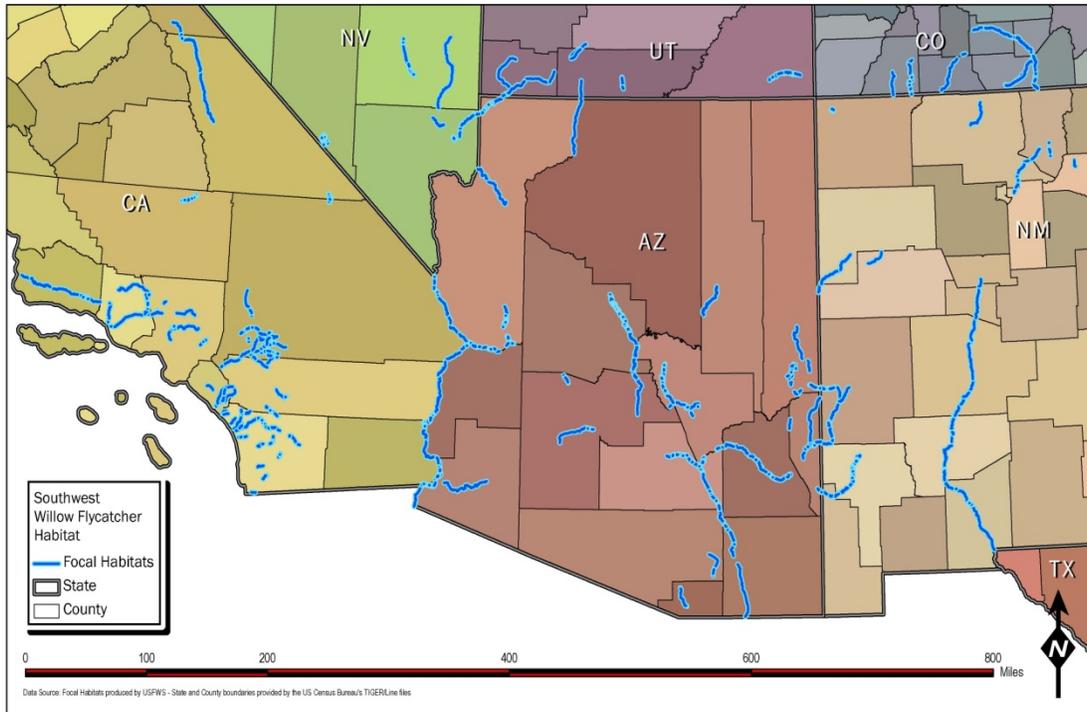
The project will target species whose decline can be reversed and will benefit other species with similar habitat needs. More information on the Working Lands for Wildlife Project can be found at:

[http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprdb1047545.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1047545.pdf).

## 2.1 The WFW – Southwest Willow Flycatcher Project

The WFW - Southwest Willow Flycatcher (SWFL) Project is a conservation initiative based upon a targeted conservation systems approach to implement specific conservation practices to manage and enhance the species while ensuring compatibility with the private landowners' expectations for their property. The WFW – SWFL Project focuses NRCS and partner resources on high priority areas – called focal areas - within the Action Area (Figure 1).

NRCS sought the U.S. Fish and Wildlife Service's (Service) assistance in determining what actions will result in avoiding or minimizing potential long-term adverse effects to the SWFL and the other covered species, and improve potential effectiveness of conservation practices that may result in range-wide benefits.



**Figure 1. Focal area map within the range of the Southwestern Willow Flycatcher**

The Action Area is the range of potential habitat for the SWFL located in Arizona, southern parts of California, Nevada, Utah and Colorado and the western two-thirds of New Mexico. The species is limited to riparian zones with surface water or at least moist soils from May through July. Uplands without riparian association within the range are not included in the action area.

The proposed action, the implementation of the WFW – SWFL Project, involves the following elements: (1) a Landscape and Targeted Focus; (2) use of Selected Conservation Practices; (3) application of the best science to support creating desired habitat conditions; (4) incorporation of jointly developed conservation measures for the selected conservation practice standards; (5) a science supported, monitoring and assessment element; (6) staff and partnership training and involvement; and (7) provision for participating landowners to return their properties to their original condition after obligations are met. Each element is discussed in further detail below.

### 2.1.2 A Landscape and Targeted Focus

The WFW – SWFL Project is structured to facilitate landscape-level improvements across the species' range while recognizing that threats and opportunities differ among ecological zones, within identified focal areas and other areas suitable for developing SWFL habitat. Close collaboration of many stakeholders, including local, State, and Federal agencies, tribes, and NGOs, will ensure that NRCS activities complement efforts already

underway. The WLFW – SWFL Project provides a multi-tiered framework that allows coordination and implementation on a range-wide scale while ensuring input and control over actions in specific States.

The implementation of the WLFW – SWFL Project is integrated into the daily operations of NRCS' existing Farm Bill authorities. As part of the scope of the consultation, it is therefore important for the reader to understand the NRCS' existing Conservation Planning processes and component elements that NRCS will use to implement this action in context with delivery of the WLFW- SWFL Project. **Appendix I** contains a description of the NRCS planning process and its interrelationship with this document.

NRCS worked closely with the Service and state wildlife agencies and other partners to produce focal habitat maps for the Southwest Willow Flycatcher. The maps focus the program on increasing and improving occupied, suitable, and potential breeding habitat, supporting southwestern willow flycatcher recovery. Further, the focal area maps provide NRCS' local offices guidance in ranking applications from interested private landowners seeking financial assistance to implement the WLFW – SWFL Project. Proposed restoration within focal areas will receive higher ranking than proposals located outside of the focal area.

### **2.1.3 Selected Conservation Practices**

To ensure that the conservation outcomes of the WLFW – SWFL Project are met, NRCS and the Service worked together to identify the covered conservation practices (**Table 1**). Practices implemented consist of:

- The core conservation management practices for the benefit of Southwest Willow Flycatcher and the other covered species. A core conservation practice establishes the focus objectives for addressing resource concerns on a client's property.
- Facilitating conservation practices that make possible the application of the core conservation management practices. Facilitating practices, by themselves, are of limited benefit to Southwest Willow Flycatcher and the other covered species; and
- Practice-specific conservation measures that can minimize or eliminate short-term detrimental effects of the installation/application of conservation practices on Southwest Willow Flycatcher and the other covered species.

The type of practice is important in this context as explained below.

All conservation plans developed under the WLFW – SWFL Project will have one or more of the core practices listed in **Table 1**. Core practices are critical to addressing the targeted resource concern(s) for the Initiative and achieving the desired environmental outcome(s). For each core practice, a wildlife habitat evaluation will be conducted, using the SWFL Wildlife Habitat Evaluation Guide WHEG (see section 2.2.3 and **Appendix V**), to identify limiting factors to be addressed in order of their significance. The identification of the species' limiting factors at the site level is essential to ensure that the goals of a core practice for SWFL are being met under WLFW-SWFL.

Implementing WLFW – SWFL Project under the core practices eliminates the possibility of using practices that benefit producers exclusively but not the Southwest Willow Flycatcher. For example, the Wetland Wildlife Habitat Management Conservation Practice Standard (644) requires a habitat evaluation to be conducted identifying the limiting factors to be addressed in their order of significance. The purpose of the practice is to treat wetland wildlife habitat concerns identified during the conservation planning process to (1) provide shelter, cover, and food in proper amounts, locations and times to sustain Southwest Willow Flycatcher during all phases of its life cycle, or (2) enable movement. Specific practices will be used by NRCS to address the limiting factors to the species and will be implemented to achieve that objective. The identification of the species' limiting factors at the individual property owner level is essential to informing the use of the Wetland Wildlife Habitat Management practice for the WLFW – SWFL Project.

**Appendix IV** provide details on each of the covered Conservation Practices and includes the definition, purpose(s), associated resource concerns and specific application within the action area. Additionally; the potential adverse and beneficial effects are identified and described for the covered species. The conservation measures necessary to minimize harm and/or produce optimal benefits to the covered species are described.

This document evaluates the collective effects of implementing all aspects of the WLFW – SWFL Project on the covered species (see **Table 2**) and their supporting habitats. The analysis focuses on identified conservation practice standards required to implement the WLFW – Southwest Willow Flycatcher Project. Use of the conservation practices occurs in concert with the NRCS comprehensive conservation planning framework – details of which are provided in **Appendix I** – and creates the circumstances by which potential adverse and/or beneficial effects to the covered species can be assessed. Therefore, the evaluation and conditioning of the identified conservation practice standards for the WLFW-Southwest Willow Flycatcher Project is essential to achieve the expected conservation outcomes of the partnership, provide regulatory determinations on effects, and provide NRCS incidental take coverage under the ESA for any adverse effects to any of the covered species that cannot be avoided or eliminated.

The NRCS and the Service will use this document as a foundation for continuing collaborative partnership designed to improve the conservation status of the Southwestern Willow Flycatcher and other targeted species on private lands within the reach of NRCS’ programs and authorities.

**Table 1.** Estimated extent and/or frequency of covered conservation practices (in acres except where noted) for WLFW-Southwestern Willow Flycatcher Project. Note: **K= 1000**

Practice Name	Practice type	Life span	Adverse effects	% of total treated	Estimated Amount					
					AZ	CA	CO	NM	NV	UT
Early Successional Habitat Development/ Management (ac.)	Core- Mgt	1	1,2,3,4, 6,8,9, 11	.1	705	233	176	353	176	176
Restoration and Management of Declining Habitats (ac.)	Core- Mgt	1	1,2,4,6, 10	.75	5288	1745	1322	2644	1322	1322
Stream Habitat Improvement and Management (ac.)	Core- Mgt	5	1,6,10	.3	2115	698	529	1058	529	529
Upland Wildlife Habitat Management (ac.)	Core- Mgt	1	1,3	.25	1763	582	441	881	441	441
Wetland Wildlife Habitat Management (ac.)	Core- Mgt	1	1,3	.5	3525	1164	882	1763	882	882
Access Control (ac.)	Facilitating-Mgt	10	1,3,5,6	.1	705	233	176	353	176	176
Animal Trails and Walkways (ft.)	Facilitating-Mechanical	10	1,2,3,6	.05	5000 ft	1700 ft	1250 ft	2500 ft	1250 ft	1250 ft
Brush Management (ac.)	Facilitating-Structural	10	1-6, 10, 11	.85	5993	1978	1499	2996	1499	1499
Conservation Cover (ac.)	Facilitating-Planting	5	1,2	.05	353	116	88	176	88	88
Critical Area Planting (ac.)	Facilitating-Planting		1-5,7-9	.2	1410	465	353	705	353	353
Fence (ft.)	Facilitating-Structural	20	1-7,9,10	.75	300K ft	75000 ft	60000 ft	120K ft	60000 ft	60000 ft
Field Border (ac.)	Facilitating-Structural	10	1,2	.1	705	233	176	353	176	176
Forage Harvest Management (ac.)	Facilitating-Management	1	None	.05	353	116	88	176	88	88

Practice Name	Practice type	Life span	Adverse effects	% of total treated	Estimated Amount					
					AZ	CA	CO	NM	NV	UT
Forage & Biomass Planting (ac.)	Facilitating-Planting	5	None	.05	353	116	88	176	88	88
Forest Harvest Trails and Landings (sq ft)	Facilitating-Mechanical	5	1,2,4,6,7,8	.05	10000 sqft	3400 sqft	2500 sqft	5000 sqft	2500 sqft	2500 sqft
Forest Stand Improvement (ac.)	Facilitating-Mechanical	10	1,2,4-8,10	.05	353	116	88	176	88	88
Grade Stabilization Structure (no.)	Facilitating-Mechanical	15	1,2,4,6-10	.2	150 ea	50 ea	36 ea	75 ea	36 ea	36 ea
Herbaceous Weed Control (ac.)	Facilitating-Management	5	1-4,6,11	.5	3525	1164	882	1763	882	882
Heavy Use Area Protection (ac.)	Facilitating-Management	10	1,2,4,6	.2	1410	465	353	705	353	353
Integrated Pest Management (ac.)	Facilitating-Management	1	6,11	.1	705	233	176	353	176	176
Irrigation System – Microirrigation (ac.)	Facilitating-Structural	15	None	.3	2115	698	529	1058	529	529
Irrigation Water Management (ac.)	Facilitating-Management	1	3,4	.1	705	233	176	353	176	176
Livestock Shelter Structure (no.)	Facilitating-Structural	10	9	.05	6 ea	2 ea	1 ea	3 ea	1 ea	1 ea
Mulching (ac.)	Facilitating-Structural	1	1-6, 10	.15	1058	349	264	529	264	264
Obstruction Removal (ac.)	Facilitating-Structural	10	1-6,10	.2	1410	465	353	705	353	353
Open Channel (ft.)	Facilitating-Mechanical	15	1-11	.05	2000 ft	750 ft	500 Ft	1000 ft	500 ft	500 ft
Pipeline (ft.)	Facilitating-Structural	20	1-11	.75	400K ft	150K ft	100K ft	200K ft	100K ft	100K ft
Prescribed Grazing (ac.)	Facilitating-Management	1	1-11	.75	20K	7500	5000	10K	5000	5000
Pumping Plant (no.)	Facilitating-Structural	15	1-4,6,10,11	.5	45 ea	24 ea	18 ea	36 ea	18 ea	18 ea
Riparian Forest Buffer (ac.)	Facilitating-Planting	15	1-6	.3	2115	698	529	1058	529	529
Riparian Herbaceous Cover (ac.)	Facilitating-Planting	10	1-3,6	.1	705	233	176	353	176	176
Stream Channel Stabilization (ft.)	Facilitating-Mechanical	10	1,2,4,6-10	.2	5000 ft	1700 ft	1250 ft	2500 ft	1250 ft	1250 ft
Stream Crossing (no.)	Facilitating-Structural	10	1-4,6-8,10,11	.1	12 ea	4 ea	3 ea	6 ea	3 ea	3 ea
Streambank & Shoreline Protection (ft.)	Facilitating-Planting	20	1,2,4,6,7-10	.2	10K ft	5000 ft	3600 ft	6400 ft	3600 ft	3600 ft
Structure for Water Control (no.)	Facilitating-Structural	20	1-4,6,10	.2	70 ea	40 ea	30 ea	60 ea	30 ea	30 ea

Tree/Shrub Establishment (ac.)	Facilitating-Planting	15	1-3,6,10	.3	2115	698	529	1058	529	529
Practice Name	Practice type	Life span	Adverse effects	% of total treated	Estimated Amount					
					AZ	CA	CO	NM	NV	UT
Tree/Shrub Site Preparation (ac.)	Facilitating-Mechanical	1	1-4,6	.15	1058	349	264	529	264	264
Water Well (no.)	Facilitating-Structural	20	1,2,6,10	.2	20 ea	7 ea	5 ea	10 ea	5 ea	5 ea
Watering Facility (no.)	Facilitating-Structural	20	1-3,6,7,9,10	.5	100 ea	60 ea	40 ea	80 ea	40 ea	40 ea
Wetland Enhancement (ac.)	Facilitating-Mechanical	15	1-4,10	.05	353	116	88	1763	88	88
Wetland Restoration (ac.)	Facilitating-Mechanical	15	1-4,6,9,10	.1	705	233	176	353	176	176
Woody Residue Treatment (ac.)	Facilitating-Mechanical	10	5	.35	2468	814	617	1234	617	617

### 2.2.3 Use of Best Science to Support Creating Desired Habitat Conditions

To support effective application of each of the conservation practices, NRCS and the Service worked collaboratively to develop a Wildlife Habitat Evaluation Guide (WHEG) for the Southwest Willow Flycatcher. The WHEGs are tools that are developed at the NRCS state level, and used by field personnel to assess existing habitat conditions and identify limiting habitat factors in the planning area. The WHEG's are named in a manner that may use terminology such as "evaluation", "appraisal", "assessment", or "habitat suitability model". They usually take a form similar to Habitat Suitability Index Models (F&WS Ecological Services Manual, Habitat as a Basis for Environmental Assessment, 1980) and often include variables that are relatively easy for non-biologist staff to collect while in the field. The

To evaluate the habitat for the Southwestern Willow Flycatcher, the NRCS, developed a range-wide WHEG that will be used by all states to evaluate Southwestern Willow Flycatcher habitat (see Appendix V). There are two versions of the SWFL WHEG, one for below 6,000 feet elevation and a WHEG for above 6,000 feet. Each WHEG evaluates existing (benchmark) habitat conditions based on multiple elements such as stream flow, surface water availability and vegetation structure. The score for each element ranges from 0 to 1.0, with 0.5 meeting the bare minimum quality criteria for SWFL habitat. Elements scoring below 0.5 do not meet SWFL habitat criteria indicating a lack of viable habitat and likely the species is not present (i.e. a baseline of zero). The WHEG can also be used to future cast a score for the expected condition of habitat after the implemented conservation practices have reached maturity. In addition to the SWFL WHEG, each state has state specific evaluation tools to evaluate the riparian zone for function and habitat value. This includes, but not limited to, the Stream Visual Assessment Protocol, Riparian based WHEGs and other individual species WHEGS.

After completing the Southwestern Willow Flycatcher WHEG, the planner will then work with the client to develop and evaluate alternatives to address the resource concerns from **Table 4** that do not meet quality criteria for SWFL habitat. A conservation practice may be a structural or vegetative measure, or a management activity used to restore, enhance or protect Southwestern Willow Flycatcher habitat. The suite of practices chosen from **Table 1** becomes the Conservation Plan, a record of the client's decisions for the treatment of resource problems.

### 2.2.4 Incorporation of Jointly Developed Conservation Measures

Conservation Measures consist of additional criteria to the conservation practice standard that reduce or eliminate the short-term adverse effects on species because of practice implementation.

As a component of the WLFW- SWFL Project, the Service and NRCS jointly identified and developed Conservation Measures (**Appendix II and III**). In most cases, these measures ensure that implementation is not likely to adversely affect any federally listed species or critical habitat.

Inherent to the NRCS conservation planning process is the mitigation of potentially negative impacts that may occur to associated resource concerns during the implementation of any conservation practice on the planning unit. However, it is not always possible to mitigate all negative impacts that may result in “take” of a Federally-listed species. In those cases, negative impacts are primarily of a short-term nature associated with installing conservation practices. **Appendix IV** is a comprehensive discussion of the the potential adverse and beneficial effects of each Conservation Practice on the covered species.

### **2.2.5 Monitoring**

The NRCS designs are based on USDA-NRCS Standards and Specifications with an additional operation and maintenance plan for each practice included in the conservation plan provided to the landowner. To certify completion of the practice NRCS will complete a “construction check” to ensure that the practice was installed according to NRCS standards and specifications. Status reviews are conducted annually throughout the life of the contract to monitor progress on application of facilitating and core management practices and to schedule future technical assistance. The NRCS will also incorporate to the extent possible, monitoring using USGS Willow flycatcher habitat modeling software.

The monitoring consists of five monitoring levels:

- a. Practice implementation oversight by NRCS
- b. Operation and Maintenance random monitoring by NRCS (5% annual spotchecks)
- c. USGS model performed by NRCS
- d. Landowner monitoring using photo points and other specified methods
- e. Grazing in riparian during growing season

### **2.2.6 Operation and Maintenance of Prescribed Grazing and Associated Practices**

**Operation.** Prescribed Grazing will be applied on a continuing basis throughout the occupation period of all planned grazing units. Adjustments will be made as needed to ensure that the goals and objectives of the prescribed grazing strategy are met.

**Maintenance.** Monitoring data and grazing records will be used to evaluate the efficacy of the prescribed grazing plan in meeting the Southwestern Willow Flycatcher habitat goals, the livestock production goals, and any associated goals such as weed control. This provides for the timely modification of the plan if the goals are not being met.

All facilitating and accelerating practices (e.g. Fence (382), Pest Management (595), Brush Management (314), Pasture Planting (512) (etc.) that are needed to effect adequate grazing and/or browsing distribution as planned by this practice standard will be maintained in good working order and are being operated as intended.

NRCS policy provides quality review of a minimum of 5 percent of contracts for compliance with these O&M requirements.

The NRCS is proposing to utilize in-house staff to monitor large scale habitat changes following the procedures of Hatten, et al, 2010. This work uses 10 years of flycatcher territory data, identified annual extent and distribution of riparian vegetation from Landsat Thematic Mapper images, and extracted floodplain features from a digital elevation model. The authors developed predictive models that quantify and assess the relative quality of flycatcher breeding habitat remotely, and which can be used to evaluate the effectiveness of habitat restoration activities. NRCS will seek training from the USGS for their GIS specialists to apply this model to determine the efficacy of the SWFL working lands for wildlife program at the landscape scale.

### **2.2.7 Training**

The NRCS and partners will provide training to landowners to monitor changes in plant community structure and habitat quality. Training will include browse utilization and monitoring of dominant and sensitive plant species so that they can accurately determine when to remove livestock from the riparian area.

The NRCS personnel in the project area will receive training in Conservation Planning, Habitat Evaluation, Southwestern Willow Flycatcher ecology, Prescribed Grazing, and riparian ecology as needed. Planners designated to develop WLFW-SWFL conservation plans will complete specific training with oversight by the designated NRCS state biologist.

### **2.2.8 Provision for Landowners to Return Properties to their Original Condition**

The NRCS expects that the majority of the contracting with private landowners under the WLFW - Southwestern Willow Flycatcher Project will be for less than five years' duration. The NRCS' contractual requirements mandate that participating landowners will continue to maintain the conservation practices that were implemented for the lifespan of that practice. **Table 1** provides the expected lifespan of each of the covered practices. NRCS is requesting that the scope of the Service's biological opinion and extent of incidental take coverage for the covered species encompass the expectation that landowners will return their properties to the original condition after all requirements of the NRCS' contracting and landowner commitments are satisfied.

Over the time elapsed during the landowners' contracted actions, an expected conservation outcome will be the creation, restoration, maintenance, and/or enhancement of habitats suitable for the covered species. Including incidental take coverage for these habitats and species' increase in abundance/distribution addresses the concern voiced by both NRCS and potential eligible landowners that, by conducting these identified actions on private lands for federally-protected species, those landowners are accruing additional liability or restrictions on their property after the term of the contract ends with NRCS. Thus, the NRCS is requesting that the evaluation of effects, and associated incidental take coverage provided by the Service, includes species numbers and/or habitat metrics determined or assumed present at the time the contracting is executed and also those that are anticipated to come into existence at the time the contract expires. The NRCS requests level of incidental take and expected tracking mechanisms be determined for all species covered by these actions.

#### **2.2.8.1 Establishing Original Conditions**

The method used for establishing original conditions will be the Wildlife Habitat Evaluation Guide (WHEG) and other acceptable methodology as identified in 2.2.3 above. The WHEG will document the extent and distribution of habitat characteristics; describe existing habitat type(s); identify conditions of the habitat(s), and any other information necessary to describe the original conditions. For each eligible landowner, NRCS may invite other conservation partners, including the affected State Wildlife Agency, and/or the Service to provide assistance in establishing the original conditions for each of the covered species. The purpose of determining these original conditions is to ensure that the covered species' status on enrolled lands is no worse after participation in the WLFW-Southwest Willow Flycatcher Project than before enrollment. The most important feature of the original conditions is that it will be determined by the existing ESA responsibilities present within the eligible enrolled lands. A landowner's original conditions can be zero (no current ESA responsibilities as illustrated by no occupied habitat or species present throughout the identified property). Baseline habitat will only be determined for the Southwestern willow flycatcher; baseline for all other listed species must be established on a case by case basis as determined necessary by the NRCS State Biologist.

#### **2.2.8.2 Maintaining Original Conditions**

For landowners that have an existing original condition responsibility above zero, (e.g., the presence of the species/occupied habitat), the landowner must agree to maintain this pre-existing level using the agreed-upon conservation practice standards as conditioned by the conservation measures and as mandated in the NRCS financial assistance contract that are necessary to maintain the original responsibilities for that landowner.

### **2.3 Outcomes Expected**

The overall goal of the WLFW- Southwestern Willow Flycatcher Project is to increase Southwest Willow Flycatcher abundance and distribution through habitat improvements and by addressing local and landscape threats. At least one of the identified core management practices will be implemented on all acres contracted through the WLFW – Southwestern Willow Flycatcher Project. The long-term implementation of these core practices is essential to the success of the WLFW – Southwestern Willow Flycatcher Project.

In the short-term, the desired outcome is additional management and enhancement of Southwest Willow Flycatcher habitat on private lands within the Action Area. Over the long-term it is anticipated that the WLFW – Southwestern Willow Flycatcher Project will facilitate the stabilization of existing populations, creation of new habitat, reduction of fragmentation of suitable habitat, and reduction or elimination of threats and challenges to recovery, and conservation of not only the Southwest Willow Flycatcher but other covered species. Many associated riparian and aquatic species will benefit from the WLFW – Southwestern Willow Flycatcher Project. The Service will discuss these benefits in more detail in the Biological Opinion .

### 3.0 SPECIES CONSIDERED

The list of species covered in this consultation is found in **Table 2**. A flow chart to guide conservation planners developing WLFW-SWFL plans is found in **Figure 1**. Since the NRCS and the Service worked together in the development of this consultation, we incorporate by reference the species and critical habitat information located on the FWS Ecological Services’ websites. Minimization measures are aimed at avoiding direct mortality, harm and harassment to covered species. Critical time periods are those portions of the year that covered species, or specific life stages of a covered species, are most vulnerable to the effects of covered activities. These critical periods typically involve times of the year when breeding, nesting, or the rearing of young occur and when vulnerable life stages, such as egg, larvae, tadpoles, nestlings, and pups may be present in the action area. These life stages are most vulnerable to the potential effects of the covered activities in this consultation. See **Table 2** for critical time periods that reflect the periods that NRCS will avoid implementation of practices except where otherwise stated. When working within the Critical Time Periods, the plan planner will direct questions to the state Biologist who will determine if additional communication is needed with the Service.

**Table 2: COVERED SPECIES LIST AND CRITICAL TIME PERIODS**

**E** = Endangered; **T** = Threatened; **PT** = Proposed Threatened; **C** = Candidate; **EXPN** = Experimental, non-essential populations (considered at the same level as proposed species). some species have Proposed critical habitat (P).

SPECIES	SCIENTIFIC NAME	STATUS	CH	STATE	CRITICAL TIME PERIOD
<b>AMPHIBIANS</b>					
Arroyo toad	<i>Anaxyrus californicus</i>	E	YES	CA	Mar 1 – Sep 15
California red-legged frog	<i>Rana aurora draytoni</i>	T	YES	CA	Nov1 - July 15
Chiricahua Leopard Frog	<i>Rana chiricahuensis</i>	T	NO	AZ NM	May 1 to Oct. 31 (above 5,900') July 15 to Feb. 14 (below 5,900')
California tiger salamander	<i>Ambystoma californiense</i>	E / T	YES	CA	To be Determined by FWS
Columbia spotted frog	<i>Rana luteiventris</i>	C	NO	CA, NV	Apr 1- Oct 1
Mountain yellow-	<i>Rana muscosa</i>	E	YES	CA	Apr 1- Oct 1

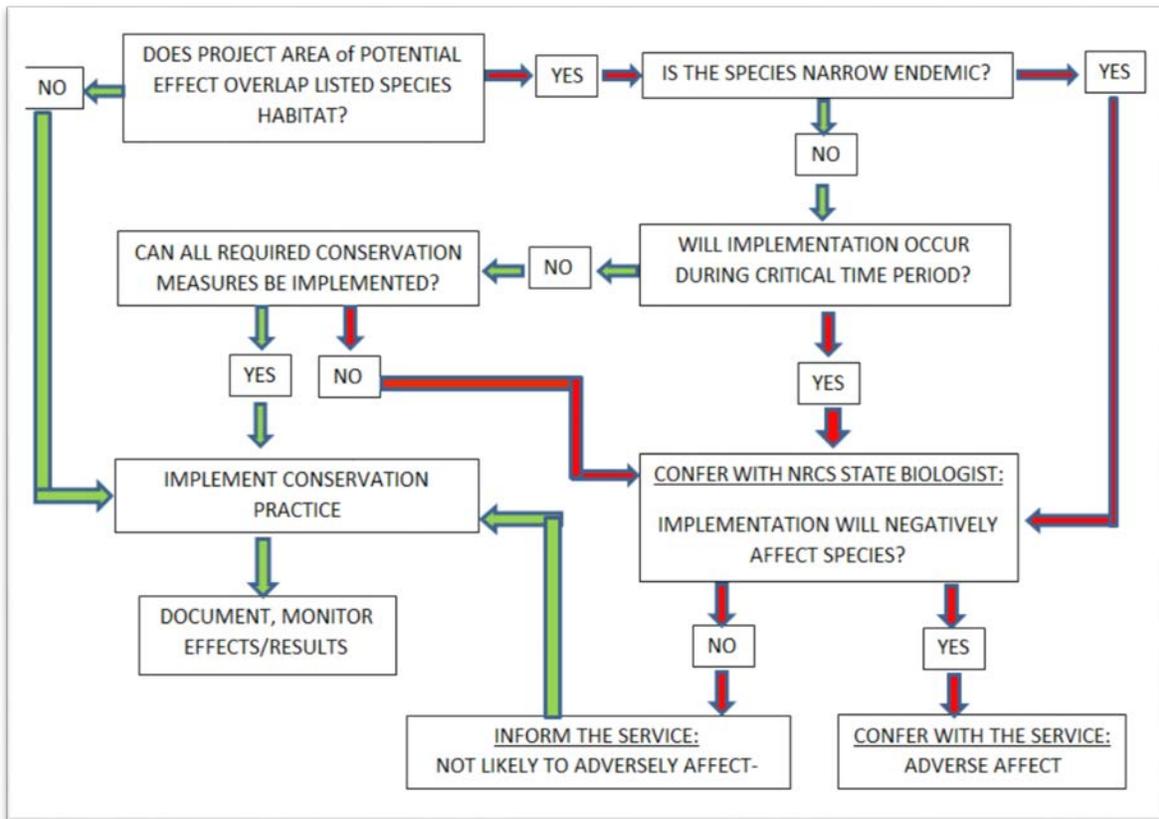
legged frog					
Relict leopard frog	<i>Lithobates onca</i>	C	NO	AZ NV	Jan 15- July 1
<b>REPTILES</b>					
Mohave desert tortoise	<i>Gopherus agassizii</i>	T	YES	AZ, CA, NV	Determine by FWS
Northern Mexican garter snake	<i>Thamnophis eques megalops</i>	PT	P	AZ	Jun 1 - Oct 1
Narrow headed garter snake	<i>Thamnophis rufipunctatus</i>	PT	P	AZ	Apr 1 – Nov 1
Sonoran desert tortoise	<i>Gopherus morafkai</i>	C	NO	AZ	Mar 1- May 1 and Jul 1-Nov 1
<b>BIRDS</b>					
California clapper rail	<i>Rallus longirostris obsoletus</i>	E	NO	CA	Mar 15- Sep 15
Least Bell's vireo	<i>Vireo bellii pusillus</i>	E	YES	CA	Mar 15 – Sep 15
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	E	YES	AZ, CA, CO, NM, NV, UT	April 15 to Aug 15
Yellow billed cuckoo	<i>Coccyzus americanus</i>	PT	NO	AZ, CA, CO, NM, NV, UT	June 15 to August 15
Yuma clapper rail	<i>Rallus longirostris yumanensis</i>	E	NO	AZ, NV CA	Mar 1 – Jul 1
<b>FISH</b>					
Apache Trout	<i>Oncorhynchus apache</i>	T	NO	AZ, NM	April 1- July 1
Ash Meadows Amargosa pupfish	<i>Cyprinodon nevadensis mionectes</i>	E	YES	NV	Mar 1 – Jul 15
Ash Meadows speckled dace	<i>Rhinichthys osculus nevadensis</i>	E	YES	NV	Mar 1 – Sep 1
Bonytail chub	<i>Gila elegans</i>	E	YES	UT	June 1-Aug 31
Chihuahua chub	<i>Gila nigrescens</i>	T	NO	AZ	Apr 1-Oct 1
Colorado pikeminnow	<i>Ptychocheilus lucius</i>	E	YES	AZ, CO, NM, UT	Jun 1-Sep 1
Colorado pikeminnow	<i>Ptychocheilus lucius</i>	EXPN	NO	AZ	Jun 1-Sep 1
Desert pupfish	<i>Cyprinodon macularius</i>	E	YES	AZ	Mar 1-Sep 1
Gila chub	<i>Gila intermedia</i>	E	YES	AZ	Apr 1 – Sep 1
Gila topminnow	<i>Poeciliopsis occidentalis</i>	E	NO	AZ	Apr 1 – Sep 1
Gila trout	<i>Oncorhynchus gilae</i>	T	NO	AZ	April 1- July 1
Greenback cutthroat trout	<i>Oncorhynchus clarki stomias</i>	T	NO	CA, CO	April 1- July 1
Headwater chub	<i>Gila nigra</i>	C	NO	AZ NM	Determine by FWS
Hiko White River springfish	<i>Crenichthys baileyi grandis</i>	E	YES	NV	Mar 1 – Jul 1
Humpback chub	<i>Gila cypha</i>	E	YES	AZ UT	May 1- Aug 1
Little Colorado spinedace	<i>Lepidomeda vittata</i>	T	YES	AZ	May1 –July 1
Loach Minnow	<i>Tiaroga cobitis</i>	E	YES	AZ	Mar 1 – July 1
Moapa dace	<i>Moapa coriacea</i>	E	NO	NV	Mar 1 – Aug 1

Mohave tui chub	<i>Gila bicolor mohavensis</i>	E	NO	CA	Determine by FWS
Owens pupfish	<i>Cyprinodon radiosus</i>	E	NO	CA	Feb 1- Sep 1
Owens tui chub	<i>Gila bicolor ssp. snyderi</i>	E	YES	CA	Apr 15- Sep 1
Pahrnagat roundtail chub	<i>Gila robusta jordani</i>	E	NO	NV	Feb 1 – Jun 1
Pecos bluntnose shiner	<i>Notropis simus pecosensis</i>	T	YES	NM	May 1-Oct 1
Pecos gambusia	<i>Gambusia nobilis</i>	E	NO	NM	Determine by FWS
Razorback sucker	<i>Xyrauchen texanus</i>	E	YES	AZ UT	Feb 1- May 1 (AZ) April 1-July 1 (UT)
Rio Grande cutthroat trout	<i>Oncorhynchus clarki virginalis</i>	C	NO	NM	May 15- Jul 15
Rio Grande silvery minnow	<i>Hybognathus amarus</i>	E	YES	NM	May 1-Sep 1
Rio Grande silvery minnow	<i>Hybognathus amarus</i>	EXPN	NO	NM	May 1-Sep 1
Roundtail chub	<i>Gila robusta</i>	C	NO	AZ	May 1-Sep 1
Santa Ana sucker	<i>Catostomus santaanae</i>	T	YES	CA	Determine by FWS
Sonora chub	<i>Gila ditaenia</i>	T	YES	AZ	Mar 1- Sep 1
Spikedace	<i>Meda fulgida</i>	E	YES	AZ	April 1- July 1
Tidewater goby	<i>Eucyclogobius newberryi</i>	E	?	CA	Determine by FWS
Unarmored threespine stickleback	<i>Gasterosteus aculeatus williamsoni</i>	E	P	CA	Feb 1- Oct 1
Virgin River chub	<i>Gila seminuda (=robusta)</i>	E	YES	AZ, NV, UT	April 1 - Jul 15 (AZ NV) April 1-Aug 15 (UT)
Warm Springs pupfish	<i>Cyprinodon nevadensis pectoralis</i>	E	NO	NV	Mar 1 – Jul 15
White River Springfish	<i>Crenichthys baileyi baileyi</i>	E	YES	NV	Mar 1 – Jul 1
Woundfin	<i>Plagopterus argentissimus</i>	E	YES	AZ, NM, UT NV	Mar 1 – Jun 15 (AZ,NV) April 1- Aug 15 (UT)
Woundfin	<i>Plagopterus argentissimus</i>	EXPN	NO	AZ	Mar 1 – Jun 1
Yaqui catfish	<i>Ictalurus pricei</i>	T	YES	AZ	Determine by FWS
Yaqui chub	<i>Gila purpurea</i>	E	YES	AZ	Determine by FWS
Zuni bluehead sucker	<i>Catostomus discobolus yarrowi</i>	C	NO	AZ, NM	Mar 1-Sep 1
<b>INVERTEBRATES</b>					
Ash Meadows naucorid	<i>Ambrysus amargosus</i>	T	YES	NV	Avoid year-round; extremely restricted habitat
Nebares Spring naucorid bug	<i>Ambrysus funebris</i>	C	NO	CA	Determine by FWS
<b>PLANTS</b>					
Amargosa niterwort	<i>Nitrophila mohavensis</i>	E	YES	CA, NV	Avoid year-round; extremely

					restricted habitat
Ash Meadows blazingstar	<i>Mentzelia leucophylla</i>	T	YES	NV	Avoid year-round; extremely restricted habitat
Ash Meadows gumplant	<i>Grindelia fraxinoprattensis</i>	T	YES	CA, NV	Avoid year-round; extremely restricted habitat
Ash Meadows ivesia	<i>Ivesia kingii var. eremica</i>	T	YES	NV	Avoid year-round; extremely restricted habitat
Ash Meadows milkvetch	<i>Astragalus phoenix</i>	T	YES	NV	Avoid year-round; extremely restricted habitat
Ash Meadows sunray	<i>Enceliopsis nedicaulis var. corrugate</i>	T	YES	NV	Avoid year-round; extremely restricted habitat
Canelo Hills Ladies Tresses	<i>Spiranthes delitescens</i>	E	NO	AZ	Year round, very difficult to detect
Chorro Creek bog thistle	<i>Cirsium fontinale var. obispoense</i>	E	NO	CA	Apr 1 –Oct 1
Dwarf bear-poppy	<i>Arctomecon humilis</i>	E	NO	UT	April 15-May 31
Gambel's watercress	<i>Rorippa gambellii</i>	E	NO	CA	Year-round; very limited numbers
Hickman's potentilla	<i>Potentilla hickmanii</i>	E	?	CA	Determine by FWS
Holmgren milkvetch	<i>Astragalus holmgreniorum</i>	E	YES	UT	April 1-May 31
Huachuca Water Umbel	<i>Lilaeopsis schaffneriana var. recurva</i>	E	YES	AZ	Determine by FWS
La Graiosa thistle	<i>Cirsium loncholepis</i>	E	YES	C	Determine by FWS
Little Aguja pondweed	<i>Potamogeton clystocarpus</i>	E	NO	CA	Determine by FWS
Marsh Sandwort	<i>Arenaria paludicola</i>	E	NO	CA	May1 to Sep 1
Navajo Sedge	<i>Carex specuicola</i>	T	YES	UT	May 1-Sept 30
Otay mesa mint	<i>Pogogyne nudiuscula</i>	E	NO	CA	Determine by FWS
Pecos River Sunflower	<i>Helianthus paradoxus</i>	T	YES	NM	Aug 1 – Nov 1
Salt Marsh bird's-beak	<i>Cordylanthus maritimus ssp. maritimus</i>	E	NO	CA	Mar 15 – Jul 15
Slender-horned spineflower	<i>Dodecahema leptoceras</i>	E	?	CA	Determine by FWS
Spring-loving centaury	<i>Centaurium namophilum</i>	T	YES	CA, NV	Avoid year-round; extremely restricted habitat
Ute ladies-tresses	<i>Spiranthes diluvialis</i>	T	NO	UT	July 15- Sep 1
Ventura Marsh milk-vetch	<i>Astragalus pycnostachyus var. lanosissimus</i>	E	YES	CA	Year-round; only one small population
Willow monardella	<i>Monardella viminea</i>	E	YES	CA	June 1-Sep 1

MAMMALS					
Amargosa vole	<i>Microtus californicus scirpensis</i>	E	YES	CA	Determine by FWS
Buena Vista Lake ornate shrew	<i>Sorex ornatus relictus</i>	E	P	CA	Mar 1 – Jul 1
New Mexico meadow jumping mouse	<i>Zapus hudsonius luteus</i>	E	P	AZ, NM	Determine by FWS

FIGURE 1. Flow chart guiding WLFW-SWFL Planners to determine when oversight by NRCS State Biologist and/or the Service is required.



#### 4.0 Effects of the Action

The effects of the action are the direct and indirect impacts of the proposed federal action on the species and critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline (50 CFR § 402.02).

#### 4.1 Effects Introduction

The NRCS and US Fish and Wildlife Service (hereafter “Service”) has evaluated the identified conservation practices in the context of how the individual practices have the potential to produce beneficial and adverse effects to the covered species – at the individual, population, and landscape scales. The NRCS worked with the Service in collaboration to develop specific conservation measures for the 5 core conservation management practices and the 31 facilitating conservation practice standards included in this consultation. The NRCS and

Service believe that, as implemented, the conservation measures will result in ameliorating, minimizing, or eliminating potential adverse effects. However, even with the implementation of the conservation measures, some remaining adverse effects will occur to the covered species as described below. Nevertheless, the NRCS believes that the conservation measures, in concert with the goals and objectives of the WLFW – Southwestern Willow Flycatcher Project, will cumulatively produce beneficial effects to the flycatcher and covered species.

Planning and execution of NRCS' financial assistance to private landowners within the program guidance of the WLFW- Southwestern Willow Flycatcher Project depends upon the completion of a Conservation Plan for each eligible participant. Consequently, the agencies recognize that each conservation practice will be designed to work synergistically with other conservation practices as a conservation management system to achieve the purposes of the selected core management practice. This linkage between conservation practices produces benefits and minimizes adverse effects to the species. **Appendix IV** provides a comprehensive narrative of each conservation practice covered in the document, its purpose, the identification of any potential adverse effects and description of expected beneficial effects, and the identification of the appropriate conservation measure(s).

#### **4.2 Summary of Direct and Indirect Effects**

In evaluating the potential direct, indirect and cumulative effects of the proposed action, the NRCS and Service were able to identify and evaluate 11 common adverse effects specific to the Southwestern Willow Flycatcher, with most common to the other covered species. As such, the two agencies were able to collectively evaluate the effects and summarize them as described below. It is important to note that the evaluation and determination of these common adverse effects duly considered and incorporated the conservation value of the identified conservation measures jointly developed by the partnership.

When Conservation Practices are installed or applied to the land, short-term and long-term positive and/or negative effects may occur for listed species. The following potential direct and indirect physical effects to the covered species have been identified:

- o WATER QUALITY – Many Conservation Practices can affect water quality. The purpose of many Conservation Practices is to improve water quality by improving vegetative cover, reducing runoff and flooding, reducing erosion in uplands and channels, reducing the potential for groundwater contamination, or providing vegetative buffers for streams. The installation or application of some conservation practices may temporarily adversely affect water quality (increased sediment, water temperature, turbidity, loss of shade, increased nutrient levels and/or contaminants).
- o CHANNEL/ STREAMBANK MODIFICATION – The purpose of many conservation practices is to protect and stabilize stream banks, and reduce stream bank erosion. Conservation Practices may provide direct structural or vegetative protection to the stream banks. The installation of some practices can temporarily alter or destabilize stream banks and/or stream channels, especially during construction.
  - AE9: Practice implementation in isolation without 528 for SWWF may reduce riparian habitat
- o WATER SURFACE FLOW ALTERATION – The purpose of many conservation practices is to help maintain or improve surface water flow in streams and springs. Other conservation practices remove or divert surface water flows to provide water for agricultural production and/or to provide water for other resource management objectives. These practices may alter short-term or long-term surface flow magnitude, duration, direction or frequency.
  - AE10: Water quality/quantity – loss or alteration of suitable hydrology
- o VEGETATION MODIFICATION – The purpose of many conservation practices is to maintain or improve vegetation on the land for a variety of conservation benefits. The installation or application of some conservation practices involves the removal or reduction of unwanted vegetation. Vegetation modification may be permanent or temporary, and may entail complete removal or targeted removal or reduction of undesirable or invasive species.
  - AE2: Temporary soil and vegetation disturbance (indirect & temporary)
  - AE4: Removal of desired riparian vegetation and understory component
  - AE5: Increased fire hazard

- AE9: Practice implementation in isolation without 528 for SWWF may reduce riparian habitat
  - AE11: Increased potential to adversely affect insect prey base
- o GROUND DISTURBANCE – The installation or application of many conservation practices will result in temporary soil surface disturbance and/or compaction. The ground disturbance may involve minor surface disturbance such as vehicle tires or livestock movement, or deeper disturbance such as pipeline trenches or pond excavations.
- o HUMAN DISTURBANCE – The installation or application of most conservation practices will permanently or temporarily increase the presence and/or level of human activities (noise, visual disturbance). Temporary disturbance will occur during installation of structural practices such as pipelines and watering facilities. Long-term increases in human activity will occur where the conservation practice requires regular operation, maintenance, or monitoring.
- AE1: Physical Disturbance including noise
- o BARRIER /HAZARD – Some vegetative or structural vegetative practices can create a barrier to movement or hazardous conditions for a species. The practice may establish a desirable physical barrier (Fence using 382 - Fencing to protect exclude and/or management livestock) or an undesirable interference with movement of fish, land animals or birds.
- AE6: Increased potential of accidental mortality of individuals
  - AE7: Increased potential of susceptibility to parasitism e.g. cowbirds
  - AE8: Increased potential for predation
  -
- o EXOTICS – Many conservation practices are applied to remove or control undesirable non-native plants and animals. The installation or application of some conservation practices also has the potential to introduce undesirable species into the area, or enhance the ability of undesirable species present in the area to increase or spread on the site, or be transported from the site.
- AE3: Increased potential of introduction of invasive plants

#### 4.2.2 Framework for Assessment of Risk/Benefit of the Physical Effects on the Covered Species

For purposes of this document, the NRCS provides a qualitative assessment of adverse effects or potential risk(s) to the species and its habitat needs from implementation of conservation practices. A qualitative assessment is used because there is uncertainty in generating specific metrics of adverse effect (such as number of expected mortalities of individuals, or numbers of habitat acres temporarily or permanently lost or temporarily affected) due to the complexity of factors affecting the individual fate of individuals of the covered species. Factors include (1) a likely inability to effectively measure them, (2) inability to differentiate the source of risk, including predictable but stochastic events such as the effects of drought, (3) sources of risk emerge outside the lands which are not part of the NRCS actions (financial or technical assistance), and (4) the adverse effect may not be directly attributable to application of a particular conservation practice standard. A compounding factor is that the adverse effects manifest themselves at different scales, i.e. population or landscape.

The NRCS has provided a qualitative assessment of benefits to the NRCS' implementation of the proposed action for the same reason described above. Benefits have been identified for each conservation practice and within the context of the core conservation practice as well (**Appendix IV**).

The NRCS believes that effective implementation of conservation practices and associated conservation measures can be anticipated to result in a positive population response by the species and achieve the expected conservation outcomes. This positive response is expected as threats are reduced; notably in addressing habitat fragmentation and improvement of habitat conditions across the landscape. This will be measured through the installation of conservation practices within the focal areas and specific resource threats are addressed or removed. At this point in the implementation of the proposed action and our analysis, these benefits, however, cannot be articulated in quantified metrics such as absolute increases in numbers of the covered species or expressed as an expected positive change in population growth. The monitoring component for the proposed action will provide information over time to better refine both the benefits and consequences of the implemented

habitat restoration and management actions funded by NRCS.

**4.2.3 Structure and Organization of the Effects Analysis**

The effects analysis addresses the nuances of each conservation practice as well as the interplay among conservation practices and the cumulative implementation of the proposed action. **Appendix IV** provides information about the conservation practices with definition, purposes, resource concerns, adverse and beneficial effects to the covered species and the conservation measures designed to address the potential adverse effects.

The last aspect of the analysis of the conservation practices review synthesizes the anticipated adverse effects resulting from both the application of individual conservation practices and the totality of the proposed action using commonly occurring adverse effects. The analysis further reviews and evaluates the individual and cumulative benefits of the individual conservation practice at both the individual landowner and landscape level scales.

The Service and NRCS identified 11 potential adverse effects that may result from implementation of the conservation practice to the covered species. To address the adverse effects identified, the NRCS and Service developed specific conservation measures (**Table 3, Appendices II and III**) which are designed to minimize, avoid, or eliminate these adverse effects.

**Table 3. Potential Adverse Effects and Associated Conservation Measures**

Potential adverse effects to the species as a result of the conservation practice standard	Conservation Measure (from Appendix II) recommended to ameliorate, minimize or abate the potential adverse effects
AE1: Physical Disturbance including noise	1-14, 20, 26, 33, 36, 39
AE2: Temporary soil and vegetation disturbance (indirect & temporary)	1-14, 20, 26, 30-35, 37-40
AE3: Increased potential of introduction of invasive plants	7,8,11-15, 18, 20, 23-26, 30-39
AE4: Removal of desired riparian vegetation and understory component	2,9-14, 17-21, 23, 23, 30-35, 39
AE5: Increased fire hazard	18, 22, 39,
AE6: Increased potential of accidental mortality of individuals	1-11,13,14, 17-20, 22, 24-27, 33, 34, 36
AE7: Increased potential of susceptibility to parasitism e.g. cowbirds	30-35, 38
AE8: Increased potential for predation	30-35, 38
AE9: Practice implementation in isolation without 528 for SWWF may reduce riparian habitat	27-34
AE10: Water quality/quantity – loss or alteration of suitable hydrology	5-8,11-16, 18, 19, 27, 28, 37
AE11: Increased potential to adversely affect insect prey base	4-20, 24-26, 39

**4.2.3.1 Adverse Effect: (1) Physical disturbance (including noise) and Adverse Effect (6) Increased potential of accidental mortality to individuals**

Mortality or injury to individual members of the covered vertebrate species is possible for most of the supporting Conservation Practices that involve the use of mechanized equipment in occupied habitat. Further, future periodic disturbances have the potential to occur, as maintenance actions for the implemented practices may be needed over their operational life. Additionally, all of the covered conservation practices, either directly or indirectly have the potential to produce some additional level of physical disturbance because they involve the physical presence of humans, livestock, and/or associated equipment, vehicles or machinery. Consequently, these two adverse effects have been combined for purposes of the overall analysis. Although effects are not quantitatively known, the literature suggests that some form of physical effects from presence and/or associated noise will create a disturbance response to individuals of the covered vertebrate species and has the potential to create a mortality event to an individual adult, young, nest, or egg/larvae of the covered species.

With respect to noise or physical disturbance, normal and routine use of equipment necessary to maintain ranching or farming operations is not considered by NRCS to be a significant source of adverse effect to the species.

The primary adverse effect of concern is physical disturbance during the SWFL's breeding and nesting season (considered April 15 thru September 15). The bird's response ("flushing"/escape behavior) may place individual birds at greater risk to predation when they leave cover. If the equipment and actions occur close to occupied nests, the female may abandon the nest for some indeterminate period or permanently. The net effect of the physical disturbance including sustained sources of noise may be a localized reduction of survival or productivity, avoidance of otherwise suitable habitat, and/or reduction of breeding frequency.

Disturbance of some members of the covered species, including trampling may occasionally occur from conservation practice standard installation and/or maintenance activities. These effects are expected to rarely occur and are not expected to produce significant changes in species distribution and abundance.

Cumulatively, the adverse effects of this concern are expected to be localized and temporary, and the use of the conservation measures will further reduce the risks of adverse effects at the scale upon which populations or the species will be negatively impacted. On balance, the long-term benefits of installation and application of conservation practice standard as proposed in the WLFW-Southwest Willow Flycatcher Project is expected to exceed the level of harm.

#### **4.2.3.2 Adverse Effect: (2) Temporary soil and vegetation disturbance (indirect & temporary) and (3) Increased potential of introduction of invasive plants**

Temporary soil disturbance and vegetation removal are expected from the implementation of most of the conservation practice standards. This disturbance may result in loss of cover and increase the potential for invasive plants, especially woody plants like salt cedar and mesquite. For purposes of this analysis, we are combining these two conservation issues into a single discussion of their potential adverse effects.

Sources of the disturbance would include use of equipment (post-hole diggers, tractors, and other machinery) as well as practices that involve the planting or manipulation of vegetation (examples such as brush management, shrub control, and prescribed burning). Common potential adverse effects include degradation of habitat conditions and the potential for increased habitat fragmentation if the scale of the disturbance is large enough and the potential to create opportunities for colonization of these disturbed sites by invasive plants.

Temporary adverse effects on individuals can include increased levels of stress hormones, increased recesses during incubation (i.e., may increase detection by predators and predation risk), or disturbance/flushing of young broods. If these risks are realized, individual fitness is reduced and may have population level effects if disturbance is over a broad enough spatial or temporal scale.

The conservation practices could produce these potential sources of adverse effects (temporary soil disturbance and vegetation removal and increased potential of introduction of invasive plants) implemented through NRCS to conduct habitat management, restoration and enhancement actions designed specifically to meet the conservation needs of the Southwest Willow Flycatcher. The net effect will be that practice installation and

maintenance may result in short-term disturbance but are expected to produce long-term restoration, maintenance and enhancement gains by improving and maintaining habitat conditions for the covered species.

The use of the conservation measures are expected to minimize the short-term adverse effects of practice installation. Conservation measures have been developed to manage the risk of soil erosion as well as the risk of invasive plants. These measures manage the risk during practice installation and require monitoring and subsequent redress of any created or emerging threat throughout the effective life of the conservation practice standard. A restoration strategy using native plants appropriate to the ecological site will be used to provide a temporary buffer in the establishment of native vegetation will further ameliorate these potential adverse effects.

Cumulatively, the long-term and landscape benefits of installation and application of the particular Conservation Practices as conditioned by the conservation measures are expected to exceed any temporary adverse effects created from their installation.

#### **4.2.3.3 Adverse Effect: (4) Removal of desired riparian vegetation and understory components**

This adverse effect is a result of permanent removal of habitat conditions and specific vegetative loss caused by the installation of the conservation practice or the expectation that, once implemented, permanent degradation of habitat conditions for the Southwest Willow Flycatcher will have resulted. Certain facilitating practices (watering facility, water well, pipeline, grade stabilization structure, fence, etc) covered in this Document have the potential to result in the permanent removal/loss of SWFL habitat.

The primary adverse effect is the permanent loss of forage and nest habitat which can lead to a reduction of available habitat and subsequent decline in breeding pair fitness, and if the areal extent is large, then effects to localized Southwest Willow Flycatcher populations.

Most of the structural practices will produce localized losses which can be minimized using the identified recommended conservation measure(s). The conservation measure(s) focus on design and planning aspects of the practice so as to avoid large expanses of habitat loss especially from linear practices (e.g., fence lines, water pipelines, etc.).

The long-term and cumulative benefits of installation and application of the particular Conservation Practice as conditioned by the conservation measures are expected to exceed the temporary expected adverse effects created from their installation. Further, the use of the conservation measures will ensure that the species habitat is maintained or improved following application. Cumulatively, the expected species response will be positive as the extent of adverse effects are not expected to occur at the scale necessary to adversely impact population trends or to result in significant additional habitat fragmentation effects.

#### **4.2.3.4 Adverse Effect: (5) Increased fire hazard**

Although fires are known to have occurred in riparian habitats historically, riparian habitats are not fire-adapted nor are they fire-generated communities. Thus, fires in riparian habitat are typically catastrophic. Busch (1995) documented that the current frequency and intensity of fires in riparian habitats is greater than what occurred historically because: (1) of a greater accumulation of fuels due to a reduced frequency of scouring floods; and (2) the expansion and dominance in many areas of saltcedar (*Tamarix chinensis*), which is highly flammable. The increased incidence of fire is causing profound alterations in riparian habitats throughout the Southwest. Both saltcedar and arrowweed (*Tessaria sericea*) recover more rapidly from fire and are more tolerant of fire-induced increases in salinity and decreases in soil moisture than are cottonwood and willow (Busch and Smith 1993, Busch 1995).

#### **4.2.3.5 Adverse Effect: (7) Increased potential of susceptibility to nest-parasitism (e.g., cowbirds)**

The Southwestern Willow Flycatcher is one of several declining species that apparently have been impacted by Brown-headed Cowbird nest parasitism (USFWS 2002, Rothstein and Robinson 1994, Holmes 1993). Among Southwestern Willow Flycatcher populations, cowbird impact varies widely. In New Mexico, reported rates vary from 18% in the Cliff Gila Valley to 40% at other sites (USFWS 2002).

Cowbird parasitism rates are typically lower in large patches of unfragmented habitat (Robinson et al. 1995). In general, parasitism rates and cowbird densities typically decline with increasing densities of low vegetation, probably because nests in dense vegetation are harder for cowbirds to find (USFWS 2002, Uyehara and Whitfield 2000, Staab and Morrison 1999, Larison et al. 1998). In one New Mexico study, cowbirds only parasitized nests in narrow habitat patches with large edge components and snags that provided perches for cowbirds (Smith and Johnson 2007).

Several of the covered Conservation Practices have the potential to temporarily or permanently remove riparian habitat and/or increase edge effects especially if the construction or required access to the active site may involve some habitat removal. The NRCS believes that implementation of conservation measures will significantly minimize this adverse effect by establishing non-disturbance dates; minimum buffer distances from nest sites; and minimizing the width of clearing of vegetation for access and construction. Further, any remaining effects will be further managed or effectively mitigated as many of the actions proposed by NRCS are designed to increase riparian habitat or improve their structural component by planting or other direct and indirect enhancements.

The long-term and cumulative benefits of installation and application of the particular Conservation Practices as conditioned by the conservation measures are expected to exceed the temporary expected adverse effects created from their installation. Further, the use of the conservation measures will ensure that the species habitat is re-established, maintained, or improved following application over the longer term. Cumulatively, the expected species response will be positive as the extent of adverse effects are not expected to occur at the scale necessary to adversely impact population trends or to result in significant additional habitat fragmentation effects.

#### **4.2.3.6 Adverse Effect: (8) Increase potential for predation**

For many flycatcher populations, nest predation is the major cause of nest failure (Finch et al. 2000). Most monitored populations experience high rates of nest predation ranging from 14 to 60% (Spencer et al. 1996, Whitfield and Strong 1995, Sferra et al. 1997, Sogge et al. 1997). Known or suspected nest predators include various snakes, predatory birds including corvids, owls, hawks, grackles and cowbirds, and small mammals including raccoons, ringtails, weasels, and rats (McCarthy et al. 1998).

Rates of predation may increase in human-altered landscapes. In the lower Colorado River valley, Rosenberg et al. (1991) noted increases in great-tailed grackles, a common nest predator. Increases in the extent of habitat fragmentation have been correlated with increased rates of nest predation in both forested and non-forested habitats (Picman et al. 1993, Askins 1993, Robinson et al. 1995). Whitfield (1990) noted that predation on flycatcher nests increased with decreasing distance to edge. Most small bird species in North America experience moderate rates of nest predation (30 to 60%) and the southwestern willow flycatcher, presumably, has adapted to similar rates. The key factor to determine is whether impacts, such as habitat fragmentation, are resulting in substantially higher rates of predation.

NRCS will implement conservation measures to address the potential for predation to the species as direct or indirect consequence of implementation of the proposed action.

Certain conservation practices may increase the potential for predation on individual birds through the installation of structures or modifying existing habitat conditions. In addition, some practices will temporarily reduce available cover and food sources, making SWFL and other covered species vulnerable to predation. Finally, the presence of humans during practice installation can temporarily create an artificial food source for predators (i.e., trash attracts predators such as foxes, coyotes, crows, ravens, etc.).

The identified conservation measures may require modifications to the design of fences, management of slash and debris piles, and management of human presence during conservation practice installation and maintenance.

Cumulatively, the NRCS believes that the conservation measures will effectively reduce the risk of predation at the local and landscape scale to the extent to which it is not expected to have a detectable effect on the population or species.

**4.2.3.7 Adverse Effect: (9) Practice implementation in isolation without 528- Prescribed Grazing may reduce riparian habitat.**

As with the explanation and discussion throughout this analysis, we recognize the interdependence and interplay between the individual Conservation Practices and how they will produce specific results within the goals and value of the 5 core Conservation Practices. By using at least one of the identified core practices, this feature will ensure that implementation of each of the supporting Conservation Practices will create, maintain, enhance, improve, or otherwise manage the SWFL and its supporting habitat needs.

This section was explicitly developed to guide NRCS planners and eligible landowners to reduce the adverse effects of those structural improvements on eligible lands that support the creation of a Prescribed Grazing Plan (528) for livestock operations. Specifically, the Conservation Practices such as Fence, Pipeline, and Watering Facility all have the potential to create their own adverse effects as discussed above and that in certain circumstances these impacts are compounded without thoughtful consideration on their placement and design. The NRCS expects that the practices identified above will be installed with NRCS technical and financial assistance and used to facilitate a prescribed grazing plan. Site-specific management plans will be developed with each landowner; these plans will detail the stocking rates, rotations, timing, and duration of use in each field. All grazing plans will contain a drought contingency that adjusts grazing use commensurate with lower precipitation and plant growth. All required facilitating practices (i.e., fence, well, pipeline, etc.) will be planned and designed to minimize disturbance and to enhance SWFL habitat through the installation of a sustainable livestock management program. Further, that where designed and installed, the use of the conservation measures for a prescribed grazing plan (528) will also be followed, as repeated below:

**Conservation Measures to Be Used for Prescribed Grazing**

*In SWFL Habitat:*

1. The timing, duration, intensity and distribution of grazing will be managed to benefit listed species by maintaining or improving the plant communities in each pasture.
2. Grazing will be scheduled to occur outside covered species' critical periods per **Table 2** except where noted in specific rotations during the riparian growing season.
3. Motorized vehicles will not be used to herd livestock within listed species habitat.

*In Riparian, Wetland or near Aquatic areas:*

4. Provide off-site water supply for livestock and wildlife to maintain or improve streamside vegetation.
5. The timing, duration, intensity and distribution of grazing will be managed to benefit listed species by maintaining or improving the plant communities in each pasture based on the ecological sites being managed. The desired kinds and amounts of vegetation will be based on the ecological sites potential and current plant communities. Monitoring will be conducted to determine if plant community goals are being achieved and may include plant species attributes such as: composition, production, vegetation and ground cover, seedling establishment, utilization, tree density or other attributes based on the vegetation goals established in the prescribed grazing plan. The prescribed grazing plan will ensure adequate post-grazing woody and herbaceous vegetation attributes and bank vegetation cover to minimize erosion and sediment losses from runoff that would cause degradation of the riparian area. Stocking rates will be based on an appropriate forage animal balance allowing for a maximum of 30% utilization on key forage species and ensure adequate rest and recovery of key SWFL habitat plant species and minimize nest disturbance. Stocking rates will also take into account utilization of vegetation by wildlife ungulates (elk, deer, etc.) and other wildlife species. The forage animal balance for pastures containing riparian areas will only take into account available forage for any uplands within the pasture if livestock can be successfully drawn out of the riparian area, or otherwise limit riparian vegetation use, through structural practices or management as part of the conservation plan (i.e. water sources located far enough from the riparian area to limit livestock use, etc.) or if livestock access to the riparian area within the pasture is limited by topography or distance. This may also take into account limited use of the riparian area due to the specific season of use of the pasture by livestock (i.e. the spring season may have cool weather with adequate cool season grasses and other desirable forage species to keep a significant portion of livestock use in the uplands). Example:

Winter (Nov. 1 –Feb 28)	Spring (Mar 1 – May 14)	Summer (May 15 – Aug 31)	Fall (Sept 1 – Oct 31)
X		X	
	X		X

X			
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Winter grazing will occur no more than 2 out of 3 years. Grazing during the spring, summer or fall will occur no more than once in 3 years.

In uplands or pastures with ephemeral water only:

6. Pastures with ephemeral water will be grazed when surface water is not present.

By following the conservation measures, the NRCS believes the potential additive effects will be effectively minimized and more than offset by the creation and maintenance of beneficial effect to the covered species habitat and other requirements.

**4.2.3.8 Adverse Effect: (10) Water Quality/Quantity – loss of alteration of suitable hydrology:**

Degraded water quality affects SWFL primarily through impacts to the aquatic food chain. Aquatic macro-invertebrates provide supplemental carbon to the terrestrial system when they emerge in great numbers to reproduce. A diverse fauna of macro-invertebrates supplies a sustained dietary supplement by producing hatches throughout the spring, summer, and into the fall.

Water quality is degraded by sediment, nutrients, pesticides, temperature, or a combination of factors resulting in a simplified macro-invertebrate fauna. Fewer organisms have the ability to persist in the degraded water. The reduction in the variety of taxa reduces the diversity of hatches and can create gaps in availability of prey from the aquatic ecosystem. Adverse impacts to water quantity can exacerbate these water quality impacts. Less water means less aquatic bed to produce macro-invertebrates, increases in water temperature and magnified effects of pesticide or nutrient pollution. There is less water to dilute the effects of the pollutants.

Water quantity can also affect the amount and quality of riparian habitat. The southwestern willow flycatcher population depends on breeding habitat in the southwestern United States with particular characteristics (Marshall, 1995). The birds prefer riparian forests with a dense understory of shrub-like vegetation where they typically construct their nests, with a more open canopy of larger trees, all situated near still or slow-moving open water. Commonly, the dense understory consists of willow (*Salix* sp.), seep-willow (*Baccharis* sp.), arrowweed (*Pluchea* sp.), tamarisk (*Tamarix* sp.), or Russian olive (*Eleagnus* sp.). The scattered overstory often consists of cottonwood (*Populus* sp.). Flycatchers are most abundant in these habitats when they are located adjacent to slack water. These riparian habitats were once much more common and spatially continuous, but human intervention in the southwestern river systems has now produced a geography of willow flycatcher habitat that is widely scattered, with small linear patches separated by dryland conditions.

Loss of hydrology suitable for sustaining this habitat can be a result of damming which alters the river hydrograph by managing flows to meet agricultural demands and to protect properties in the floodplain. This often changes the hydrologic peak, reducing flooding and sediment deposition required for riparian plant establishment and habitat renewal. Irrigation withdrawals result in low flows during the summer. This can cause plant stress to native riparian plants and alter the makeup of the riparian flora. Down cutting of the stream channel can act as a drain to the floodplain and result in a flora of upland and facultative plants not suitable for SWFL habitat. Bank stabilization can result in sealing of preferential flow paths adversely affecting oxbows and back swamp habitats.

**4.2.3.9 Adverse Effect: (11) Increased potential to adversely affect insect prey base:**

Direct effects to the insect prey base are the result of spray drift from nearby agricultural fields. Insecticides that are applied when weather conditions are inappropriate are prone to drift. Wind speed, temperature and barometric pressure all can affect pesticide drift. Indirect effects to the insect prey base come from actions affecting the habitat. See section 4.2.3.8 Water quality above for discussion of effects of water quality on macro-invertebrate habitat.

Cattle grazing can have unintended effects on insect populations. Cattle are often equipped with ear tags containing insecticides. These tags are intended to keep flies and ticks off livestock but might affect non-target species.

**4.3 General Beneficial Effects of WFLW Implementation**

Implementation of the WLFW – Southwest Willow Flycatcher Project involves conservation measures and management practices that ultimately work towards securing compatibility of the working private lands and the covered species. Financial agreements with individual landowners will also provide incentives for private lands conservation of federally threatened and endangered species. Each landowner agreement is expected to provide some measure of conservation benefit to the covered species via implementation of the conservation actions and practices described in the “Description of Proposed Action” section and as conditioned by the agreed-upon conservation measures. The objective of the WHEG is to evaluate habitat conditions that provide for the life requisites of the wildlife species under consideration and to inform alternative formulation and effects analysis.

For as long as management activities are carried out, or the habitat they create persists, enrolled lands will benefit the covered species by providing feeding, breeding, foraging and/or cover habitat. For some eligible lands, the full measure of the conservation benefit may be achieved early, while for others it may take years to fully express for the covered species. In addition, the habitat maintained through commitments created by the WLFW – Southwest Willow Flycatcher Project will not necessarily cease to exist upon expiration or termination of the individual contract and even after the lifespan of the particular conservation practice standard is honored by that affected landowner.

A qualitative evaluation of similar incentive programs such as the Service’s Safe Harbor Program reveals that, in the vast majority of cases, landowners will maintain their commitment in the program. For example, in tracking landowner participation in the Service’s Red-cockaded woodpecker Safe Harbor program in nine southeastern states since 1995, only about one (1) percent of landowners desired to return their properties to their original baseline conditions by seeking termination of their Safe Harbor Agreement (Service, unpublished data).

For NRCS financial assistance contracts, the participant is responsible for obtaining the authorities, permits, easements, or other approvals necessary for the implementation, operation, and maintenance of the conservation practices and activities in accordance with applicable laws and regulations. A participant must comply with all laws and is responsible for all effects or actions resulting from the participant’s performance under this contract. A participant can be found in non-compliance if the client fails to comply with laws that are associated with environmental regulations (e.g. Endangered Species Act). Such actions are handled on a case by case basis.

#### **4.4 CUMULATIVE EFFECTS**

Cumulative effects include the impacts of future State, local, or private actions that are reasonably certain to occur in the action area considered in this document. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

The following summary from “Questions and Answers: Scoping for Southwestern Willow Flycatcher Critical Habitat Proposal” found on the Arizona FWS Ecological Services website describes the general alterations to SWFL habitat:

“Changes to riparian ecosystems (trees and shrubs near water) including reductions in water flow, alteration of flood flows, physical modifications to watersheds and streams, and removal of riparian vegetation have occurred as a result of dams and reservoirs, groundwater pumping, channelization of streams for flood control, livestock overgrazing, agriculture developments, urbanization and other modifications. These factors have contributed to a significant decline in flycatcher populations throughout its range. An increase in nest parasitism by cowbirds and predation of flycatcher nests affects populations, especially those in smaller numbers and at more isolated locations. As a result of changes in land use and water management, native riparian woody vegetation has changed in many areas to more adaptable exotic vegetation such as salt cedar, Russian olive, and other species. This change in vegetation has created and changed flycatcher habitat in many parts of its range. Modification and loss of wintering habitat and “stopover” habitat used by flycatchers to replenish energy reserves during migration, and the continued use of agri-chemicals and pesticides in Latin America are also believed to be contributing to the decline of flycatchers”.

Cumulative effects to the flycatcher and other listed species would include, but are not limited to, the following broad types of impacts:

- Ongoing grazing and farming activities that will continue to occur on properties within the action area;
- Changes in land use patterns or practices that could affect critical habitat;
- Encroachment of human development into a species' habitat.

The introduced tamarisk leaf beetle was first detected affecting tamarisk within the range of the southwestern willow flycatcher in 2008 along the Virgin River in St. George, Utah. Initially, this insect was not believed to be able to move into or survive within the southwestern United States in the breeding range of the flycatcher. Along this Virgin River site in 2009, 13 of 15 flycatcher nests failed following vegetation defoliation (Paxton *et al.* 2010). As of 2012, the beetle has been found in southern Nevada/Utah and northern Arizona/New Mexico within the flycatcher's breeding range. Because tamarisk is a component of about 50 percent of all known flycatcher territories (Durst *et al.* 2008), continued spread of the beetle has the potential to significantly alter the distribution, abundance, and quality of flycatcher nesting habitat and impact breeding attempts.

#### **4.5 SUMMARY OF EFFECTS**

Although the long-term effects of these projects result in conservation benefits for the covered species, short-term adverse effects could occur in association with habitat restoration, enhancement, and management activities to be carried out on the eligible properties. Planting native vegetation to enhance habitat or controlling or removing nonnative vegetation, as well as restoring the physical and biological functions of the stream and floodplain wetlands may increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation treatment disturbance, and surface disturbance. Associated noise disturbances may adversely affect the behavior of SWFL and other vertebrates during breeding, nesting or foraging activities. Vegetation disturbances, vegetation removal, or chemical treatment of vegetation may adversely affect availability of nesting habitat, cover from predators, prey, and prey habitat, and adversely affect SWFL and other covered species. Soil disturbances may increase erosion, adversely affect soil stability, increase sediment deposits, and alter channel morphology.

Because of these disturbances, there may be decreases in nest initiation or nesting success. Prescribed grazing management may also alter vegetation composition, structure, and nutritive quality and adversely affect availability of nesting habitat, cover from predators, prey habitat for SWFL and other species, and alterations of water distribution. Although some activities, such as vegetation management, prescribed grazing, fencing and enclosure construction, channel width restoration, and in-stream structure installation may cause short-term adverse impacts, they will, if conducted in association with the identified conservation measures and other design requirements of the WLFW-Southwest Willow Flycatcher Project, likely result in long-term benefits.

In general, long-term efforts to improve the health and availability of riparian habitats and reduce/manage/eliminate the adjacent upland direct and indirect adverse effects, will benefit the covered species by increasing nesting success, increasing insect prey abundance, decreasing predation and by enhancement overall habitat values.

Implementation of the proposed action under the WLFW-Southwest Willow Flycatcher is intended to eliminate or reduce the threats to the species and to improve its conservation status. The targeted benefit of WLFW is to create strategic improvements to the status of the species on private working lands receiving NRCS financial and technical assistance. The proposed action in conjunction with the integrated use of the conservation measures is expected to benefit the SWFL by maintaining, enhancing, and restoring populations and their habitats as well as by reducing the threats of direct mortality. Landowners who are interested in participating in the WLFW-Southwest Willow Flycatcher Project must agree to install and maintain the covered conservation practices as conditioned by the conservation measures and as designed using one of the identified core management practices. This will individually and cumulatively produce benefits to the species in the form of increased habitat quantity and quality and the reduction and/or management of threats (indirect and direct) acting on the individual and population scales during the term of the individual contracts (between 3 and 15 years).

Conservation Measures are designed to maintain and enhance habitat and decrease fragmentation that is the greatest threat to SWFL. Conservation Measures also include commitments to reduce direct mortality and conserve the natural landscape attributes required by the species. The overwhelming conservation benefits of implementation of the proposed action within the selected priority areas, maintenance of existing habitat, and

enhancement of marginal habitat will outweigh short-term negative impacts to individual members of the species. The implementation of the proposed action will result in more of the threats that adversely affect populations being managed – either through avoidance or minimization measures. Beneficial actions to the covered species are expected to accrue, as most of the covered conservation practices installed are focused on habitat restoration, maintenance and/or enhancement actions.

Cumulatively, the NRCS and Service find that effective implementation of conservation practices and associated conservation measures are anticipated to result in a positive population response by the species, and that the short term localized adverse impacts are more than offset by the implementation of conservation practices for the benefit of SWFL and the other covered species as modified by the agreed-upon conservation measures.

## 5.0 Effects Determination

The NRCS determines that the actions as proposed in *most cases* will not have adverse effects to the southwestern willow flycatcher and other listed species (see **Table 2**). However, the NRCS requests the Service to allow those clients who choose to do so be able to return their property to the baseline condition upon completion of their contractual responsibilities with NRCS. With this return to baseline condition, certain cases of livestock management, and to protect the NRCS against unforeseen circumstances, **we determine that the actions proposed “may affect, and are likely to adversely affect” the species listed in Table 2.** We stress that the long-term affects of all the conservation practices listed will, when properly installed, have the following beneficial effects:

1. Have a net conservation benefit to the flycatcher and other species by improving and increasing available habitat and contributing to the enhancement and survival of the species, as well as associated beneficial impacts to riparian habitat for the other species listed (**Table 2**).
2. The proposed project may expand habitat for flycatchers located on enrolled private lands and promote their existence for a minimum of the lifespan of the conservation practices per individual landowner agreement. Similar associated beneficial effects are expected for the other listed species.
3. If the enrolled properties are returned to baseline conditions, they will maintain the baseline flycatcher habitat.
4. Management activities designed for flycatcher habitat enhancement will also provide associated beneficial impacts to riparian habitat for other listed species by enhancing native riparian vegetation.
5. The commitment to incorporate conservation measures into project designs should have positive effects to riparian habitat.

### 5.1 Incidental Take Coverage & Critical Habitat Regulatory Effects Determination

NRCS prefers to manage the authority of the incidental take for the enrolled landowners at the programmatic level as this approach fully takes into consideration the interdependent nature of commonly identified adverse effects from implementation of the covered conservation practice standards, the interrelationship of beneficial effects created by adding other components of the WLFW-SWFL, and is appropriate for managing the scale of expected adverse effects and long term benefits to the species over the 30 years' duration of the proposed action.

## 6.0 Administrative Management Features

To ensure continuity and consistency throughout the 30-year term of the take authority and regulatory predictability for enrolled landowners under WLFW-SWFL, NRCS is proposing the use of the following administrative procedures.

Incidental take management is requested for upwards of 30 years, subject to an annual review of effectiveness of the effort. Further, at 5 year intervals, NRCS will assess the WLFW-SWFL effort in a more comprehensive manner to re-evaluate the overall progress towards meeting the expected conservation outcomes.

NRCS practice standards and specifications undergo periodic review, usually on a 5 year cycle. Additionally, at irregular intervals (as needed basis), changes are made to the standard, specification, or the practice name as

new technologies and methods are developed. Should changes be made to any approved practice, NRCS will provide information regarding the changes and justification why the practice still meets the requirements and conservation measures as provided in this BA within 60 days of changes becoming final.

## 6.1 Annual Meeting

The above process for modifications can be included in the annual review conducted between the Service and NRCS and other invited partners and experts. During the annual review meeting, other items and information pertinent to the BA or Opinion (new information, a summary of the previous years' changes, new science, new research, etc) will be discussed and incorporated where agreed.

On an annual basis, the NRCS will provide a summary of accomplishments of the WLFW-SWFL effort in a manner that is consistent with the Opinion and its responsibilities under the Farm Bill, including but not limited to:

- a. Acreage/frequency of each conservation practice
- b. Results from the Wildlife Habitat Evaluation Guide (WHEG) (appropriate scale element)
- c. Changes in the implementation of the covered conservation practice standards (changes in technology, plans and/or specifications, quality criteria, etc.)
- d. Information on the efficacy of the conservation measures specific to the expected benefits where available.
- e. Identify the circumstances and details of any incidental take events of SWFL or adverse modification of habitat.

6.2 **Yearly Report:** The NRCS will provide a recovery unit based report annually through the lead state, Arizona, to the USFWS no later than February 15th of each year.

6.3 **Conservation practice changes:** The NRCS will notify the Service of conservation practices that receive major updates to the practice standard.

6.4 **Adjustments to Existing Conditions:** Unforeseen circumstances may require adjusting the originally established Existing Conditions in an affected eligible landowners' Conservation Plan for the covered species. Unforeseen circumstances include impacts to habitat(s) from events beyond the participating landowners' control and/or influence such as weather, fire, floods, insect/disease epidemics, or natural vegetation succession that locally destroy the species population or render habitat unsuitable for breeding, thereby reducing population numbers or occupied acreage below the original existing conditions stated at the time the landowners' Conservation Plan was finalized and enrollment in the WLFW-SWFL occurred. For such circumstances, NRCS will work with the affected landowner(s) to revise Conservation Plan to reflect the new circumstances, rather than terminate that landowner's participation in the WLFW-SWFL. In areas where existing conditions for the covered species' habitat has been reduced or eliminated, and the land conditions will still allow the future development of covered species habitat, the affected Conservation Plan(s) may need to be amended to reflect the new or renewed actions that the enrolled landowner(s) will implement to address new or the original resource concerns. No action, including adjustment of the Existing Condition, is necessary by the eligible landowner or NRCS if the enrolled property develops into a seral stage or otherwise is determined to no longer provide the necessary life history requirements for breeding of the covered species. Circumstances reporting out the frequency and extent of any adjustments to Existing Conditions will be reported to the Service as a component of the annual reporting requirements (Section 6.2).

## 7.0 State and other non-federal Lands Proposal

WLFW under 2008 Farm Bill was funded through the Wildlife Habitat Incentives Program (WHIP), which was limited to only private land. This program was incorporated into the Environmental Quality Incentives Program (EQIP) in the new Farm Bill of 2014. EQIP allows for participation on private, state and federal lands. The current WLFW predictability agreement between US FWS and NRCS applies only to private lands. NRCS

proposes that state land and other non-federal land, besides private and Tribal, be allowed to participate under the WLFW-SWFL program as long as the appropriate cooperating agency agrees. The NRCS will engage in discussion with the cooperating agency to determine specific requirements.

## 8.0 Literature Cited

Askins, R. A. 1993. Population trends in grassland, shrubland, and forest birds in eastern North America. Pp. 1-34. In: *Current Ornithology*, vol. 11 (D. Powers, Ed.). New York, Plenum Press.

Busch, D. E. 1995. Effects of fire on southwestern riparian plant community structure. *Southwestern Naturalist* 40: 259-267.

Busch, D. E., and S. D. Smith. 1993. Effects of fire on water and salinity relations of riparian woody taxa. *Oecologia* 94: 186-194.

Finch, Deborah M.; Stoleson, Scott H., eds. 2000. Status, ecology, and conservation of the Southwestern Willow Flycatcher. Gen. Tech. Rep. RMRS-GTR-60. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 131 p.

Hatten, James R.; Paxton, Eben H.; and Mark K. Sogge. 2010. Modeling the dynamic habitat and breeding population of Southwestern Willow Flycatcher. *Ecological Modelling* 221 (2010) 1674–1686. Accessed June 11, 2101 at <http://sbcs.wr.usgs.gov/cprs/research/projects/swwf/Reports/hatten%20et%20al.%202010%20flycatcher%20modeling%20-%20Ecological%20Modelling%20-%20Page%201%20only.pdf>

Holmes, B. 1993. An avian arch-villain gets off easy. *Science* 262:1514-1515.

Larison, B., S. A. Laymon, P. L. Williams, and T. B. Smith. 1998. Song Sparrows vs. cowbird brood parasites: impacts of forest structure and nest-site selection. *Condor* 100:93-101.

McCarthy, T. D., C. E. Paradzick, J. W. Rourke, M. W. Sumner, and R. F. Davidson. 1998. Draft Arizona Partners In Flight southwestern willow flycatcher 1997 survey and nest monitoring report. Arizona Game and Fish Department, Phoenix, AZ. 79 p.

Moore, D., and D. Ahlers. 2006. 2006 Southwestern Willow Flycatcher study results. Bureau of Reclamation, Denver, Colorado.

Morrison, L. S. Hall, S. K. Robinson, S. I. Rothstein, D. C. Hahn, and T. D. Rich. 1999. Research and management of the Brown-headed Cowbird in western landscapes. *Studies in Avian Biology* 18.

Picman, J., M. L. Milks, and M. Leptich. 1993. Patterns of predation on passerine nests in marshes: effects of water depth and distance from edge. *Auk* 110: 89-94.

Robinson, S. K., F. R. Thompson III, T. M. Donovan, D. R. Whitehead, and J. Faaborg. 1995. Regional forest fragmentation and the nesting success of migratory birds. *Science* 267:1987-1990.

Rosenberg, K. V., R. D. Ohmart, W. C. Hunter, and B. W. Anderson. 1991. *Birds of the Lower Colorado River Valley*. University of Arizona Press, Tucson. 416 p.

Rothstein, S. I., and S. K. Robinson. 1994. Conservation and coevolutionary implications of brood parasitism by cowbirds. *Trends Ecol. Evol.* 9:162-164.

Sferra, S. J., T. E. Corman, C. E. Paradzick, J. W. Rourke, J. A. Spencer, and M. W. Sumner. 1997. Arizona Partners In Flight southwestern willow flycatcher survey: 1993-1996 summary report. Arizona Game and Fish Department. Phoenix, Arizona. Nongame and Endangered Wildlife Program Technical Report 113.

Smith, J., and K. Johnson. 2004. Southwestern Willow Flycatcher nesting success, cowbird parasitism, and

habitat characteristics at the Pueblo of Isleta, New Mexico, 2003 report. Natural Heritage New Mexico, Publication No. 03-GTR-255.

Smith, J., and K. Johnson. 2005. Southwestern Willow Flycatcher nesting success, cowbird parasitism, and habitat characteristics at the Pueblo of Isleta, New Mexico. Natural Heritage New Mexico, Museum of Southwestern Biology, Albuquerque, New Mexico. Natural Heritage Publication No. 05-GTR-283.

Smith, J., and K. Johnson. 2007. Water requirements for Southwestern Willow Flycatcher habitat and nesting at the Pueblo of Isleta, 2006-2007 draft report. Natural Heritage New Mexico, Museum of Southwestern Biology, Albuquerque, New Mexico.

Sogge, M. K., T. J. Tibbitts, and J. R. Petterson. 1997. Status and breeding ecology of the Southwestern Willow Flycatcher in the Grand Canyon. *Western Birds* 28: 142-157.

Spencer, J.A., S.J. Sferra, T.E. Corman, J.W. Rourke, and M.W. Sumner. 1996. Arizona Partners In Flight 1995 southwestern willow flycatcher survey. Technical Report 97, March 1996. Arizona Game and Fish Department, Phoenix, Arizona. 69 p.

Staab, C. A., and M. L. Morrison. 1999. Managing riparian vegetation to control cowbirds. Pages 18-22 in M. L.

Stoleson, S. H., and D. M. Finch. 2003. Microhabitat use by breeding Southwestern Willow Flycatchers on the Gila River, New Mexico. *Studies in Avian Biology* 26:91-95.

Smith, T. L. Cook, S. I. Rothstein, S. K. Robinson, and S. G. Sealy, eds. Ecology and management of cowbirds and their hosts. University of Texas Press, Austin, Texas.

U.S. Fish and Wildlife Service. 2002. Southwestern Willow Flycatcher recovery plan. Albuquerque, NM, i-ix + 210 pp., Appendices A-O.

Uyehara, J. C., and M. J. Whitfield. 2000. Association of cowbird parasitism and vegetative cover in territories of Southwestern Willow Flycatchers. Pages 204-209 in J. N. M.

Whitfield, M.J. 1990. Willow flycatcher reproductive response to brown-headed cowbird parasitism. Masters Thesis, California State University, Chico.

Whitfield, M. J., and C. M. Strong. 1995. Bird and Mammal Conservation Program Report, 95-4: A Brown-headed Cowbird control program and monitoring for the Southwestern Willow Flycatcher, South Fork Kern River, California. Sacramento, California Department of Fish and Game.

## APPENDIX I. NRCS CONSERVATION PLANNING PROCESS

The planning process is initiated when a client requests NRCS assistance to address one or more resource concerns, usually on their private property and/or leased lands. Beginning with the initial site visit, the NRCS planner and client will complete the following nine steps in developing and implementing a conservation plan for the property. These iterative steps are a process that blends the objectives of the land owner, NRCS, and environmental laws:

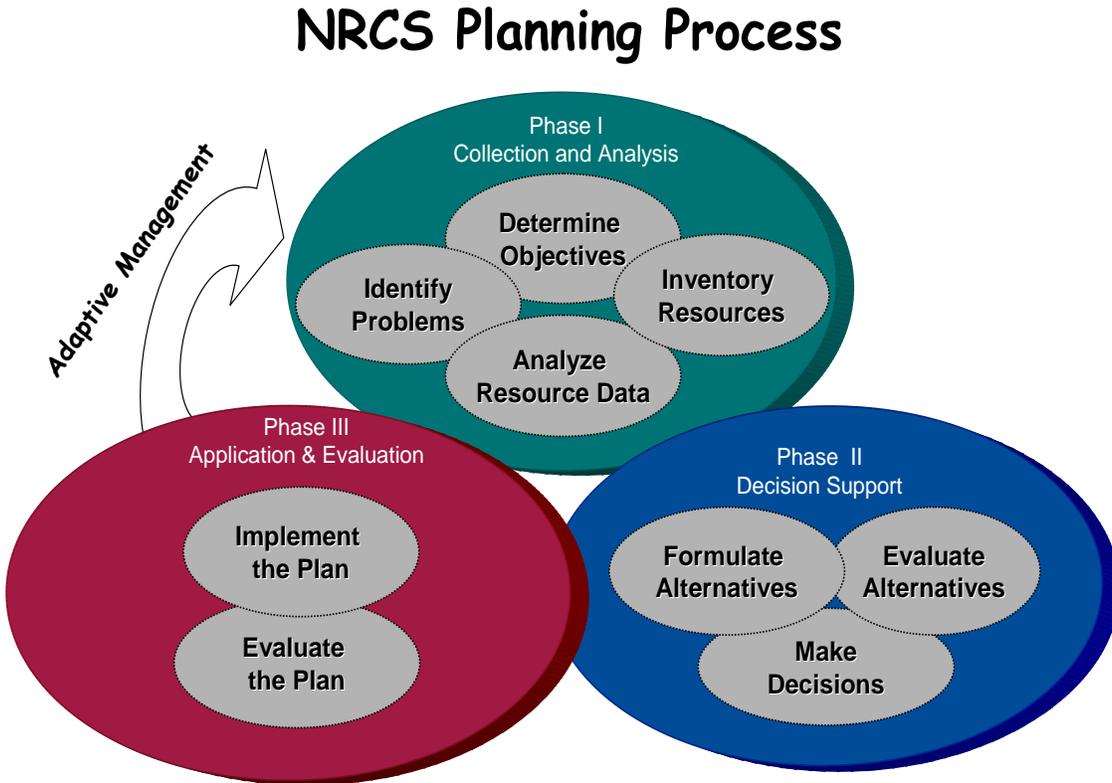


Figure A. NRCS Planning Process

### Phase I - Collection and Analysis

Step 1 - Identify Problems and Opportunities: Identify resource problems, opportunities, and concerns in the planning area.

Step 2 - Determine Objectives: Identify and document the client's objectives.

Step 3 - Inventory Resources: Inventory the natural resources and their condition, and the economic and social considerations related to the resources. This includes on-site and related off-site conditions.

Step 4 - Analyze Resource Data: Analyze the resource information gathered in planning Step 3 to clearly define the natural resource conditions, along with economic and social issues related to the resources. This includes problems and opportunities.

### Phase II - Decision Support

Step 5 - Formulate Alternatives: Formulate alternatives that will achieve the client's objectives, solve natural resource problems, and take advantage of opportunities to improve or protect resource conditions.

Step 6 - Evaluate Alternatives: Evaluate the alternatives to determine their effects in addressing the client's objectives and the natural resource problems and opportunities. Evaluate the projected effects on social, economic, and ecological concerns. Special attention must be given to those ecological values protected by law or Executive Order.

Step 7 - Make Decisions: The client selects the alternative(s) and works with the planner to schedule conservation

system and practice implementation. The planner prepares the necessary documentation.

### **Phase III - Application and Evaluation**

Step 8 - Implement the Plan: The client implements the selected alternative(s). The planner provides encouragement to the client for continued implementation.

Step 9 - Evaluate the Plan: Evaluate the effectiveness of the plan as it is implemented and make adjustments as needed. A financial assistance contract can be modified through this process.

### **PLANNING CRITERIA, CONSERVATION SYSTEMS AND PRACTICES**

In Steps 5 and 6, the planner strives to help the client balance natural resource issues with economic and social needs through the development of a Resource Management System (RMS). An RMS is a combination of Conservation Practices that treat all Resource Concerns to a condition that meets or exceeds Planning Criteria for sustainable land use. Planning Criteria establishes the desired condition for a Resource Concern. An evaluation method (indicator) is chosen to evaluate each Resource Concern, and a target value (Planning Criteria) is established based on the evaluation method. Planning criteria for RMS's (see National Planning Procedures Handbook (NPPH), Subpart D, Section 600.43) are located in the Field Office Technical Guide (FOTG), Section III- <http://efotg.nrcs.usda.gov/treemenuFS.aspx>.

A Conservation System is the implementation of a variety of conservation practices that together address multiple resource concerns. A Conservation Practice is a discrete set of technology used to address a resource problem. A conservation practice may be a structural or vegetative measure, or a management activity used to protect or reduce the degradation of soil, water, air, plant or animal resources. Some practices are stand-alone in that they can be implemented to meet a desired condition and not be associated with other practices, such as Prescribed Grazing (NRCS code 328). If the client has the ability to manage livestock in a manner to meet quality criteria, they can simply implement Prescribed Grazing through managing duration and numbers of livestock grazing on a given area. Other practices, such as Fence (NRCS code 382) are facilitating practices, in that they cannot stand alone to treat resource problems; rather they are installed to facilitate other conservation practices. A fence by itself does not do anything for conservation; when installed to facilitate Prescribe Grazing, it facilitates the manager's ability to manipulate livestock to achieve the goals of Prescribed Grazing.

The NRCS planner works with the client to develop and evaluate alternatives that would allow the user to manage the land to meet or exceed quality criteria for each resource concern. The client chooses the alternative consisting of a suite of Conservation Practices best suited to their needs and ability to implement. The suite of practices chosen becomes their Conservation Plan, a record of the client's decisions for the treatment of resource problems. Therefore, it is the client's plan and not the NRCS' plan. The Conservation Plan identifies the conservation practices and a planned schedule for installing or applying the practices. The client can then apply for financial assistance to implement all or a portion of the conservation plan through NRCS, other agencies or through their own funding initiative.

As part of this conservation planning effort, individual environmental reviews called Environmental Evaluations (EE) are completed which inform the conservation planning effort and assist the Agency's compliance with NRCS regulations that implement NEPA. The EE is a concurrent part of the planning process in which the potential long-term and short-term impacts of an action on people, their physical surroundings, and the natural environment are, evaluated and alternative actions explored. The EEs and conservation plans are developed to assist the client in making decisions and implementing the conservation practices identified in the conservation plan. A Conservation plan is a record of the client's decision to implement of one or more conservation practices which prescribe the actions necessary to address the identified resource concerns in need of treatment.

Structural conservation practices may have some short term (the construction or implementation phase) negative effects on certain listed species if they are in the action area, such as soil disturbance that can be mitigated through incorporation of conservation measures. The long-term (after construction through the life-span of the practice) effects are positive or beneficial for nearly all conservation practices. However, some practices can have longer-term effects to specific species, such as when the construction of a fire break done in a certain way may create a barrier to movement to sand skinks or other reptilian species. In some cases, long term effects may have "no effect" after the short-term effects have been mitigated for or disappeared.

The NRCS works with land users to plan and implement Resource Management Systems that will maintain or improve the condition and health of the soil, water, air, plant and animal resources for long term sustainability of a quality environment. The NRCS helps the land user understand the potential of the land, determine the current health and condition, and identify existing and potential resource problems.

A resource concern is an element of the natural resources that may be sensitive to change by natural forces or human activity. Resource concerns are nationally established soil, water, air, plant and animal resource elements used by NRCS to evaluate the health of the natural resources. The NRCS conducts an inventory of the planning area to determine the current condition of the resource concerns as the basis for developing the conservation plan. The NRCS resource concerns are nationally established indicators that are used to evaluate the health of the natural resources. For this effort, the NRCS identified fifteen resource concerns that affect the quality and quantity of SWFL habitat (**Table 4**). A resource problem is identified when a resource concern does not meet Quality Criteria. The client determines which resource problems they are ready, willing and able to treat using Conservation Practices to reach Quality Criteria.

**Table 4. Resource Concerns in SWFL Habitat**

#	RESOURCE CONCERN	RESOURCE CONCERN DESCRIPTION
1	SOIL EROSION - Sheet, rill, & wind erosion	Detachment and transportation of soil particles caused by rainfall runoff/splash, irrigation runoff or wind that degrades soil quality
2	SOIL EROSION – Concentrated flow erosion	Untreated classic gullies may enlarge progressively by head cutting and/or lateral widening. Ephemeral gullies occur in the same flow area and are obscured by tillage. This includes concentrated flow erosion caused by runoff from rainfall, snowmelt or irrigation water.
3	SOIL EROSION– Excessive bank erosion from streams shorelines or water conveyance channels	Sediment from banks or shorelines threatens to degrade water quality and limit use for intended purposes
4	INSUFFICIENT WATER – Inefficient moisture management	Natural precipitation is not optimally managed to support desired land use goals or ecological processes
5	INSUFFICIENT WATER – Inefficient use of irrigation water	Irrigation water is not stored, delivered, scheduled and/or applied efficiently. Aquifer or surface water withdrawals threaten sustained availability of ground or surface water. Available irrigation water supplies have been reduced due to aquifer depletion, competition, regulation and/or drought.
6	WATER QUALITY DEGRADATION – Excess pathogens and chemicals from manure, bio-solids or compost applications	Pathogens, pharmaceuticals and other chemicals are applied as amendments and transported to receiving waters in quantities that degrade water quality and limit use for intended purposes. This resource concern also includes the off-site transport of leachate and runoff from silage, compost, or other organic materials.
7	WATER QUALITY DEGRADATION – Excessive sediment in surface waters	Off-site transport of sediment from sheet, rill, gully, and wind erosion into surface water that threatens to degrade surface water quality and limit use for intended purposes
8	WATER QUALITY DEGRADATION – Elevated	Surface water temperatures exceed State/Federal standards and/or limit use for intended purposes.

#	RESOURCE CONCERN	RESOURCE CONCERN DESCRIPTION
	water temperature	
9	DEGRADED PLANT CONDITION – Undesirable plant productivity and health	Plant productivity, vigor and/or quality negatively impacts other resources or does not meet yield potential due to improper fertility, management or plants not adapted to site. This could include addressing pollinators and beneficial insects.
10	DEGRADED PLANT CONDITION – Inadequate structure and composition	Plant communities have insufficient composition and structure to achieve ecological functions and management objectives. This includes degradation of wetland habitat, targeted ecosystems, or unique plant communities.
11	DEGRADED PLANT CONDITION – Excessive plant pest pressure	Excessive pest damage to plants including that from undesired plants, diseases, animals, soil borne pathogens, and nematodes. As an example, this concern addresses invasive plant, animal and insect species
12	DEGRADED PLANT CONDITION– Wildfire hazard, excessive biomass accumulation	The kinds and amounts of fuel loadings - plant biomass - create wildfire hazards that pose risks to human safety, structures, plants, animals, and air resources.
13	INADEQUATE HABITAT FOR FISH AND WILDLIFE – Habitat degradation	Quantity, quality or connectivity of food, cover, space, shelter and/or water is inadequate to meet requirements of identified fish, wildlife or invertebrate species.
14	LIVESTOCK PRODUCTION LIMITATION – Inadequate feed and forage	Feed and forage quality or quantity is inadequate for nutritional needs and production goals of the kinds and classes of livestock.
15	LIVESTOCK PRODUCTION LIMITATION – Inadequate livestock water	Quantity, quality and/or distribution of drinking water are insufficient to maintain health or production goals for the kinds and classes of livestock.

### Conservation Practice Standards

The NRCS standard for each conservation practice establishes criteria for applying conservation technology on the land and sets the minimum acceptable level for application of the technology. Each conservation practice has a practice standard that guides the site-specific design. The NRCS issues conservation practice standards in its National Handbook of Conservation Practices (NHCP), periodically revising them and developing new standards. Before revised or new conservation practice standards are added to the NHCP, they are advertised in the Federal Register for review and comment by the general public. All standards currently under Federal Register review are located at <ftp://ftp-c.sc.egov.usda.gov/NHQ/practice-standards/federal-register>.

Each state determines which National conservation practice standards are applicable in their state. States add the technical detail needed to effectively use the standards at the Field Office level, and issue them as state conservation practice standards. State conservation practice standards may be found in Section IV of the FOTG at: <http://efotg.nrcs.usda.gov/treemenuFS.aspx>. At a minimum, each state will review and revise each standard every 5 years.

Conservation Practice Standards include the Name, Code, and Unit of Measure for the practice. They also include a Definition of the practice, list the Purpose(s), describe the Conditions where the practice applies (as well as where the practice may not apply), identify the minimum Quality Criteria for successfully achieving a single purpose or for multiple purposes, discuss special Considerations, which may be important to the successful operation of the practice after it has been applied, provide guidance for the development of Plans and

Specifications used to install the practice, and provide instructions for developing the Operation and Maintenance guidance that will be used after practice installation. Conservation measures required through this programmatic consultation for each standard listed in Appendix 1 will be added to the practice design provided to the client.

### **Potential Resource Effects of Implementing a Conservation Practice**

The potential effects of conservation practices were evaluated in several ways. The NRCS planning process has long been based on the ability of any given conservation practice to effectively address a resource concern. This tool evaluates the ability of a conservation practice to address resource concerns and to meet quality criteria.

The NRCS, in collaboration with the Service, reviewed the Conservation Practices covered in the consultation (Table 1). We then listed the resource effects that can be expected from implementation of any given conservation practice through a conservation system and evaluated the impacts on all the covered species with particular emphasis placed on the SWFL. Since the purpose of a resource management system is to improve natural resource conditions, conservation practices will normally have long term beneficial effects on listed species. Practice standards establish the minimum acceptable level of quality that is required to plan, design, install, operate, and maintain conservation practices.

## APPENDIX II.

### CONSERVATION MEASURES FOR ALL CONSERVATION PRACTICES OCCURRING IN THE 100 YEAR FLOODPLAIN:

#### Planning:

1. Flag or otherwise protect individuals of a listed plant species in construction areas.
2. If removing vegetation or habitat structural materials, a pre-construction survey will be completed to ensure that materials to be removed are not used as primary cover for a listed species. Cover or nest materials will remain with a 250' undisturbed buffer.
3. Conduct a pre-installation, pedestrian survey for wildlife that may be trapped within a temporarily fenced construction area. Trapped wildlife will be allowed to escape prior to construction. Egg masses will be protected from construction or moved by certified person.

#### Timing:

4. Install outside covered species' critical periods (**Table 2**), Referenced in practice standard as Field Office Technical Guide, Section II, Technical note except where otherwise stated (e.g. Prescribed Grazing).
5. Install practices when any ephemeral streambed within the action area is dry; or at times when hydrologic, migration or reproduction conditions ensure that covered species are not present.
6. Minimize upland soil compaction during practice construction by selecting the location and timing of the practice to minimize compaction (i.e. avoid periods when soil is wet, especially high clay soils).

#### Location:

7. Use existing stream crossings for equipment access during practice installation.
8. Use existing roads, limit cross-country travel or initiation of new roads.
9. Locate practice a minimum of 250 feet from any known listed species active nest or burrow as applicable, whether or not bulldozers, trenching machines, or similar equipment is used.
10. Alignments for any planned construction will be routed to avoid specific areas known to be occupied by the covered species and known habitat features of the covered species such as nests.

#### Vegetation:

11. Minimize soil and vegetation disturbance during practice installation; avoid total removal of vegetation to allow regrowth by only removing targeted species and leaving the native herbaceous layer as undisturbed as possible.
12. Plant or seed native species adapted to local conditions on disturbed ground to reduce opportunities of invasive weed establishment.
13. Where clearing of vegetation is determined to be necessary during planned construction or maintenance, the corridor cleared, otherwise prepared, or maintained will not exceed 25 Feet in width.

#### Equipment:

14. Minimize or eliminate stream bank disturbance during practice construction.
15. Clean equipment used in practice implementation (vehicles, farm equipment, and tools) before entering and leaving project site to prevent the spread of non-native plant/animals or disease.
16. Immediately clean grease, oil, or other contaminant spills and remove from the site.

## APPENDIX III.

### Additional Conservation Measures Applied to Selected Conservation Practices (see Appendix IV)

17. Conservation plans using Brush Management will be designed to develop SWFL habitat of improved quality or that provides equivalent habitat and decreases the potential of wild fire due to tamarisk.

18. Tamarisk in a nesting patch shall not be treated if a biologist designated by state biologist determines that implementation of Brush Management will decrease SWFL viability in the patch for the following nesting season.
19. Treated sites may be deferred from grazing for a period of time determined to be necessary to restore SWFL habitat based on pre and post site treatment conditions.
20. This practice is not to be used for land use change.

21. Treating Woody Invasive Species Slash within the 100-year Floodplain:

*Removal.* The recommended method is to haul the slash out of the 100-year floodplain. In some cases, it may be possible to deposit slash into a transportation truck for off-site uses (bio-utilization). Else the slash may be relocated to an adjacent area and then treated using the methods provided in the 384-Woody Residue Treatment practice specification. The removal method requires that slash from state-listed noxious species (i.e. salt cedar, Siberian elm, Russian olive) only be moved when it poses a minimal risk of transporting viable seed or root-producing fragments. Each species has different seed/fragment viability<sup>1</sup>; identify these periods or conditions in the planning phase. In addition, an operation and maintenance (O&M) item will include scouting the re-location site for at least one year to treat any new infestations (using practice 314-Brush Mgmt.).

*Partial Removal/On-site Treatment.* When it is necessary to treat slash within the 100-year floodplain, first remove the large wood; any downed wood that will pose a flood hazard, even if it's planned to be treated at a later date (i.e. pile burn next year). This also reduces the biomass that will remain on-site and will facilitate other treatment methods. The most economical method for removal may be to harvest the firewood sized wood; consider cutting 4-8 foot lengths to pile by an access road. Treat the remaining slash by following the methods identified in the 384-Woody Residue Treatment practice specification. The method chosen must have consideration for reducing wildfire risk, allowing un-restricted understory growth, and protecting sensitive resource areas: streambanks, wetlands, overflow waterways, areas with concentrated flows, or areas of native regeneration.

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<sup>1</sup> Seed and rooting-fragment viability by species.

**Salt cedar** produces seed continually from March through October and are primarily dispersed by air. Seeds can germinate immediately; however, the seed is only viable for only a few weeks. Both seed and rooting fragments only require a short duration (as little as 24 hrs) of soil moisture to establish. *Slash removal implication:* avoid physically disturbing live salt cedar from March to mid-October, and ensure live vegetative fragments (stem or root) have limited contact with soil. Also avoid disturbing the soil surface; root crowns and shallow roots will sprout new stems rapidly when disturbed.

**Russian olive** seeds mature late summer through fall and remain on the tree until disturbed. Seeds require stratification (winter dormancy) until prolonged cool, moist conditions in (fall or spring) allow germination. They remain viable in the soil for up to 3 years until germination conditions are available. If soil is disturbed, use site specific reclamation using SWFL WHEG, Stream Visual Assessment Protocol-2 and/or riparian Ecological Site Description with consideration of SWFL habitat needs.

**Siberian elm** seeds mature March through April, dispersed by air. Seeds can germinate immediately or go dormant until the following spring, and they have a moderate germination rate and wide range of tolerances. Top-kill to trees (especially young trees) will result in re-growth from the root crown or stump. *Slash removal implication:* avoid physically disturbing seed producing elm from March to May.

22. If soil is disturbed, use site specific reclamation using SWFL WHEG, Stream Visual Assessment Protocol-2 and/or riparian Ecological Site Description with consideration of SWFL habitat needs.
23. Use Win\_PST to determine pesticide mitigation requirements.
24. Herbicide applications will follow the applicable conservation measures recommended in the FWS document "Recommended Protection Measures For Pesticide Applications in Region 2 of the U.S. Fish and Wildlife Service" available on the Arizona Ecological Services webpage.
25. Where clearing of vegetation is determined to be necessary during planned construction or maintenance, the corridor cleared, otherwise prepared, or maintained will not exceed 5 Feet in width in SWFL occupied habitat. Outside of SWFL occupied habitat, the path or corridor where the practice is implement may be up to 25 feet wide.
26. Provide wildlife safe ingress/egress in trenches (ladder or dirt plugs to allow escape) during construction.

27. Implementation of grazing management plans, to the extent practicable, will meet habitat conditions for riparian habitat as recommended by WHEG
28. Frequency – Grazing will occur at a rate conducive to creating or maintaining desired habitat structure for nesting SWFL.
29. Duration – Grazing periods will be designed to establish or maintain desired habitat conditions as recommended by WHEG
30. Timing – Grazing will be scheduled to avoid potential disturbance to SWFL and occupied SWFL habitat during breeding season – from April 15 to Sept 15, except when following prescribed grazing protocol during growing season as stated
31. Intensity – the amount of forage removed (or left) during any particular grazing cycle will be in keeping with the life cycle requirements of the SWFL.
32. The timing, duration, intensity and distribution of grazing will be managed to benefit listed species by maintaining or improving the plant communities in each pasture based on the ecological sites being managed. The desired kinds and amounts of vegetation will be based on the ecological sites potential and current plant communities. Monitoring will be conducted to determine if plant community goals are being achieved and may include plant species attributes such as: composition, production, vegetation and ground cover, seedling establishment, utilization, tree density or other attributes based on the vegetation goals established in the prescribed grazing plan. The prescribed grazing plan will ensure adequate post-grazing woody and herbaceous vegetation attributes and bank vegetation cover to minimize erosion and sediment losses from runoff that would cause degradation of the riparian area. Stocking rates will be based on an appropriate forage animal balance allowing for a maximum of 30% utilization on key forage species and ensure adequate rest and recovery of key SWFL habitat plant species and minimize nest disturbance. Stocking rates will also take into account utilization of vegetation by wildlife ungulates (elk, deer, etc.) and other wildlife species. The forage animal balance for pastures containing riparian areas will only take into account available forage for any uplands within the pasture if livestock can be successfully drawn out of the riparian area, or otherwise limit riparian vegetation use, through structural practices or management as part of the conservation plan (i.e. water sources located far enough from the riparian area to limit livestock use, etc.) or if livestock access to the riparian area within the pasture is limited by topography or distance. This may also take into account limited use of the riparian area due to the specific season of use of the pasture by livestock (i.e. the spring season may have cool weather with adequate cool season grasses and other desirable forage species to keep a significant portion of livestock use in the uplands). Example:

Winter (Nov. 1 –Feb 28)	Spring (Mar 1 – May 14)	Summer (May 15 – Aug 31)	Fall (Sept 1 – Oct 31)
X		X	
	X		X
X			

Winter grazing will occur no more than 2 out of 3 years. Grazing during the spring, summer or fall will occur no more than once in 3 years. Grazing will not occur back to back seasons.

33. Motorized vehicles will not be used to herd livestock within listed species habitat.
34. Provide off-site water supply for livestock and wildlife to maintain or improve streamside vegetation.
35. Time practice implementation to reduce spread of non-native plants by implementing the practice during the dormant season (e.g. avoid ground disturbance in riparian areas in the summer to reduce salt cedar spread).
36. Leave adequate vegetation buffer and/or install best management practices along down slope edge of project area to prevent disturbed ground sediment runoff from entering aquatic habitats. These can include straw baffles, silt fence, hay bales, etc.
37. Design stream crossings to prevent water flow blockage during low flow periods or debris blockage during high flow periods.

38. Screen inlets and outlets to prevent non-native fish and amphibians from spreading into other habitats.
39. Re-establish native riparian vegetation on disturbed sites to maintain or improve bank stability.
40. Plan for this practice shall be designed to develop SWFL habitat of improved quality or that provides equivalent habitat and decreases potential of wild fire due to tamarisk.
41. Defer use of this practice from April 15 to Sept 15

## APPENDIX IV CONSERVATION PRACTICES

**Note 1: Additional Conservation Measures to be added to address the specific effect of the Conservation Practice on the species or taxa. They are in addition to the 16 CMs listed in Appendix II; those 16 apply to ALL conservation practices implemented under WLFW-SWFL. IF no Additional Conservation Measures are listed for a potential adverse effect (AE), then only the Appendix II CMs are needed.**

**Note 2: NRCS has indicated in Potential Adverse Effects for each Taxa our call on level of Take. If NT (No Take), then we determine the effects of the practice to be May affect, not likely to adversely affect when all indicated conservation Measures are present. If T, then we determine there is a possibility of Take and therefore the determination is "May Adversely Affect" even with conservation measures in place. Take level is not expected to exceed an occurrence more than 10% of applications.**

### CORE PRACTICES

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#### CONSERVATION PRACTICE: EARLY SUCCESSIONAL HABITAT DEVELOPMENT/MANAGEMENT (647)

**Definition** – Manage plant succession to develop and maintain early successional habitat to benefit desired wildlife and/or natural communities.

**Purpose** – To provide habitat for species requiring early successional habitat for all or part of their life cycle.

**Resource Concern** –

RC 13: Inadequate Habitat for Fish and Wildlife

**Application** – Vegetation manipulation to maximize plant and animal diversity can be accomplished by disturbance practices including a combination of: selected herbicide techniques, brush management, prescribed burning, light disking, mowing, or prescribed grazing.

**Potential Beneficial Effect(s) to SWFL** – Remove decadent growth and other vegetation that impedes regrowth of healthy native vegetation.

**Potential Adverse Effect(s) to SWFL – T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat
- AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Fish-**

- AE1: Physical Disturbance including noise
- AE3: Increased potential of introduction of invasive plants
- AE6: Increased potential of accidental mortality of individuals
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat

**Potential Adverse Effect(s) to – Mammals- T**

- AE1: Physical Disturbance including noise
- AE3: Increased potential of introduction of invasive plants
- AE6: Increased potential of accidental mortality of individuals
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component

**Potential Adverse Effect(s) to – Plants- T**

- AE4: Removal of desired riparian vegetation and understory component
- AE3: Increased potential of introduction of invasive plants
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)

**Potential Adverse Effect(s) to – Birds (other than SWFL) - T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)

- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat
- AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Invertebrates**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Amphibians T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE8: Increased potential for predation
- AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Reptiles T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE8: Increased potential for predation

**Additional Conservation Measures – (If grazed)**

19. Treated sites may be deferred from grazing for a period of time determined to be necessary to restore SWFL habitat based on pre and post site treatment conditions.
27. Implementation of grazing management plans, to the extent practicable, will meet habitat conditions for riparian habitat as recommended by WHEG
28. Frequency – Grazing will occur at a rate conducive to creating or maintaining desired habitat structure for nesting SWFL.
29. Duration – Grazing periods will be designed to establish or maintain desired habitat conditions as recommended by WHEG
30. Timing – Grazing will be scheduled to avoid potential disturbance to SWFL and occupied SWFL habitat during breeding season – from April 15 to Sept 15, except when following prescribed grazing protocol during growing season as stated
31. Intensity – the amount of forage removed (or left) during any particular grazing cycle will be in keeping with the life cycle requirements of the SWFL.
32. The timing, duration, intensity and distribution of grazing will be managed to benefit listed species by maintaining or improving the plant communities in each pasture based on the ecological sites being managed. The desired kinds and amounts of vegetation will be based on the ecological sites potential and current plant communities. Monitoring will be conducted to determine if plant community goals are being achieved and may include plant species attributes such as: composition, production, vegetation and ground cover, seedling establishment, utilization, tree density or other attributes based on the vegetation goals established in the prescribed grazing plan. The prescribed grazing plan will ensure adequate post-grazing woody and herbaceous vegetation attributes and bank vegetation cover to minimize erosion and sediment losses from runoff that would cause degradation of the riparian area. Stocking rates will be based on an appropriate forage animal balance allowing for a maximum of 30% utilization on key forage species and ensure adequate rest and recovery of key SWFL habitat plant species and minimize nest disturbance. Stocking rates will also take into account utilization of vegetation by wildlife ungulates (elk, deer, etc.) and other wildlife species. The forage animal balance for pastures containing riparian areas will only take into account available forage for any uplands within the pasture if livestock can be successfully drawn out of the riparian area, or otherwise limit riparian vegetation use, through structural

practices or management as part of the conservation plan (i.e. water sources located far enough from the riparian area to limit livestock use, etc.) or if livestock access to the riparian area within the pasture is limited by topography or distance. This may also take into account limited use of the riparian area due to the specific season of use of the pasture by livestock (i.e. the spring season may have cool weather with adequate cool season grasses and other desirable forage species to keep a significant portion of livestock use in the uplands). Example:

<u>Winter (Nov. 1 –Feb 28)</u>	<u>Spring (Mar 1 – May 14)</u>	<u>Summer (May 15 – Aug 31)</u>	<u>Fall (Sept 1 – Oct 31)</u>
X		X	
	X		X
X			

Winter grazing will occur no more than 2 out of 3 years. Grazing during the spring summer or fall will occur no more than once in 3 years.

33. Motorized vehicles will not be used to herd livestock within listed species habitat.

34. Provide off-site water supply for livestock and wildlife to maintain or improve streamside vegetation.

**CONSERVATION PRACTICE: RESTORATION & MANAGEMENT OF RARE & DECLINING HABITATS (643)**

**Definition** – Restoring, conserving, and managing unique or diminishing native terrestrial and aquatic ecosystems.

**Purpose** – To return aquatic or terrestrial ecosystems to their original or usable and functioning condition and to improve biodiversity by providing and maintaining habitat for fish and wildlife species associated with the ecosystem.

**Resource Concern** –

- RC 10: Degraded Plant Condition – Inadequate structure and composition
- RC 13: Inadequate Habitat for Fish and Wildlife

**Application** – This practice will be a core practice in which a system of supporting practices will be applied to restore and manage the covered species with particular emphasis on the Southwest Willow Flycatcher. This Practice may be utilized in those areas or states where Southwest Willow Flycatcher has been identified to occur in an identified rare or declining habitat(s).

**Potential Beneficial Effect(s) to SWFL** – This is one of several practices that can be used for the restoration of riparian habitat providing the basic needs of food, cover, and water for the SWFL.

**Potential Adverse Effect(s) to SWFL – T**

- AE1: Physical Disturbance including noise
- AE4: Removal of desired riparian vegetation and understory component

**Potential Adverse Effect(s) to – Fish- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Mammals- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Plants- T**

- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

- AE1: Physical Disturbance including noise
- AE4: Removal of desired riparian vegetation and understory component

**Potential Adverse Effect(s) to – Invertebrates- T**

AE1: Physical Disturbance including noise  
AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Amphibians- T**

AE1: Physical Disturbance including noise  
AE2: Temporary soil and vegetation disturbance (indirect & temporary)  
AE4: Removal of desired riparian vegetation and understory component  
AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Reptiles- T**

AE1: Physical Disturbance including noise  
AE2: Temporary soil and vegetation disturbance (indirect & temporary)  
AE4: Removal of desired riparian vegetation and understory component  
AE6: Increased potential of accidental mortality of individuals

**Additional Conservation Measures – (If Grazed)**

19. Treated sites may be deferred from grazing for a period of time determined to be necessary to restore SWFL habitat based on pre and post site treatment conditions.
27. Implementation of grazing management plans, to the extent practicable, will meet habitat conditions for riparian habitat as recommended by WHEG
28. Frequency – Grazing will occur at a rate conducive to creating or maintaining desired habitat structure for nesting SWFL.
29. Duration – Grazing periods will be designed to establish or maintain desired habitat conditions as recommended by WHEG
30. Timing – Grazing will be scheduled to avoid potential disturbance to SWFL and occupied SWFL habitat during breeding season – from April 15 to Sept 15, except when following prescribed grazing protocol during growing season as stated
31. Intensity – the amount of forage removed (or left) during any particular grazing cycle will be in keeping with the life cycle requirements of the SWFL.
32. See description in Appendix III above.
33. Motorized vehicles will not be used to herd livestock within listed species habitat.
34. Provide off-site water supply for livestock and wildlife to maintain or improve streamside vegetation.

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**CONSERVATION PRACTICE: STREAM HABITAT IMPROVEMENT & MANAGEMENT (395)**

**Definition** – Maintain, improve or restore physical, chemical and biological functions of a stream, and its associated riparian zone, necessary for meeting the life history requirements of desired aquatic species.

**Purpose** –

- Provide suitable habitat for desired fish and other aquatic species.
- Provide stream channel and associated riparian conditions that maintain stream corridor ecological processes and hydrological connections of diverse stream habitat types important to aquatic species.

**Resource Concern** –

RC 13: Inadequate Habitat for Fish and Wildlife

**Application** – This practice is used to supply need habitat elements identified in the stream visual assessment or other habitat model. Typical application might call for the establishment of trees to reduce thermal pollution or place large boulders to create scour pools.

**Potential Beneficial Effect(s) to SWFL** – Improving in stream habitat will provide the proper diversity of substrates for the production of benthic invertebrates that provide critical food resources for aquatic and terrestrial species, including SWFL, during hatches.

**Potential Adverse Effect(s) to SWFL – T**

AE1: Physical Disturbance including noise

**Potential Adverse Effect(s) to – Fish- T**

- AE1: Physical Disturbance including noise
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Mammals- T**

- AE1: Physical Disturbance including noise
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Plants- T**

- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

- AE1: Physical Disturbance including noise

**Potential Adverse Effect(s) to – Invertebrates- T**

- AE1: Physical Disturbance including noise
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Amphibians- T**

- AE1: Physical Disturbance including noise
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Reptiles- T**

- AE1: Physical Disturbance including noise
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Additional Conservation Measures – (If Grazed)**

19. Treated sites may be deferred from grazing for a period of time determined to be necessary to restore SWFL habitat based on pre and post site treatment conditions.
27. Implementation of grazing management plans, to the extent practicable, will meet habitat conditions for riparian habitat as recommended by WHEG
28. Frequency – Grazing will occur at a rate conducive to creating or maintaining desired habitat structure for nesting SWFL.
29. Duration – Grazing periods will be designed to establish or maintain desired habitat conditions as recommended by WHEG
30. Timing – Grazing will be scheduled to avoid potential disturbance to SWFL and occupied SWFL habitat during breeding season – from April 15 to Sept 15, except when following prescribed grazing protocol during growing season as stated
31. Intensity – the amount of forage removed (or left) during any particular grazing cycle will be in keeping with the life cycle requirements of the SWFL.
32. See description in Appendix III.
33. Motorized vehicles will not be used to herd livestock within listed species habitat.
34. Provide off-site water supply for livestock and wildlife to maintain or improve streamside vegetation.

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**CONSERVATION PRACTICE: UPLAND WILDLIFE HABITAT MANAGEMENT (645)**

**Definition** – Provide and manage upland habitats and connectivity within the landscape for wildlife.

**Purpose** – Treating upland wildlife habitat concerns identified during the conservation planning process that enable movement, or provide shelter, cover, and food in proper amounts, locations and times to sustain wild animals that inhabit uplands during a portion of their life cycle.

**Resource Concern** –

- RC 13: Inadequate Habitat for Fish and Wildlife

**Application** – This practice is used to supply needed habitat elements identified in the Upland WHEG or other habitat model. Typical application might call for the establishment of plants to provide food and/or cover, manipulation of plants to improve quality or manage timing of producer activities to enable life stage events of wildlife.

**Potential Beneficial Effect(s) to SWFL** – Upland habitat is managed for the benefit of species identified. Needs are assessed using an appropriate Wildlife Habitat Evaluation Guide (WHEG), in this case the SWFL guide, and the limiting factors are addressed through appropriate conservation practices.

**Potential Adverse Effect(s) to SWFL – NT**

AE1: Physical Disturbance including noise

AE3: Increased potential of introduction of invasive plants

**Potential Adverse Effect(s) to – Fish- None -NT**

**Potential Adverse Effect(s) to – Mammals- None- NT**

**Potential Adverse Effect(s) to – Plants- None- NT**

**Potential Adverse Effect(s) to – Birds (other than SWFL)- NT**

AE1: Physical Disturbance including noise

AE3: Increased potential of introduction of invasive plants

**Potential Adverse Effect(s) to – Invertebrates- None- NT**

**Potential Adverse Effect(s) to – Amphibians- None- NT**

**Potential Adverse Effect(s) to – Reptiles- None- NT**

**Additional Conservation Measures – (If grazed)**

19. Treated sites may be deferred from grazing for a period of time determined to be necessary to restore SWFL habitat based on pre and post site treatment conditions.
27. Implementation of grazing management plans, to the extent practicable, will meet habitat conditions for riparian habitat as recommended by WHEG
28. Frequency – Grazing will occur at a rate conducive to creating or maintaining desired habitat structure for nesting SWFL.
29. Duration – Grazing periods will be designed to establish or maintain desired habitat conditions as recommended by WHEG
30. Timing – Grazing will be scheduled to avoid potential disturbance to SWFL and occupied SWFL habitat during breeding season – from April 15 to Sept 15, except when following prescribed grazing protocol during growing season as stated
31. Intensity – the amount of forage removed (or left) during any particular grazing cycle will be in keeping with the life cycle requirements of the SWFL.
32. See description in Appendix III.
33. Motorized vehicles will not be used to herd livestock within listed species habitat.
34. Provide off-site water supply for livestock and wildlife to maintain or improve streamside vegetation.

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**CONSERVATION PRACTICE: WETLAND WILDLIFE HABITAT MANAGEMENT (644)**

**Definition** – Retaining, developing or managing wetland habitat for wetland wildlife.

**Purpose** – To maintain, develop, or improve wetland habitat for waterfowl, shorebirds, fur-bearers, or other wetland dependent or associated flora and fauna.

**Resource Concern** –

RC 04: Insufficient Water

RC 13: Inadequate Habitat for Fish and Wildlife

**Application** – This practice is used to supply needed habitat elements identified in the Wetland WHEG or other habitat model. Typical application might call for the establishment of plants to provide food and/or cover, manipulation of plants to improve quality or manage timing of producer activities to enable life stage events of

wildlife.

**Potential Beneficial Effect(s) to SWFL –** Wetland habitat is managed for the benefit of species identified. Needs are assessed using an appropriate Wildlife Habitat Evaluation Guide (WHEG), in this case the SWFL guide, and the limiting factors are addressed through appropriate conservation practices. Potential Adverse Effect(s) to SWFL: should be none if correctly applied

**Potential Adverse Effect(s) to SWFL – T**

- AE1: Physical Disturbance including noise
- AE3: Increased potential of introduction of invasive plants

**Potential Adverse Effect(s) to – Fish- T**

- AE1: Physical Disturbance including noise

**Potential Adverse Effect(s) to – Mammals- T**

- AE1: Physical Disturbance including noise
- AE3: Increased potential of introduction of invasive plants

**Potential Adverse Effect(s) to – Plants- T**

- AE1: Physical Disturbance including noise
- AE3: Increased potential of introduction of invasive plants

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

- AE1: Physical Disturbance including noise
- AE3: Increased potential of introduction of invasive plants

**Potential Adverse Effect(s) to – Invertebrates- T**

- AE1: Physical Disturbance including noise

**Potential Adverse Effect(s) to – Amphibians- T**

- AE1: Physical Disturbance including noise

**Potential Adverse Effect(s) to – Reptiles- T**

- AE1: Physical Disturbance including noise

**Additional Conservation Measures – (if Grazed)**

19. Treated sites may be deferred from grazing for a period of time determined to be necessary to restore SWFL habitat based on pre and post site treatment conditions.
27. Implementation of grazing management plans, to the extent practicable, will meet habitat conditions for riparian habitat as recommended by WHEG
28. Frequency – Grazing will occur at a rate conducive to creating or maintaining desired habitat structure for nesting SWFL.
29. Duration – Grazing periods will be designed to establish or maintain desired habitat conditions as recommended by WHEG
30. Timing – Grazing will be scheduled to avoid potential disturbance to SWFL and occupied SWFL habitat during breeding season – from April 15 to Sept 15, except when following prescribed grazing protocol during growing season as stated
31. Intensity – the amount of forage removed (or left) during any particular grazing cycle will be in keeping with the life cycle requirements of the SWFL.
32. See description in Appendix III.
33. Motorized vehicles will not be used to herd livestock within listed species habitat.
34. Provide off-site water supply for livestock and wildlife to maintain or improve streamside vegetation.

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## SUPPORTING PRACTICES

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### CONSERVATION PRACTICE: ACCESS CONTROL (472)

**Definition –** The temporary or permanent exclusion of animals, people, vehicles, and/or equipment from an area.

**Purpose** — Achieve and maintain desired resource conditions by monitoring and managing the intensity of use by animals, people, vehicles, and/or equipment in coordination with the application schedule of practices, measures and activities specified in the conservation plan.

**Resource Concern** –

- RC 03: Soil Erosion – Excessive Bank Erosion
- RC 07: Water Quality Degradation – Excessive sediment in surface waters
- RC 10: Degraded Plant Condition – Inadequate structure and composition
- RC 13: Inadequate Habitat for Fish and Wildlife

**Application** – Typical Application: A four wire fence is installed using three barbed wires and a smooth bottom wire. If ORVs are to be excluded a ½ inch cable is used to replace one of the middle wires. Five acres of access control is accomplished with the installation of approximately 2,500 feet of fence. Access is controlled for the duration needed to achieve resource goals such as 3 – 5 years for the establishment of woody vegetation.

**Potential Beneficial Effect to SWFL** – Controlled access of people (especially vehicles) and livestock will reduce ground disturbance, allow plants to recover for food, cover, and reduce human presence disturbance to species.

**Potential Adverse Effect(s) to SWFL – T**

- AE1: Physical Disturbance including noise
- AE3: Increased potential of introduction of invasive plants
- AE5: Increased fire hazard

**Potential Adverse Effect(s) to – Fish- None- NT**

**Potential Adverse Effect(s) to – Mammals- T**

- AE1: Physical Disturbance including noise
- AE3: Increased potential of introduction of invasive plants
- AE5: Increased fire hazard
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Plants- T**

- AE5: Increased fire hazard
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

- AE1: Physical Disturbance including noise
- AE3: Increased potential of introduction of invasive plants
- AE5: Increased fire hazard

**Potential Adverse Effect(s) to – Invertebrates- None- NT**

**Potential Adverse Effect(s) to – Amphibians- T**

- AE1: Physical Disturbance including noise
- AE3: Increased potential of introduction of invasive plants
- AE5: Increased fire hazard
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Reptiles- T**

- AE1: Physical Disturbance including noise
- AE3: Increased potential of introduction of invasive plants
- AE5: Increased fire hazard
- AE6: Increased potential of accidental mortality of individuals

**Additional Conservation Measures – NONE**

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**CONSERVATION PRACTICE: ANIMAL TRAILS AND WALKWAYS (575)**

**Definition** – Established lanes or travel ways that facilitate animal movement.

**Purpose** –

- Provide or improve access to forage, water, working/handling facilities, and/or shelter,
- Improve grazing efficiency and distribution, and/or
- Protect ecologically sensitive, erosive and/or potentially erosive sites.

**Resource Concern** –

RC 02: Soil Erosion – Concentrated flow erosion.  
RC 03: Soil Erosion – Excessive Bank Erosion  
RC 07: Water Quality Degradation – Excessive sediment in surface waters

**Application** – Installation of a stable path to move livestock through easily damaged areas such as down steep embankments.

**Potential Beneficial Effect(s) to SWFL** – Preserve the integrity of the stream channel and reduces sedimentation preserving macro-invertebrate production for SWFL forage resources.

**Potential Adverse Effect(s) to SWFL – T**

AE1: Physical Disturbance including noise  
AE2: Temporary soil and vegetation disturbance (indirect & temporary)  
AE3: Increased potential of introduction of invasive plants

**Potential Adverse Effect(s) to – Fish- T**

AE1: Physical Disturbance including noise  
AE2: Temporary soil and vegetation disturbance (indirect & temporary)  
AE3: Increased potential of introduction of invasive plants

**Potential Adverse Effect(s) to – Mammals- T**

AE1: Physical Disturbance including noise  
AE2: Temporary soil and vegetation disturbance (indirect & temporary)  
AE3: Increased potential of introduction of invasive plants  
AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Plants- T**

AE1: Physical Disturbance including noise  
AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

AE1: Physical Disturbance including noise  
AE2: Temporary soil and vegetation disturbance (indirect & temporary)  
AE3: Increased potential of introduction of invasive plants

**Potential Adverse Effect(s) to – Invertebrates- T**

AE1: Physical Disturbance including noise  
AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Amphibians- T**

AE1: Physical Disturbance including noise  
AE2: Temporary soil and vegetation disturbance (indirect & temporary)  
AE3: Increased potential of introduction of invasive plants  
AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Reptiles- T**

AE1: Physical Disturbance including noise  
AE2: Temporary soil and vegetation disturbance (indirect & temporary)  
AE3: Increased potential of introduction of invasive plants  
AE6: Increased potential of accidental mortality of individuals

**Additional Conservation Measures – NONE**

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**CONSERVATION PRACTICE: BRUSH MANAGEMENT (314)**

**Definition** – To provide habitat for species requiring early successional habitat for all or part of their life cycle.

**Purpose** –

- Create the desired plant community consistent with the ecological site.
- Restore or release desired vegetative cover to protect soils, control erosion, reduce sediment, improve water quality or enhance stream flow.
- Maintain, modify, or enhance fish and wildlife habitat.
- Improve forage accessibility, quality and quantity for livestock and wildlife.
- Manage fuel loads to achieve desired conditions.

**Resource Concern –**

- RC 10: Degraded Plant Condition – Inadequate structure and composition
- RC 13: Inadequate Habitat for Fish and Wildlife

**Application –** Typical installation involves the removal of individual invasive shrubs such as salt cedar with a chain saw. The stump is then painted with an appropriate herbicide to prevent sprouting. Treatment area is from one to five acres with 20 – 40 trees per acre removed.

**Potential Beneficial Effect(s) to SWFL –** Restore native plant community and diversity including diversity of associated invertebrates.

**Potential Adverse Effect(s) to SWFL – T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE6: Increased potential of accidental mortality of individuals
- AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Fish- T**

- AE1: Physical Disturbance including noise
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Mammals- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Plants- T**

- AE1: Physical Disturbance including noise
- AE3: Increased potential of introduction of invasive plants
- AE5: Increased fire hazard
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE6: Increased potential of accidental mortality of individuals
- AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Invertebrates- T**

- AE1: Physical Disturbance including noise
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Amphibians- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE6: Increased potential of accidental mortality of individuals
- AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Reptiles- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)

- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE6: Increased potential of accidental mortality of individuals

**Additional Conservation Measures –**

**Planning:**

17. Conservation plans using Brush Management will be designed to develop SWFL habitat of improved quality or that provides equivalent habitat and decreases the potential of wild fire due to tamarisk.
18. Tamarisk in a nesting patch shall not be treated if a biologist designated by state biologist determines that implementation of Brush Management will decrease SWFL viability in the patch for the following nesting season.
19. Treated sites may be deferred from grazing for a period of time determined to be necessary to restore SWFL habitat based on pre and post site treatment conditions.
20. This practice is not to be used for land use change.

**Location:**

21. Treating Woody Invasive Species Slash within the 100-year Floodplain: See description in Appendix III.

**Vegetation:**

22. If soil is disturbed, use site specific reclamation using SWFL WHEG, Stream Visual Assessment Protocol-2 and/or riparian Ecological Site Description with consideration of SWFL habitat needs.

**CONSERVATION PRACTICE: CONSERVATION COVER (327)**

**Definition –** Establishing and maintaining permanent vegetation cover.

**Purpose –**

- Reduce soil erosion and sedimentation.
- Improve water quality.
- Improve air quality
- Enhance wildlife habitat and pollinator habitat.
- Improve soil quality
- Manage plant pests

**Resource Concern –**

- RC 01: Soil Erosion – Sheet, rill, and wind erosion
- RC 07: Water Quality Degradation – Excessive sediment in surface waters
- RC 08: Water Quality – Elevated water temperature
- RC 14: Livestock Production Limitation – Inadequate feed and forage

**Application –**Typically the planting of grasses and legumes with the primary purpose of reducing erosion and protecting water quality. Can be drill or broadcast seeded in rough terrain

**Potential Beneficial Effect(s) to SWFL –** Improved water quality will improve macroinvertebrate production. Provide an alternative source of livestock forage that could reduce grazing pressure in flycatcher habitat.

**Potential Adverse Effect(s) to SWFL – NT**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)

**Potential Adverse Effect(s) to – Fish- None- NT**

**Potential Adverse Effect(s) to – Mammals- None- NT**

**Potential Adverse Effect(s) to – Plants- None- NT**

**Potential Adverse Effect(s) to – Birds (other than SWFL)- NT**

- AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

**Potential Adverse Effect(s) to – Invertebrates- None- NT**

**Potential Adverse Effect(s) to – Amphibians- None - NT**

**Potential Adverse Effect(s) to – Reptiles- None- NT**

**Additional Conservation Measures – NONE**

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## **CONSERVATION PRACTICE: CRITICAL AREA PLANTING (342)**

**Definition** – Establishing permanent vegetation on sites that have, or are expected to have, high erosion rates, and on sites that have physical, chemical or biological conditions that prevent the establishment of vegetation with normal practices.

**Purpose** –

- Stabilize stream and channel banks, and shorelines.
- Stabilize areas with existing or expected high rates of soil erosion by wind or water.
- Rehabilitate and vegetate degraded sites that cannot be stabilized using normal establishment techniques.

**Resource Concern** –

- RC 01: Soil Erosion- Sheet, Rill and Wind
- RC 02: Soil Erosion – Concentrated flow erosion
- RC 03: Soil Erosion – Excessive Bank Erosion
- RC 06: Water Quality Degradation- Excess pathogens and chemicals
- RC 07: Water Quality Degradation – Excessive sediment in surface waters
- RC 13: Inadequate Habitat for Fish and Wildlife
- RC 14: Livestock Production Limitation: Inadequate Feed and Forage

**Application** – Typically the planting of grasses and legumes with the primary purpose of reducing erosion and protecting water quality. Can be drill or broadcast seeded in rough terrain.

**Potential Beneficial Effect(s) to SWFL** – Improved water quality will improve macroinvertebrate production. Provide an alternative source of livestock forage that could reduce grazing pressure in flycatcher habitat.

**Potential Adverse Effect(s) to SWFL – T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE7: Increased potential of susceptibility to parasitism e.g. cowbirds
- AE8: Increased potential for predation
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat

**Potential Adverse Effect(s) to – Fish- T**

- AE1: Physical Disturbance including noise
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Mammals- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Plants- T**

- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE8: Increased potential for predation
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat

**Potential Adverse Effect(s) to – Invertebrates- T**

- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Amphibians- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Reptiles- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals

**Additional Conservation Measures – (If Grazed)**

19. Treated sites may be deferred from grazing for a period of time determined to be necessary to restore SWFL habitat based on pre and post site treatment conditions.
27. Implementation of grazing management plans, to the extent practicable, will meet habitat conditions for riparian habitat as recommended by WHEG
28. Frequency – Grazing will occur at a rate conducive to creating or maintaining desired habitat structure for nesting SWFL.
29. Duration – Grazing periods will be designed to establish or maintain desired habitat conditions as recommended by WHEG
30. Timing – Grazing will be scheduled to avoid potential disturbance to SWFL and occupied SWFL habitat during breeding season – from April 15 to Sept 15, except when following prescribed grazing protocol during growing season as stated
31. Intensity – the amount of forage removed (or left) during any particular grazing cycle will be in keeping with the life cycle requirements of the SWFL.
32. See description in Appendix III.
33. Motorized vehicles will not be used to herd livestock within listed species habitat.
34. Provide off-site water supply for livestock and wildlife to maintain or improve streamside vegetation.

**CONSERVATION PRACTICE: FENCE (382)**

**Definition** – A constructed barrier to animals or people

**Purpose** – This practice facilitates the accomplishment of conservation objectives by providing a means to control movement of animals and people, including vehicles.

**Resource Concern** –

- RC 03: Soil Erosion – Excessive Bank Erosion
- RC 06: Water Quality Degradation – excess pathogens and chemicals from manure
- RC 10: Degraded Plant Condition – Inadequate structure and composition
- RC 13: Inadequate Habitat for Fish and Wildlife

**Application** – Typically installed parallel to the riparian area on the terrace for the control of livestock. In some instances fences are constructed across the riparian area to break it into multiple pastures to facilitate prescribed grazing.

**Potential Beneficial Effect(s) to SWFL** – In conjunction with use exclusion or prescribed grazing this practice will improve nesting and foraging habitat. Exclusion or proper timing of grazing will reduce bank erosion and enhance the sustainability of the habitat.

**Potential Adverse Effect(s) to SWFL – T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE7: Increased potential of susceptibility to parasitism e.g. cowbirds
- AE8: Increased potential for predation
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat

**Potential Adverse Effect(s) to – Fish- T**

- AE1: Physical Disturbance including noise

**Potential Adverse Effect(s) to – Mammals- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat

**Potential Adverse Effect(s) to – Plants- T**

- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE8: Increased potential for predation
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat

**Potential Adverse Effect(s) to – Invertebrates- T**

- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Amphibians- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE8: Increased potential for predation
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat
- AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Reptiles- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE8: Increased potential for predation
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat

**Additional Conservation Measures –  
Vegetation:**

25. Where clearing of vegetation is determined to be necessary during planned construction or maintenance, the corridor cleared, otherwise prepared, or maintained will not exceed 5 Feet in width in SWFL occupied habitat. Outside of SWFL occupied habitat, the path or corridor where the practice is implemented may be up to 25 feet wide.

**If Grazed:**

19. Treated sites may be deferred from grazing for a period of time determined to be necessary to restore SWFL habitat based on pre and post site treatment conditions.
27. Implementation of grazing management plans, to the extent practicable, will meet habitat conditions for riparian habitat as recommended by WHEG
28. Frequency – Grazing will occur at a rate conducive to creating or maintaining desired habitat structure for nesting SWFL.
29. Duration – Grazing periods will be designed to establish or maintain desired habitat conditions as recommended by WHEG
30. Timing – Grazing will be scheduled to avoid potential disturbance to SWFL and occupied SWFL habitat during breeding season – from April 15 to Sept 15, except when following prescribed grazing protocol during growing season as stated
31. Intensity – the amount of forage removed (or left) during any particular grazing cycle will be in keeping with the life cycle requirements of the SWFL.
32. See description in Appendix II.\*
33. Motorized vehicles will not be used to herd livestock within listed species habitat.
34. Provide off-site water supply for livestock and wildlife to maintain or improve streamside vegetation.

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**CONSERVATION PRACTICE: FIELD BORDER (386)**

**Definition** – A strip of permanent vegetation established at the edge or around the perimeter of a field.

**Purpose** – This practice may be applied to accomplish one or more of the following:

- Reduce erosion from wind and water
- Protect soil and water quality
- Manage pest populations
- Provide wildlife food and cover and pollinator habitat
- Increase carbon storage
- Improve air quality

**Resource Concern** –

- RC 01: Soil Erosion – Sheet, rill, and wind erosion
- RC 13: Inadequate Habitat for Fish and Wildlife

**Application** – A line of dense tall vegetation at the edge of an agricultural field used to prevent/reduce the drift of chemicals.

**Potential Beneficial Effect(s) to SWFL** – Field borders can help preserve the SWFL forage base by reducing chemical drift from cropland. Field borders also reduce sedimentation thereby supporting water quality.

**Potential Adverse Effect(s) to SWFL – NT**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)

**Potential Adverse Effect(s) to – Fish- None- NT**

**Potential Adverse Effect(s) to – Mammals- None- NT**

**Potential Adverse Effect(s) to – Plants- None- NT**

**Potential Adverse Effect(s) to – Birds (other than SWFL)- NT**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

**Potential Adverse Effect(s) to – Invertebrates- None- NT**

**Potential Adverse Effect(s) to – Amphibians- None- NT**

**Potential Adverse Effect(s) to – Reptiles- None- NT**

**Additional Conservation Measures – NONE**

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### **CONSERVATION PRACTICE: FORAGE HARVEST MANAGEMENT (511)**

**Definition** – The timely cutting and removal of forages from the field as hay, green-chop or ensilage

**Purpose** –

- Optimize yield and quality of forage at the desired levels
- Promote vigorous plant re-growth
- Manage for the desired species composition
- Use forage plant biomass as a soil nutrient uptake tool
- Control insects, diseases and weeds
- Maintain and/or improve wildlife habitat

**Resource Concern** –

RC 13: Inadequate Habitat for Fish and Wildlife

RC 14: Livestock Production Limitation – Inadequate feed and forage

**Application** – The management of haying or grazing of tame pastures for sustained yield.

**Potential Beneficial Effect(s) to SWFL** – Managing forage harvest can provide an alternative to riparian grazing during key life cycle periods for SWFL. Alternative forage resources can allow recovery and restoration of riparian habitat.

**Potential Adverse Effect(s) to SWFL – NONE- NT**

**Potential Adverse Effect(s) to – Fish- None- NT**

**Potential Adverse Effect(s) to – Mammals- None- NT**

**Potential Adverse Effect(s) to – Plants- None- NT**

**Potential Adverse Effect(s) to – Birds (other than SWFL)- None- NT**

**Potential Adverse Effect(s) to – Invertebrates- None - NT**

**Potential Adverse Effect(s) to – Amphibians- None - NT**

**Potential Adverse Effect(s) to – Reptiles- None- NT**

**Additional Conservation Measures – NONE**

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### **CONSERVATION PRACTICE: FORAGE & BIOMASS PLANTINGS (512)**

**Definition** – Establishing adapted and/or compatible species, varieties, or cultivars of herbaceous species suitable for pasture, hay, or biomass production.

**Purpose** –

- Improve or maintain livestock nutrition and/or health.
- Provide or increase forage supply during periods of low forage production.
- Reduce soil erosion.
- Improve soil and water quality.
- Produce feedstock for biofuel or energy production

**Resource Concern** –

RC 13: Inadequate Habitat for Fish and Wildlife

RC 14: Livestock Production Limitation – Inadequate feed and forage

**Application** – Planting of grasses and legumes for haying, grazing or biomass production. Not done in the riparian area.

**Potential Beneficial Effect(s) to SWFL** – Managing forage harvest can provide an alternative to riparian grazing during key life cycle periods for SWFL. Alternative forage resources can allow recovery and restoration of riparian habitat.

**Potential Adverse Effect(s) to SWFL** – NONE- NT

**Potential Adverse Effect(s) to** – Fish- None- NT

**Potential Adverse Effect(s) to** – Mammals- None- NT

**Potential Adverse Effect(s) to** – Plants- None- NT

**Potential Adverse Effect(s) to** – Birds (other than SWFL)- None- NT

**Potential Adverse Effect(s) to** – Invertebrates- None - NT

**Potential Adverse Effect(s) to** – Amphibians- None- NT

**Potential Adverse Effect(s) to** – Reptiles- None - NT

**Additional Conservation Measures** – NONE

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### **CONSERVATION PRACTICE: FOREST HARVEST TRAILS AND LANDINGS (655)**

**Definition** – A temporary or infrequently used route, path or cleared area.

**Purpose** –

- Provide routes for temporary or infrequent travel by people or equipment for management activities.
- Provide periodic access for removal and collection of forest products.

**Resource Concern** –

RC 10: Degraded Plant Condition – Inadequate Structure and composition

**Application** – installed prior to a scheduled harvest to provide a location to assemble and transport harvested logs.

**Potential Beneficial Effect(s) to SWFL** – The conservation objective is to minimize onsite and offsite damage to the other natural resources.

**Potential Adverse Effect(s) to SWFL** – T

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE4: Removal of desired riparian vegetation and understory component

AE7: Increased potential of susceptibility to parasitism e.g. cowbirds

AE8: Increased potential for predation

**Potential Adverse Effect(s) to** – Fish- None- NT

**Potential Adverse Effect(s) to** – Mammals- T

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE4: Removal of desired riparian vegetation and understory component

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to** – Plants- T

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to** – Birds (other than SWFL)- T

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE4: Removal of desired riparian vegetation and understory component

AE8: Increased potential for predation

**Potential Adverse Effect(s) to** – Invertebrates- None- NT

**Potential Adverse Effect(s) to** – Amphibians- T

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE4: Removal of desired riparian vegetation and understory component

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to** – Reptiles- T

AE1: Physical Disturbance including noise

- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals

**Additional Conservation Measures – NONE**

**CONSERVATION PRACTICE: FOREST STAND IMPROVEMENT (666)**

**Definition** – The manipulation of species composition, stand structure and stocking by cutting or killing selected trees and understory vegetation.

**Purpose** –

- Increase the quantity and quality of forest products by manipulating stand density and structure.
- Timely harvest of forest products
- Development of renewable energy systems.
- Initiate forest stand regeneration.
- Reduce wildfire hazard.
- Improve forest health reducing the potential of damage from pests and moisture stress.
- Restore natural plant communities.
- Achieve or maintain a desired native understory plant community for special forest products, grazing, and browsing.
- Improve aesthetic and recreation, values.
- Improve wildlife habitat.
- Alter water yield.
- Increase carbon storage in selected trees.

**Resource Concern** –

- RC 10: Degraded Plant Condition – Inadequate Structure and composition
- RC 13: Inadequate Habitat for Fish and Wildlife

**Application** – This conservation practice will be used for the removal of exotic tree species where removal will not degrade nesting SWFL habitat.

**Potential Beneficial Effect(s) to SWFL** – Used for the removal of exotic tree species where removal will not degrade nesting habitat. Provide diversity of habitat structure to improve foraging opportunities.

**Potential Adverse Effect(s) to SWFL – T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE7: Increased potential of susceptibility to parasitism e.g. cowbirds
- AE8: Increased potential for predation

**Potential Adverse Effect(s) to – Fish- T**

- AE1: Physical Disturbance including noise
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Mammals- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Plants- T**

- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants

- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard

**Potential Adverse Effect(s) to – Invertebrates- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Amphibians- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Reptiles- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals

**Additional Conservation Measures –**

**Planning**

18. Tamarisk in a nesting patch shall not be treated if a biologist designated by state biologist determines that it will decrease SWFL viability in the patch for the following nesting season.
19. Treated sites may be deferred from grazing for a period of time determined to be necessary to restore SWFL habitat based on pre and post site treatment conditions.
20. This practice shall not to be used for land use change.
40. Plan for this practice shall be designed to develop SWFL habitat of improved quality or that provides equivalent habitat and decreases potential of wild fire due to tamarisk.

**Timing**

41. Defer use of this practice from April 15 to Sept 15

**Location**

21. Treating Woody Invasive Species Slash within the 100-year Floodplain: See description in Appendix III

**Vegetation**

22. If soil is disturbed, use site specific reclamation using SWFL WHEG, Stream Visual Assessment Protocol-2 and/or riparian Ecological Site Description with consideration of SWFL habitat needs.

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**CONSERVATION PRACTICE: GRADE STABILIZATION (410)**

**Definition** – A structure used to control the grade and head cutting in natural or artificial channels.

**Purpose** –

- To stabilize the grade and control erosion in natural or artificial channels
- Prevent the formation or advance of gullies
- Enhance environmental quality and reduce pollution hazards.

**Resource Concern** –

- RC 03: Soil Erosion – Excessive Bank Erosion
- RC 10: Degraded Plant Condition – Inadequate Structure and composition

**Application** – Grade stabilization is used to arrest head cutting or other channel degradation which can cause the local water table to drop essentially draining the riparian area and changing the plant community. Typically rock of sufficient size is installed to arrest a head cut from further advancement. See Zeedyk and Clothier, *“Let the Water Do the Work: Induced Meandering, an Evolving Method for Restoring Incised Channels”*.

**Potential Beneficial Effect(s) to SWFL** – Grade stabilization is used to arrest head cutting or other channel degradation which can cause the local water table to drop essentially draining the riparian area and changing the

plant community. By preventing these action SWFL habitat is maintained.

**Potential Adverse Effect(s) to SWFL – T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE7: Increased potential of susceptibility to parasitism e.g. cowbirds
- AE8: Increased potential for predation
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Fish- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Mammals- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Plants- T**

- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Invertebrates- T**

- AE1: Physical Disturbance including noise
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Amphibians- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Reptiles- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Additional Conservation Measures – NONE**

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**CONSERVATION PRACTICE: HERBACEOUS WEED CONTROL (315)**

**Definition** – The removal or control of herbaceous weeds including invasive, noxious and prohibited plants

**Purpose** –

- Enhance accessibility, quantity, and quality of forage and/or browse.
- Restore or release native or create desired plant communities and wildlife habitats consistent with the ecological site.

- Protect soils and control erosion
- Reduce fine-fuels fire hazard and improve air quality

**Resource Concern –**

RC 10: Degraded Plant Condition – Inadequate structure and composition  
 RC 11: Degraded Plant Condition – Excessive plant pest pressure  
 RC 13: Inadequate Habitat for Fish and Wildlife

**Application –** Typical application: The spot application of selective herbicide to control noxious or invasive weeds. Also applied mechanically using hand tools on limited infestations.

**Potential Beneficial Effect(s) to SWFL –**

- Facilitate establishment of woody vegetation and understory.
- Long-term benefit to invertebrate diversity and quantity for SWFL foraging.
- Reduction of fire hazards.

**Potential Adverse Effect(s) to SWFL – T**

AE1: Physical Disturbance including noise  
 AE2: Temporary soil and vegetation disturbance (indirect & temporary)  
 AE3: Increased potential of introduction of invasive plants  
 AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Fish- T**

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Mammals- T**

AE1: Physical Disturbance including noise  
 AE2: Temporary soil and vegetation disturbance (indirect & temporary)  
 AE3: Increased potential of introduction of invasive plants  
 AE6: Increased potential of accidental mortality of individuals  
 AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Plants- T**

AE1: Physical Disturbance including noise  
 AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

AE1: Physical Disturbance including noise  
 AE2: Temporary soil and vegetation disturbance (indirect & temporary)  
 AE3: Increased potential of introduction of invasive plants  
 AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Invertebrates- T**

AE1: Physical Disturbance including noise  
 AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Amphibians- T**

AE1: Physical Disturbance including noise  
 AE2: Temporary soil and vegetation disturbance (indirect & temporary)  
 AE4: Removal of desired riparian vegetation and understory component  
 AE6: Increased potential of accidental mortality of individuals  
 AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Reptiles- T**

AE1: Physical Disturbance including noise  
 AE2: Temporary soil and vegetation disturbance (indirect & temporary)  
 AE4: Removal of desired riparian vegetation and understory component  
 AE6: Increased potential of accidental mortality of individuals

**Additional Conservation Measures –**

**Planning:**

23. Use Win\_PST to determine pesticide mitigation requirements.

24. Herbicide applications will follow the applicable conservation measures recommended in the FWS document "Recommended Protection Measures For Pesticide Applications in Region 2 of the U.S. Fish and Wildlife Service" available on the Arizona Ecological Services webpage.

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### **CONSERVATION PRACTICE: HEAVY USE AREA PROTECTION (561)**

**Definition** – The stabilization of areas frequently and intensively used by people, animals or vehicles by establishing vegetative cover, surfacing with suitable materials, and/or installing needed structures.

**Purpose** –

- To provide a stable, non-eroding surface for areas frequently used by animals, people or vehicles
- To protect and improve water quality

**Resource Concern** –

RC 03: Soil Erosion – Excessive Bank Erosion

RC 07: Water Quality Degradation – Excessive sediment in surface waters

**Application** – Typically protecting an area of heavy use such as around a water facility from erosion by hardening. Installation of a concrete apron around a stock tank is an example of heavy use area protection.

**Potential Beneficial Effect(s) to SWFL** – Preserve the integrity of the stream channel and reduces sedimentation preserving macro-invertebrate production for SWFL forage resources.

**Potential Adverse Effect(s) to SWFL – T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

**Potential Adverse Effect(s) to – Fish- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Mammals- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE4: Removal of desired riparian vegetation and understory component

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Plants- T**

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

**Potential Adverse Effect(s) to – Invertebrates- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Amphibians- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE4: Removal of desired riparian vegetation and understory component

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Reptiles- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE4: Removal of desired riparian vegetation and understory component

AE6: Increased potential of accidental mortality of individuals

**Additional Conservation Measures – NONE**

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## CONSERVATION PRACTICE: INTEGRATED PEST MANAGEMENT (595)

**Definition** – A site-specific combination of pest prevention, pest avoidance, pest monitoring, and pest suppression strategies.

**Purpose** –

- Prevent or mitigate off-site pesticide risks to water quality from leaching, solution runoff and adsorbed runoff losses.
- Prevent or mitigate off-site pesticide risks to soil, water, air, plants, animals and humans from drift and volatilization losses.
- Prevent or mitigate on-site pesticide risks to pollinators and other beneficial species through direct contact.
- Prevent or mitigate cultural, mechanical and biological pest suppression risks to soil, water, air, plants, animals and humans.

**Resource Concern** –

- RC 10: Degraded Plant Condition – Inadequate structure and composition
- RC 11: Degraded Plant Condition – Excessive plant pest pressure
- RC 13: Inadequate Habitat for Fish and Wildlife

**Application** – This practice will be used to control crop pests on existing croplands. Also, this practice will be used in combination with herbaceous weed control (315) to protect the integrity of the riparian plant community and conserve/management habitat and species diversity and structure.

**Potential Beneficial Effect(s) to SWFL** – When used to control crop pests this practice can reduce impacts on SWFL prey items. When used in combination with 315 herbaceous weed control it can protect the integrity of the riparian plant community, preserving habitat and species diversity and structure.

**Potential Adverse Effect(s) to SWFL – NT**

- AE6: Increased potential of accidental mortality of individuals
- AE11: Increased potential to adversely effect insect prey base

**Potential Adverse Effect(s) to – Fish- NT**

- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Mammals- NT**

- AE6: Increased potential of accidental mortality of individuals
- AE11: Increased potential to adversely effect insect prey base

**Potential Adverse Effect(s) to – Plants- NT**

- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- NT**

- AE6: Increased potential of accidental mortality of individuals
- AE11: Increased potential to adversely effect insect prey base

**Potential Adverse Effect(s) to – Invertebrates- NT**

- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Amphibians- NT**

- AE6: Increased potential of accidental mortality of individuals
- AE11: Increased potential to adversely effect insect prey base

**Potential Adverse Effect(s) to – Reptiles- NT**

- AE6: Increased potential of accidental mortality of individuals

**Additional Conservation Measures – NONE**

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## CONSERVATION PRACTICE: IRRIGATION SYSTEM- MICROIRRIGATION (441)

**Definition** – An irrigation system for frequent application of small quantities of water on or below the soil surface: as drops, tiny streams or miniature spray through emitters or applicators placed along a water delivery line.

**Purpose** –

- Efficiently and uniformly apply irrigation water and maintain soil moisture for plant growth.

- Prevent contamination of ground and surface water
- Establish desired vegetation.
- Reduce energy use.

**Resource Concern –**

RC 05: Insufficient Water – Inefficient use of irrigation water.

**Application –** providing irrigation water in limited amounts to establish desired vegetation for riparian forest buffers, and wildlife plantings. This practice standard applies to systems with design discharge less than 60 gal/hr at each individual lateral discharge point.

**Potential Beneficial Effect(s) to SWFL –** Irrigation to establish vegetation will provide a faster start to habitat development.

**Potential Adverse Effect(s) to – SWFL – None- NT**

**Potential Adverse Effect(s) to – Fish- None - NT**

**Potential Adverse Effect(s) to – Mammals- None - NT**

**Potential Adverse Effect(s) to – Plants- None- NT**

**Potential Adverse Effect(s) to – Birds (other than SWFL)- None- NT**

**Potential Adverse Effect(s) to – Invertebrates- None- NT**

**Potential Adverse Effect(s) to – Amphibians- None- NT**

**Potential Adverse Effect(s) to – Reptiles- None - NT**

**Additional Conservation Measures – None**

**CONSERVATION PRACTICE: IRRIGATION WATER MANAGEMENT (449)**

**Definition –** The process of determining and controlling the volume, frequency and application rate of irrigation water in a planned, efficient manner.

**Purpose –**

- Manage soil moisture to promote desired crop response.
- Optimize use of available water supplies.
- Minimize irrigation induced soil erosion.
- Decrease non-point source pollution of surface and groundwater resources.
- Manage salts in the crop root zone.
- Manage air, soil, or plant micro-climate.
- Proper and safe chemigation or fertigation.
- Improve air quality by managing soil moisture to reduce particulate matter movement.

**Resource Concern –**

RC 05: Insufficient Water – Inefficient use of irrigation water.

**Application –** The management of the timing and amount of application of irrigation water to meet the crop needs and conserve water.

**Potential Beneficial Effect(s) to SWFL –** As part of a water management system this practice can potentially improve in stream flows. It supplies a stable, relatively stable point of diversion reduces entries and disturbance to the stream channel and disturbance to SWFL.

**Potential Adverse Effect(s) to SWFL – T**

AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Fish- T**

AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Mammals- None- NT**

**Potential Adverse Effect(s) to – Plants- None- NT**

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Invertebrates- T**

AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Amphibians- T**

AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Reptiles- T**

AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Additional Conservation Measures – NONE**

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### **CONSERVATION PRACTICE: LIVESTOCK SHELTER STRUCTURE (576)**

**Definition** – A permanent or portable structure with less than four walls and/or a roof to provide for improved utilization of pastureland and rangeland and to shelter livestock from negative environmental factors. This structure is not to be construed to be a building.

**Purpose** –

- To provide protection for livestock from excessive heat, wind, cold, or snow.
- Protect surface waters from nutrient and pathogen loading.
- Protect wooded areas from accelerated erosion and excessive nutrient deposition by providing alternative livestock shelter/shade location.
- Improve the distribution of grazing livestock to enhance wildlife habitat, reduce over-used areas, or correct other resource concerns resulting from improper livestock distribution.

**Resource Concern** –

RC 03: Soil Erosion – Excessive Bank Erosion

RC 07: Water Quality Degradation – Excessive sediment in surface waters

RC 10: Degraded Plant Condition – Inadequate structure and composition

RC 13: Inadequate Habitat for Fish and Wildlife

**Application** – Structures installed outside of the riparian zone to help prevent livestock from lounging in or near channels.

**Potential Beneficial Effect(s) to SWFL** – Lounging livestock increase compaction of soils and trampling of vegetation as they seek shade. The livestock shelter structure provides shade outside of the riparian area so that livestock spend less time under trees and on streambanks.

**Potential Adverse Effect(s) to – SWFL- NT**

**Potential Adverse Effect(s) to – Fish- NT**

**Potential Adverse Effect(s) to – Mammals- None- NT**

**Potential Adverse Effect(s) to – Plants- None- NT**

**Potential Adverse Effect(s) to – Birds (other than SWFL)- NT**

**Potential Adverse Effect(s) to – Invertebrates- NT**

**Potential Adverse Effect(s) to – Amphibians- NT**

**Potential Adverse Effect(s) to – Reptiles- NT**

**Additional Conservation Measures – NONE**

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### **CONSERVATION PRACTICE: MULCHING (484)**

**Definition** – Applying plant residues, by-products or other suitable materials produced off site, to the land surface.

**Purpose** –

- To conserve moisture
- Prevent surface compaction or crusting
- Reduce runoff and erosion
- Control weeds
- Help establish plant cover.

**Resource Concern** –

RC 13: Inadequate Habitat for Fish and Wildlife

**Application** - On soils subject to erosion on critical areas; and on soils that have a low infiltration rate.

**Potential Beneficial Effect(s) to SWFL** – Reduce possibility of invasive plants establishing around desired planted species.

**Potential Adverse Effect(s) to SWFL – T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Fish- T**

- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Mammals- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Plants- T**

- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Invertebrates- T**

- AE1: Physical Disturbance including noise
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Amphibians- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Reptiles- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals

**Additional Conservation Measures – NONE**

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**CONSERVATION PRACTICE: OBSTRUCTION REMOVAL (500)**

**Definition** – Removal and disposal of buildings, structures, other works of improvement, vegetation, debris or other materials.

**Purpose** –

- To safely remove and dispose of unwanted obstructions in order to apply conservation practices or facilitate the planned land use.

**Resource Concern** –

RC 13: Inadequate Habitat for Fish and Wildlife

**Application** – Used to remove levees, fences or other manmade or man caused obstructions from the floodplain

or habitat area. Typically, the removal of an old levy or other anthropogenic obstruction from the floodplain to increase function.

**Potential Beneficial Effect(s) to SWFL –** Used to remove levees, fences or other manmade or man caused obstructions from the floodplain or habitat area. Can aid in restoration of a more natural hydrologic regime.

**Potential Adverse Effect(s) to SWFL – T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Fish- T**

- AE1: Physical Disturbance including noise
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Mammals- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Plants- T**

- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Invertebrates- T**

- AE1: Physical Disturbance including noise
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Amphibians- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE5: Increased fire hazard
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Reptiles- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE5: Increased fire hazard
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Additional Conservation Measures – NONE**

**Definition** – Constructing or improving a channel either natural or artificial, in which water flows with a free surface.

**Purpose** – To provide discharge capacity required for flood prevention, drainage, other authorized water management purposes, or any combination of these purposes.

**Resource Concern –**

- RC 07: Water Quality Degradation – Excessive sediment in surface waters
- RC 08: Water Quality Degradation – Elevated water temperature
- RC 09: Degraded Plant Condition – Undesirable plant productivity and health
- RC 10: Degraded Plant Condition – Inadequate structure and composition
- RC 13: Inadequate Habitat for Fish and Wildlife

**Application** – This conservation practice standard will be applied in situations where the stream channel is so degraded that it needs to be reconstructed to reconnect the channel and its floodplain and restore the riparian area and its associated SWFL habitat. The reconstruction of a stable analog of the natural channel. Only used when the current channel is so degraded and incised that other methods will not work in the foreseeable future. Extremely expensive and rarely used.

**Potential Beneficial Effect(s) to SWFL** – Open channel is applied in situations where the stream channel is so degraded that it needs to be reconstructed to reconnect the channel and its floodplain and restore the riparian area and its associated SWFL habitat.

**Potential Adverse Effect(s) to SWFL – T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE6: Increased potential of accidental mortality of individuals
- AE7: Increased potential of susceptibility to parasitism e.g. cowbirds
- AE8: Increased potential for predation
- AE9: Practice implementation in isolation without 528 for SWWF may reduce riparian habitat
- AE10: Water quality/quantity – loss or alteration of suitable hydrology
- AE11: Increased potential to adversely effect insect prey base

**Potential Adverse Effect(s) to – Fish- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology
- AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Mammals- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE6: Increased potential of accidental mortality of individuals
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat
- AE10: Water quality/quantity – loss or alteration of suitable hydrology
- AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Plants- T**

- AE1: Physical Disturbance including noise
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)

- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE6: Increased potential of accidental mortality of individuals
- AE8: Increased potential for predation
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat
- AE10: Water quality/quantity – loss or alteration of suitable hydrology
- AE11: Increased potential to adversely effect insect prey base

**Potential Adverse Effect(s) to – Invertebrates- T**

- AE1: Physical Disturbance including noise
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Amphibians- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE6: Increased potential of accidental mortality of individuals
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat
- AE10: Water quality/quantity – loss or alteration of suitable hydrology
- AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Reptiles- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE6: Increased potential of accidental mortality of individuals
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Additional Conservation Measures –**

**Timing:**

- 35. Time practice implementation to reduce spread of non-native plants by implementing the practice during the dormant season (e.g. avoid ground disturbance in riparian areas in the summer to reduce salt cedar spread).

**Location:**

- 38. Screen inlets and outlets to prevent non-native fish and amphibians from spreading into other habitats.

**Vegetation:**

- 25. Where clearing of a vegetation strip is determined to be necessary during planned construction or maintenance, the strip will not exceed 5 Feet in width in SWFL occupied habitat. Outside of SWFL occupied habitat, the strip may be up to 25 feet wide.
- 36. Leave adequate vegetation buffer and/or install best management practices along down slope edge of project area to prevent disturbed ground sediment runoff from entering aquatic habitats. These can include straw baffles, silt fence, hay bales, etc.
- 39. Re-establish native riparian vegetation on disturbed sites to maintain or improve bank stability.

**CONSERVATION PRACTICE: PIPELINE (516)**

**Definition** – A pipeline and appurtenances installed to convey water for livestock or wildlife.

**Purpose** – This practice may be applied as part of a resource management system to achieve one or more of the following purposes:

- Convey water to points of use for livestock or wildlife.
- Reduce energy use.

- Develop renewable energy systems

**Resource Concern –**

- RC 03: Soil Erosion – Excessive Bank Erosion
- RC 06: Water Quality Degradation – excess pathogens and chemicals from manure
- RC 13: Inadequate Habitat for Fish and Wildlife
- RC 15: Livestock Production Limitation – Inadequate Livestock Water

**Application –** A small diameter (generally less than 2 inches in diameter) pipeline that connects a water source such as a well to a watering facility. Buried beneath the depth of freeze construction involves the ripping of a trench with the immediate installation of the pipeline and refilling of the trench.

**Potential Beneficial Effect(s) to SWFL –** In combination with 614, Watering Facility, this practice provides livestock water out of the riparian area. This benefits SWFL by protecting the overall integrity of the habitat by reducing bank erosion. It improves water quality and associated macroinvertebrate production. Improved water quality improves livestock production making ranching and it's associated open space more viable. It facilitates livestock management which can improve or maintain SWFL habitat.

**Potential Adverse Effect(s) to SWFL – T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE7: Increased potential of susceptibility to parasitism e.g. cowbirds
- AE8: Increased potential for predation
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Fish- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Mammals- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat
- AE10: Water quality/quantity – loss or alteration of suitable hydrology
- AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Plants- T**

- AE1: Physical Disturbance including noise
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE8: Increased potential for predation
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Invertebrates- T**

- AE1: Physical Disturbance including noise
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Amphibians- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat
- AE10: Water quality/quantity – loss or alteration of suitable hydrology
- AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Reptiles- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Additional Conservation Measures –**

- 26. Provide wildlife safe ingress/egress in trenches (ladder or dirt plugs to allow escape) during construction.

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**CONSERVATION PRACTICE: PRESCRIBED GRAZING (528)**

**Definition** – Managing the harvest of vegetation with grazing and/or browsing animals.

**Purpose** –

- Improve or maintain desired species composition and vigor of plant communities.
- Improve or maintain quantity and quality of forage for grazing and browsing animals' health and productivity.
- Improve or maintain surface and/or subsurface water quality and quantity.
- Improve or maintain riparian and watershed function.
- Reduce accelerated soil erosion, and maintain or improve soil condition.
- Improve or maintain the quantity and quality of food and/or cover available for wildlife.
- Manage fine fuel loads to achieve desired conditions.

**Resource Concern** –

- RC 03: Soil Erosion – Excessive Bank Erosion
- RC 06: Water Quality Degradation – excess pathogens and chemicals from manure
- RC 14: Inadequate Habitat for Fish and Wildlife
- RC 25: Livestock Production Limitation – Inadequate Livestock Water

**Application** – Managing the number of livestock, the duration of use, and the timing of use in order to achieve resource goals. Such goals include annual animal production goals, plant community goals, and wildlife habitat. Repeated grazing during the same season each year (such as winter grazing only in riparian areas) is generally detrimental to some part of the plant community, woody species in this example. The Wildlife Habitat Evaluation Guide (WHEG) will provide the basis for planning Prescribed Grazing. For example where the WHEG indicates insufficient nesting cover the 528 plan will be designed to favor woody plants (see the first bullet in "Purpose"). The timing, intensity, duration, and frequency of livestock grazing will be controlled to maintain or improve the plant communities in accordance to goals developed from the habitat evaluation. The desired kinds and amounts of vegetation will be based on the ecological sites being managed and the current plant communities that will be managed. Monitoring will be done to determine if plant community goals are being achieved. Monitoring may include species composition, production, vegetation and ground cover, seedling establishment, utilization, tree density or other attributes based on the vegetation goals established in the prescribed grazing plan. The Prescribed Grazing plan will also ensure adequate bank vegetation cover to minimize erosion and sediment losses from runoff, and to control stream bank erosion that would cause degradation of the riparian area. Stocking

rates will be light to minimize nest disturbance. Fall and winter grazing after the willow flycatcher has left will be done no more 2 of 3 years. Grazing during the spring and summer will occur no more than once in 3 years. Off-site watering facilities will be a requirement for grazing in SWFL habitat.

**Potential Beneficial Effect(s) to SWFL –** Controlling the timing of livestock use can avoid resource damage to soils, streams, plant communities preserving the integrity of the swfl habitat. Timing of grazing can be used for specific benefits such as weed control or increasing the coefficient of roughness to collect more sediment and build banks. Controlling livestock numbers reduces the incidence of density dependent events such as nest disturbance. Controlling the timing and duration of livestock grazing allows for the accomplishment of specific plant community goals such as benefiting the woody community. Prescribed grazing contributes to the sustainability of livestock production and hence the sustainability of the associated open space.

**Potential Adverse Effect(s) to SWFL – T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE6: Increased potential of accidental mortality of individuals
- AE7: Increased potential of susceptibility to parasitism e.g. cowbirds
- AE8: Increased potential for predation
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat
- AE10: Water quality/quantity – loss or alteration of suitable hydrology
- AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Fish- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology
- AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Mammals- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE6: Increased potential of accidental mortality of individuals
- AE8: Increased potential for predation
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat
- AE10: Water quality/quantity – loss or alteration of suitable hydrology
- AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Plants- T**

- AE1: Physical Disturbance including noise
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE5: Increased fire hazard
- AE6: Increased potential of accidental mortality of individuals
- AE8: Increased potential for predation
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat
- AE10: Water quality/quantity – loss or alteration of suitable hydrology
- AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Invertebrates- T**

- AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Amphibians- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE3: Increased potential of introduction of invasive plants

AE4: Removal of desired riparian vegetation and understory component

AE5: Increased fire hazard

AE6: Increased potential of accidental mortality of individuals

AE7: Increased potential of susceptibility to parasitism e.g. cowbirds

AE8: Increased potential for predation

AE9: Practice implementation in isolation without 528 may reduce riparian habitat

AE10: Water quality/quantity – loss or alteration of suitable hydrology

AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Reptiles- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE3: Increased potential of introduction of invasive plants

AE4: Removal of desired riparian vegetation and understory component

AE5: Increased fire hazard

AE6: Increased potential of accidental mortality of individuals

AE7: Increased potential of susceptibility to parasitism e.g. cowbirds

AE8: Increased potential for predation

AE9: Practice implementation in isolation without 528 may reduce riparian habitat

AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Additional Conservation Measures –**

27. Implementation of grazing management plans, to the extent practicable, will meet habitat conditions for riparian habitat as recommended by WHEG

28. Frequency – Grazing will occur at a rate which is conducive to creating or maintaining desired habitat structure for nesting SWFL.

29. Duration – Grazing periods will be designed to establish or maintain desired habitat conditions as recommended by WHEG

30. Timing – Grazing will be scheduled to avoid potential disturbance to SWFL and occupied SWFL habitat during breeding season – from April 15 to Sept 15, except when following prescribed grazing protocol during growing season as stated ABOVE.

31. Intensity – the amount of forage removed (or left) during any particular grazing cycle will be in keeping with the life cycle requirements of the SWFL.

32. See description in Appendix III.

33. Motorized vehicles will not be used to herd livestock within listed species habitat.

34. Provide off-site water supply for livestock and wildlife to maintain or improve streamside vegetation.

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**CONSERVATION PRACTICE: PUMPING PLANT (533)**

**Definition** – A facility that delivers water at a designed pressure and flow rate. Includes the required pump(s), associated power unit(s), plumbing, appurtenances, and may include on-site fuel or energy source(s), and protective structures.

**Purpose** –

- Delivery of water for irrigation, watering facilities, wetlands, or fire protection
- Removal of excessive subsurface or surface water
- Provide efficient use of water on irrigated land
- Transfer of animal waste as part of a manure transfer system
- Improvement of air quality
- Reduce energy use

**Application** – where conservation objectives require the addition of energy to pressurize and transfer water

**Resource Concern** –

- RC 03: Soil Erosion – Excessive Bank Erosion
- RC 06: Water Quality Degradation – excess pathogens and chemicals from manure
- RC 13: Inadequate Habitat for Fish and Wildlife
- RC 15: Livestock Production Limitation – Inadequate Livestock Water

**Application** – Typically installed on a concrete pad less than 20' square.

**Potential Beneficial Effect(s) to SWFL** – An integral component of water well (642) and pipeline (516) to provide livestock water outside the riparian area.

**Potential Adverse Effect(s) to SWFL – T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component

**Potential Adverse Effect(s) to – Fish- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology
- AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Mammals- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE10: Water quality/quantity – loss or alteration of suitable hydrology
- AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Plants- T**

- AE1: Physical Disturbance including noise
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component

**Potential Adverse Effect(s) to – Invertebrates- T**

- AE1: Physical Disturbance including noise
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Amphibians- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE10: Water quality/quantity – loss or alteration of suitable hydrology
- AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Reptiles- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Additional Conservation Measures** –

35. Time practice implementation to reduce spread of non-native plants by implementing the practice during the dormant season (e.g. avoid ground disturbance in riparian areas in the summer to reduce salt cedar spread).

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### **CONSERVATION PRACTICE: RIPARIAN FOREST BUFFER (391)**

**Definition** – An area predominantly trees and/or shrubs located adjacent to and up-gradient from watercourses or water bodies.

**Purpose** –

- Create shade to lower or maintain water temperatures to improve habitat for aquatic organisms.
- Create or improve riparian habitat and provide a source of detritus and large woody debris.
- Reduce excess amounts of sediment, organic material, nutrients and pesticides in surface runoff and reduce excess nutrients and other chemicals in shallow ground water flow.
- Reduce pesticide drift entering the water body.
- Restore riparian plant communities.
- Increase carbon storage in plant biomass and soils.

**Resource Concern** –

RC 03: Soil Erosion – Excessive Bank Erosion

RC 07: Water Quality Degradation – Excessive sediment in surface waters

RC 10: Degraded Plant Condition – Inadequate structure and composition

RC 13: Inadequate Habitat for Fish and Wildlife

**Application** – Typically, a buffer of woody plants of sufficient width to address the resource concern such as wildlife habitat or water quality.

**Potential Beneficial Effect(s) to SWFL** – Improves nesting and foraging habitat. Protect the stream system from degradation.

**Potential Adverse Effect(s) to SWFL – T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE3: Increased potential of introduction of invasive plants

AE4: Removal of desired riparian vegetation and understory component

AE5: Increased fire hazard

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Fish- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Mammals- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE6: Increased potential of accidental mortality of individuals

AE4: Removal of desired riparian vegetation and understory component

**Potential Adverse Effect(s) to – Plants- T**

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE3: Increased potential of introduction of invasive plants

AE4: Removal of desired riparian vegetation and understory component

AE5: Increased fire hazard

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Invertebrates- T**

AE1: Physical Disturbance including noise

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Amphibians- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE6: Increased potential of accidental mortality of individuals

AE4: Removal of desired riparian vegetation and understory component

**Potential Adverse Effect(s) to – Reptiles- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE6: Increased potential of accidental mortality of individuals

AE4: Removal of desired riparian vegetation and understory component

**Additional Conservation Measures –**

40. Plan for this practice shall be designed to develop SWFL habitat of improved quality or that provides equivalent habitat and decreases potential of wild fire due to tamarisk.

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**CONSERVATION PRACTICE: RIPARIAN HERBACEOUS COVER (390)**

**Definition-** Grasses, sedges, rushes, ferns, legumes, and forbs tolerant of intermittent flooding or saturated soils, established or managed as the dominant vegetation in the transitional zone between upland and aquatic habitats.

**Purpose-**

- Provide or improve food and cover for fish, wildlife and livestock,
- Improve and maintain water quality.
- Establish and maintain habitat corridors.
- Increase water storage on floodplains.
- Reduce erosion and improve stability to stream banks and shorelines.
- Increase net carbon storage in the biomass and soil.
- Enhance pollen, nectar, and nesting habitat for pollinators.
- Restore, improve, or maintain the desired plant communities.
- Dissipate stream energy and trap sediment.
- Enhance stream bank protection as part of stream bank soil bioengineering practices.

**Resource Concern –**

RC 03: Soil Erosion – Excessive Bank Erosion

RC 07: Water Quality Degradation – Excessive sediment in surface waters

RC 10: Degraded Plant Condition – Inadequate structure and composition

RC 13: Inadequate Habitat for Fish and Wildlife

**Application – Typical Practice Application:** In areas where the herbaceous seedbank is depleted or where natural regeneration leaves the soil exposed to erosion for too long a period herbaceous cover will be installed. Sedge plugs are installed in a 3'x3' grid in areas with adequate contact to the water table. Generally 5 acres or less.

**Potential Beneficial Effect(s) to SWFL –** Improve foraging habitat. Maintain sustainability of the riparian system. Protect water quality and associated macroinvertebrate production.

**Potential Adverse Effect(s) to SWFL – T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE3: Increased potential of introduction of invasive plants

**Potential Adverse Effect(s) to – Fish- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

**Potential Adverse Effect(s) to – Mammals- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE3: Increased potential of introduction of invasive plants

**Potential Adverse Effect(s) to – Plants- T**

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE3: Increased potential of introduction of invasive plants

**Potential Adverse Effect(s) to – Invertebrates- T**

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Amphibians- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

**Potential Adverse Effect(s) to – Reptiles- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE6: Increased potential of accidental mortality of individuals

**Additional Conservation Measures – NONE**

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**CONSERVATION PRACTICE: STREAM CHANNEL STABILIZATION (584)**

**Definition** – Measure(s) used to stabilize the bed or bottom of a channel.

**Purpose** – This practice may be applied as part of a conservation management system to support one or more of the following:

- Maintain or alter channel bed elevation or gradient
- Modify sediment transport or deposition
- Manage surface water and groundwater levels in floodplains, riparian areas, and wetlands.

**Resource Concern –**

RC 09: Degraded Plant Condition – Undesirable plant productivity and health

RC 10: Degraded Plant Condition – Inadequate structure and composition

RC 13: Inadequate Habitat for Fish and Wildlife

**Application** – Typically rock of sufficient size is installed to arrest a head cut from further advancement. Used to prevent/arrest channel down cutting which can reduce the stream's access to the flood plain and act as a drain to the riparian area eventually altering the plant community to more upland plants.

**Potential Beneficial Effect(s) to SWFL** – Channel Stabilization is used to arrest head-cutting and incising of the channel. An incised channel functions as a drain robbing the riparian area of the free water that allow the production and structure found there. Vertically stabilizing the channel preserves the channel integrity the near surface water table and hence the riparian habitat.

**Potential Adverse Effect(s) to SWFL –**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE4: Removal of desired riparian vegetation and understory component

AE6: Increased potential of accidental mortality of individuals

AE7: Increased potential of susceptibility to parasitism e.g. cowbirds

AE8: Increased potential for predation

AE9: Practice implementation in isolation without 528 for SWWF may reduce riparian habitat

AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Fish- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE6: Increased potential of accidental mortality of individuals

AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Mammals- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Plants- T**

- AE1: Physical Disturbance including noise
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Invertebrates- T**

- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Amphibians- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Reptiles- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Additional Conservation Measures –**

22. If soil is disturbed, use site specific reclamation using SWFL WHEG, Stream Visual Assessment Protocol- 2 and/or riparian Ecological Site Description with consideration of SWFL habitat needs.
35. Time practice implementation to reduce spread of non-native plants by implementing the practice during the dormant season (e.g. avoid ground disturbance in riparian areas in the summer to reduce salt cedar spread).
36. Leave adequate vegetation buffer and/or install best management practices along down slope edge of project area to prevent disturbed ground sediment runoff from entering aquatic habitats. These can include straw baffles, silt fence, hay bales, etc.
39. Re-establish native riparian vegetation on disturbed sites to maintain or improve bank stability.
41. Defer use of this practice from April 15 to Sept 15

**CONSERVATION PRACTICE: STREAM CROSSING (578)**

**Definition** – A stabilized area or structure constructed across a stream to provide a travel way for people, livestock, equipment, or vehicles.

**Purpose** –

- Improve water quality by reducing sediment, nutrient, organic, and inorganic loading of the stream.
- Reduce streambank and streambed erosion.
- Provide crossing for access to another land unit.

**Resource Concern:**

RC 03: Soil Erosion – Excessive bank erosion

RC 06: Water Quality Degradation – Excess pathogens and chemicals from manure

RC 07: Water Quality Degradation – Excessive sediment in surface waters

**Application** –Stream crossings are typically installed at the crossover. The crossover is the midpoint in the relatively straight part of the stream between two meanders where the thalweg (deepest part of the current) crosses from one side of the stream to the other. This is the most stable part of the channel. The approaches to the crossing are hardened with rock to prevent erosion. The crossing itself is hardened if the channel bed is sand or finer material.

**Potential Beneficial Effect(s) to SWFL** – By providing a stable point for crossings needed for management or recreation impacts to riparian areas and associated habitats are avoided or minimized.

**Potential Adverse Effect(s) to SWFL – T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE3: Increased potential of introduction of invasive plants

AE4: Removal of desired riparian vegetation and understory component

AE6: Increased potential of accidental mortality of individuals

AE7: Increased potential of susceptibility to parasitism e.g. cowbirds

AE8: Increased potential for predation

AE10: Water quality/quantity – loss or alteration of suitable hydrology

AE11: Increased potential to adversely effect insect prey base

**Potential Adverse Effect(s) to – Fish- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE6: Increased potential of accidental mortality of individuals

AE10: Water quality/quantity – loss or alteration of suitable hydrology

AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Mammals- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE3: Increased potential of introduction of invasive plants

AE4: Removal of desired riparian vegetation and understory component

AE6: Increased potential of accidental mortality of individuals

AE10: Water quality/quantity – loss or alteration of suitable hydrology

AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Plants- T**

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE3: Increased potential of introduction of invasive plants

AE4: Removal of desired riparian vegetation and understory component

AE6: Increased potential of accidental mortality of individuals

AE10: Water quality/quantity – loss or alteration of suitable hydrology

AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Invertebrates- T**

AE1: Physical Disturbance including noise

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Amphibians- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE3: Increased potential of introduction of invasive plants

AE4: Removal of desired riparian vegetation and understory component

AE6: Increased potential of accidental mortality of individuals  
AE10: Water quality/quantity – loss or alteration of suitable hydrology  
AE11: Increased potential to adversely affect insect prey base

**Potential Adverse Effect(s) to – Reptiles- T**

AE1: Physical Disturbance including noise  
AE2: Temporary soil and vegetation disturbance (indirect & temporary)  
AE3: Increased potential of introduction of invasive plants  
AE4: Removal of desired riparian vegetation and understory component  
AE6: Increased potential of accidental mortality of individuals  
AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Additional Conservation Measures –**

35. Time practice implementation to reduce spread of non-native plants by implementing the practice during the dormant season (e.g. avoid ground disturbance in riparian areas in the summer to reduce salt cedar spread).
37. Design stream crossings to prevent water flow blockage during low flow periods or debris blockage during high flow periods.

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**CONSERVATION PRACTICE: STREAMBANK AND SHORELINE PROTECTION (580)**

**Definition** – Treatment(s) used to stabilize and protect banks of streams or constructed channels, and shorelines of lakes, reservoirs, or estuaries.

**Purpose** –

- To prevent the loss of land or damage to land uses, or facilities adjacent to the banks of streams or constructed channels, shoreline of lakes, reservoirs, or estuaries including the protection of known historical, archeological, and traditional cultural properties.
- To maintain the flow capacity of streams or channels.
- Reduce the offsite or downstream effects of sediment resulting from bank erosion.
- To improve or enhance the stream corridor for fish and wildlife habitat, aesthetics, recreation.

**Resource Concern** –

RC 03: Soil Erosion – Excessive Bank Erosion  
RC 07: Water Quality Degradation – Excessive sediment in surface waters

**Application** – Typically the use of plant materials to protect the streambank or shoreline from excessive erosion. This practice standard will be used to arrest head-cutting and incising of the channel. An incised channel functions as a drain robbing the riparian area of the free water that allow the production and structure found there. Vertically stabilizing the channel preserves the channel integrity the near surface water table and hence the riparian habitat.

**Potential Beneficial Effect(s) to SWFL** – Preserve the integrity of the stream channel or shoreline and reduce sedimentation preserving macro-invertebrate production for SWFL forage resources.

**Potential Adverse Effect(s) to SWFL – T**

AE1: Physical Disturbance including noise  
AE2: Temporary soil and vegetation disturbance (indirect & temporary)  
AE4: Removal of desired riparian vegetation and understory component  
AE6: Increased potential of accidental mortality of individuals  
AE7: Increased potential of susceptibility to parasitism e.g. cowbirds  
AE8: Increased potential for predation  
AE9: Practice implementation in isolation without 528 may reduce riparian habitat  
AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Fish- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)  
AE6: Increased potential of accidental mortality of individuals  
AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Mammals- T**

AE6: Increased potential of accidental mortality of individuals

AE1: Physical Disturbance including noise  
AE2: Temporary soil and vegetation disturbance (indirect & temporary)  
AE4: Removal of desired riparian vegetation and understory component  
AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Plants- T**

AE1: Physical Disturbance including noise  
AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

AE1: Physical Disturbance including noise  
AE2: Temporary soil and vegetation disturbance (indirect & temporary)  
AE4: Removal of desired riparian vegetation and understory component  
AE6: Increased potential of accidental mortality of individuals  
AE9: Practice implementation in isolation without 528 may reduce riparian habitat  
AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Invertebrates- T**

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Amphibians- T**

AE1: Physical Disturbance including noise  
AE2: Temporary soil and vegetation disturbance (indirect & temporary)  
AE4: Removal of desired riparian vegetation and understory component  
AE6: Increased potential of accidental mortality of individuals  
AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Reptiles- T**

AE1: Physical Disturbance including noise  
AE2: Temporary soil and vegetation disturbance (indirect & temporary)  
AE4: Removal of desired riparian vegetation and understory component  
AE6: Increased potential of accidental mortality of individuals  
AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Additional Conservation Measures –**

**Timing:**

35. Time practice implementation to reduce spread of non-native plants by implementing the practice during the dormant season (e.g. avoid ground disturbance in riparian areas in the summer to reduce salt cedar spread).

**Vegetation:**

25. Where clearing of a vegetation strip is determined to be necessary during planned construction or maintenance, the strip will not exceed 5 Feet in width in SWFL occupied habitat. Outside of SWFL occupied habitat, the strip may be up to 25 feet wide.
36. Leave adequate vegetation buffer and/or install best management practices along down slope edge of project area to prevent disturbed ground sediment runoff from entering aquatic habitats. These can include straw baffles, silt fence, hay bales, etc.

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**CONSERVATION PRACTICE: STRUCTURE FOR WATER CONTROL (587)**

**Definition** – A structure in a water management system that conveys water, controls the direction or rate of flow, maintains a desired water surface elevation or measures water.

**Purpose** –The practice may be applied as a management component of a water management system to control the stage, discharge, distribution, delivery or direction of water flow.

**Resource Concern** –

RC 05: Insufficient Water – Inefficient use of irrigation water

**Application** – Typically a gate valve or similar structure to regulate the movement of water from a stream to a ditch or from a stream to a reconnected oxbow for example.

**Potential Beneficial Effect(s) to SWFL:** As part of a water management system this practice can potentially improve in stream flows. It supplies a stable, relatively stable point of diversion reduces entries and disturbance to the stream channel and disturbance to SWFL.

**Potential Adverse Effect(s) to SWFL – T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Fish- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Mammals- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Plants- NT**

- AE3: Increased potential of introduction of invasive plants
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Invertebrates- T**

- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Amphibians-**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Reptiles- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Additional Conservation Measures** – NONE AZ

**Definition** – Establishing woody plants by planting seedlings or cuttings, direct seeding, or natural regeneration.

**Purpose** – Establish woody plants for:

- forest products such as timber, pulpwood, etc.
- wildlife habitat
- long-term erosion control and improvement of water quality
- treating waste
- storing carbon in biomass
- reduce energy use
- develop renewable energy systems
- improving or restoring natural diversity
- enhancing aesthetics.

**Resource Concern** –

RC 03: Soil Erosion – Excessive Bank Erosion

RC 07: Water Quality Degradation – Excessive sediment in surface waters

RC 10: Degraded Plant Condition – Inadequate structure and composition

RC 13: Inadequate Habitat for Fish and Wildlife

**Application** – Typically in conjunction with 490 Tree and Shrub Site Preparation rooted stock is planted into the capillary fringe of the water table. Cuttings are planted into the dry season water table. Trees and shrubs are planted in clumps to mimic natural regeneration.

**Potential Beneficial Effect(s) to SWFL** – Improves nesting and foraging habitat. Protect the stream system from degradation.

**Potential Adverse Effect(s) to SWFL – T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE3: Increased potential of introduction of invasive plants

**Potential Adverse Effect(s) to – Fish- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Mammals- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Plants- T**

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE3: Increased potential of introduction of invasive plants

**Potential Adverse Effect(s) to – Invertebrates- None- NT**

**Potential Adverse Effect(s) to – Amphibians- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Reptiles- T**

AE1: Physical Disturbance including noise

AE2: Temporary soil and vegetation disturbance (indirect & temporary)

AE6: Increased potential of accidental mortality of individuals

**Additional Conservation Measures** – None

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**CONSERVATION PRACTICE: TREE SHRUB SITE PREPARATION (490)**

**Definition** – Treatment of areas to improve site conditions for establishing trees and/or shrubs.

**Purpose** –

- Encourage natural regeneration of desirable woody plants.
- Permit artificial establishment of woody plants.

**Resource Concern** –

- RC 10: Degraded Plant Condition – Inadequate structure and composition
- RC 13: Inadequate Habitat for Fish and Wildlife

**Application** – Where herbaceous competition is a detriment to tree or shrub establishment a 2'x2' area is scalped of vegetation and a 2'x2' weed barrier is installed prior to planting. Generally applied on 0.5 acres.

**Potential Beneficial Effect(s) to SWFL** – In combination with 612, Tree and Shrub Establishment, this practice can restore nesting and foraging habitats.

**Potential Adverse Effect(s) to SWFL – T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component

**Potential Adverse Effect(s) to – Fish- T**

- AE1: Physical Disturbance including noise

**Potential Adverse Effect(s) to – Mammals- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Plants- T**

- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component

**Potential Adverse Effect(s) to – Invertebrates- T**

- AE1: Physical Disturbance including noise
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Amphibians- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Reptiles- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE6: Increased potential of accidental mortality of individuals

**Additional Conservation Measures** – NONE

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## **CONSERVATION PRACTICE: WATER WELL (642)**

**Definition** – A hole drilled, dug, driven, bored, jetted or otherwise constructed to an aquifer for water supply.

**Purpose** –

- Provide water for livestock, wildlife, irrigation and other agricultural uses.
- Facilitate proper use of vegetation such as keeping animals on rangeland and pastures and away from streams, and providing water for wildlife.

**Resource Concern –**

- RC 03: Soil Erosion – Excessive Bank Erosion
- RC 06: Water Quality Degradation – excess pathogens and chemicals from manure
- RC 13: Inadequate Habitat for Fish and Wildlife
- RC 15: Livestock Production Limitation – Inadequate Livestock Water

**Application –** Well is established outside the riparian area on a terrace. Drill depth is normally 50-100 feet. Casing is installed in the well and flows are typically from 1 – 10 gallons per minute.

**Potential Beneficial Effect(s) to SWFL –** In combination with 516, livestock pipeline and 614, Watering Facility, this practice provides livestock water out of the riparian area. This benefits SWFL by protecting the overall integrity of the habitat by reducing bank erosion. It improves water quality and associated macro-invertebrate production. Improved water quality improves livestock production making ranching and it's associated open space more viable. It facilitates livestock management which can improve or maintain SWFL habitat.

**Potential Adverse Effect(s) to SWFL – T**

AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Fish- T**

AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Mammals- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Plants- T**

AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

- AE1: Physical Disturbance including noise
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Invertebrates- None- NT**

**Potential Adverse Effect(s) to – Amphibians- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Reptiles- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Additional Conservation Measures – None**

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**CONSERVATION PRACTICE: WATERING FACILITY (614)**

**Definition –** A permanent or portable device to provide an adequate amount and quality of drinking water for livestock and or wildlife.

**Purpose –** To provide access to drinking water for livestock and/or wildlife in order to:

- Meet daily water requirements
- Improve animal distribution

**Resource Concern –**

- RC 03: Soil Erosion – Excessive Bank Erosion
- RC 06: Water Quality Degradation – excess pathogens and chemicals from manure
- RC 13: Inadequate Habitat for Fish and Wildlife
- RC 15: Livestock Production Limitation – Inadequate Livestock Water

**Application –** This practice is typically used to support a prescribed grazing management plan (518) and used in combination with livestock pipeline (516) to direct and manage livestock away from riparian areas.

**Potential Beneficial Effect(s) to SWFL –** In combination with 516, livestock pipeline, this practice provides livestock water out of the riparian area. This benefits SWFL by protecting the overall integrity of the habitat by reducing bank erosion. It improves water quality and associated macro-invertebrate production. Improved water quality improves livestock production making ranching and it's associated open space more viable. It facilitates livestock management which can improve or maintain SWFL habitat.

**Potential Adverse Effect(s) to SWFL – NT**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE7: Increased potential of susceptibility to parasitism e.g. cowbirds
- AE9: Practice implementation in isolation without 528 for SWWF may reduce riparian habitat
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Fish- NT**

- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Mammals- NT**

- AE1: Physical Disturbance including noise
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Plants- NT**

- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)-NT**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE9: Practice implementation in isolation without 528 may reduce riparian habitat
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Invertebrates- None- NT**

**Potential Adverse Effect(s) to – Amphibians- NT**

- AE1: Physical Disturbance including noise
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Reptiles- NT**

- AE1: Physical Disturbance including noise
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Additional Conservation Measures – NONE**

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**CONSERVATION PRACTICE: WETLAND ENHANCEMENT (659)**

**Definition –** The augmentation of wetland functions beyond the original natural conditions on a former, degraded, or naturally functioning wetland site; sometimes at the expense of other functions.

**Purpose –** To increase the capacity of specific wetland functions (such as habitat for targeted species, and recreational and educational opportunities) by enhancing:

- Hydric soil functions (changing soil hydrodynamic and/or bio-geochemical properties).
- Hydrology (dominant water source, hydroperiod, and hydrodynamics).
- Vegetation (including the removal of undesired species, and/or seeding or planting of desired species).
- Enhancing plant and animal habitats.

**Resource Concern –**

- RC 04: Insufficient Water
- RC 13: Inadequate Habitat for Fish and Wildlife

**Application –** This practice involves an increase in a specific wetland function to achieve the desire objective. Increasing the hydro-period is a typical wetland enhancement increasing the habitat value for some species.

**Potential Beneficial Effect(s) to SWFL –** Wetland restoration can improve both nesting and foraging habitat

for SWFL. Floodplain wetlands store water for recharge of streams during low flow sustaining both SWFL habitat and that of benthic macro-invertebrate food resources for SWFL.

**Potential Adverse Effect(s) to SWFL – NT**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Fish- NT**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Mammals- NT**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Plants- NT**

- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- NT**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Invertebrates- NT**

- AE1: Physical Disturbance including noise
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Amphibians- NT**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Reptiles- NT**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Additional Conservation Measures – NONE**

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**CONSERVATION PRACTICE: WETLAND RESTORATION (657)**

**Definition** – The return of a wetland and its functions to a close approximation of its original condition as it existed prior to disturbance on a former or degraded wetland site

**Purpose** – To restore wetland function, value, habitat, diversity, and capacity to a close approximation of the pre-disturbance conditions by restoring:

- Conditions conducive to hydric soil maintenance.
- Wetland hydrology (dominant water source, hydroperiod, and hydrodynamics).
- Native hydrophytic vegetation (including the removal of undesired species, and/or seeding or planting of desired species).
- Original fish and wildlife habitats.

**Resource Concern –**

- RC 04: Insufficient Water
- RC 13: Inadequate Habitat for Fish and Wildlife

**Application** – Wetland restoration occurs in areas that were wetlands (hydric soils) or in degraded wetlands where functions are restored. Removing excess sediment, establishing native hydrophytic plants, creating micro-topography are actions that might be undertaken to restore a wetland.

**Potential Beneficial Effect(s) to SWFL** – Wetland restoration can improve both nesting and foraging habitat for SWFL. Floodplain wetlands store water for recharge of streams during low flow sustaining both SWFL habitat and that of benthic macro-invertebrate food resources for SWFL.

**Potential Adverse Effect(s) to SWFL – T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE3: Increased potential of introduction of invasive plants
- AE4: Removal of desired riparian vegetation and understory component
- AE9: Practice implementation in isolation without 528 for SWFL may reduce riparian habitat

**Potential Adverse Effect(s) to – Fish- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Mammals- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Plants- T**

- AE6: Increased potential of accidental mortality of individuals

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Invertebrates- T**

- AE1: Physical Disturbance including noise
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Amphibians- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Reptiles- T**

- AE1: Physical Disturbance including noise
- AE2: Temporary soil and vegetation disturbance (indirect & temporary)
- AE4: Removal of desired riparian vegetation and understory component
- AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Additional Conservation Measures – None**

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**CONSERVATION PRACTICE: WOODY RESIDUE TREATMENT (384)**

**Definition** – The treatment of residual woody material that is created due to management activities or natural disturbances.

**Purpose** – To reduce hazardous fuels and:

- Reduce the risk of harmful insects and disease
- Protect/maintain air quality by reducing the risk of wildfire
- To improve access for management purposes
- Improve access to forage for livestock and wildlife
- Develop renewable energy systems

- Enhance aesthetics
- Reduce the risk of harm to humans and livestock
- Improve the soil organic matter
- Improve the site for natural or artificial regeneration.

**Resource Concern –**

RC 12: Degraded Plant Condition – Wildfire Hazard, excessive biomass accumulation

**Application –** This practice involves the use or disposal of woody residue from 314 Brush Management or 666 Forest Stand Improvement. Typical application might be to distribute the mulch from brush management in a manner that protects the soil and allows plant establishment.

**Potential Beneficial Effect(s) to SWFL –** Helps to maintain the fire return interval within the natural range of variation.

**Potential Adverse Effect(s) to SWFL – T**

AE5: Increased fire hazard

**Potential Adverse Effect(s) to – Fish- T**

AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Mammals- T**

AE5: Increased fire hazard

**Potential Adverse Effect(s) to – Plants- T**

AE5: Increased fire hazard

**Potential Adverse Effect(s) to – Birds (other than SWFL)- T**

AE5: Increased fire hazard

**Potential Adverse Effect(s) to – Invertebrates- T**

AE10: Water quality/quantity – loss or alteration of suitable hydrology

**Potential Adverse Effect(s) to – Amphibians- T**

AE5: Increased fire hazard

**Potential Adverse Effect(s) to – Reptiles- T**

AE5: Increased fire hazard

**Additional Conservation Measures –**

21. Treating Woody Invasive Species Slash within the 100-year Floodplain

Within the 100-year Floodplain. Treating residual woody material, resulting from invasive species control, has additional resource considerations to address when working within the 100-year floodplain; including the potential for damage from floating wood debris during flood events, the potential for alteration of floodplain hydrology, and risk of spreading or re-infestation of invasive species.

*Removal.* The recommended method is to haul the slash out of the 100-year floodplain. In some cases, it may be possible to deposit slash into a transportation truck for off-site uses (bio-utilization). Else the slash may be relocated to an adjacent area and then treated using the methods provided in the 384-Woody Residue Treatment practice specification. The removal method requires that slash from state-listed noxious species (i.e. salt cedar, Siberian elm, Russian olive) only be moved when it poses a minimal risk of transporting viable seed or root-producing fragments. Each species has different seed/fragment viability<sup>1</sup>; identify these periods or conditions in the planning phase. In addition, an operation and maintenance (O&M) item will include scouting the re-location site for at least one year to treat any new infestations (using practice 314-Brush Mgmt.).

*Partial Removal/On-site Treatment.* When it is necessary to treat slash within the 100-year floodplain, first remove the large wood; any downed wood that will pose a flood hazard, even if it's planned to be treated at a later date (i.e. pile burn next year). This also reduces the biomass that will remain on-site and will facilitate other treatment methods. The most economical method for removal may be to harvest the firewood sized wood; consider cutting 4-8 foot lengths to pile by an access road. Treat the remaining slash by following the methods identified in the 384-Woody Residue Treatment practice specification. The method chosen must have consideration for reducing wildfire risk, allowing un-restricted understory growth, and protecting sensitive resource areas: streambanks, wetlands, overflow waterways, areas with concentrated flows, or areas of native regeneration.

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<sup>1)</sup> Seed and rooting-fragment viability by species.

**Salt cedar** produces seed continually from March through October and are primarily dispersed by air. Seeds can germinate immediately; however, the seed is only viable for only a few weeks. Both seed and rooting fragments only require a short duration (as little as 24 hrs) of soil moisture to establish. *Slash removal implication:* avoid physically disturbing live salt cedar from March to mid-October, and ensure live vegetative fragments (stem or root) have limited contact with soil. Also avoid disturbing the soil surface; root crowns and shallow roots will sprout new stems rapidly when disturbed.

**Russian olive** seeds mature late summer through fall and remain on the tree until disturbed. Seeds require stratification (winter dormancy) until prolonged cool, moist conditions in (fall or spring) allow germination. They remain viable in the soil for up to 3 years until germination conditions are available. Top-kill will result in re-growth from the root crown or stump, and will cause spreading from root-sprouting. *Slash removal implication:* avoid placing slash (which has mature seed) in areas, or through areas, that may have moist soil at some time of the year or in areas that may flood (seed disperses by floating on the water).

**Siberian elm** seeds mature March through April, dispersed by air. Seeds can germinate immediately or go dormant until the following spring, and they have a moderate germination rate and wide range of tolerances. Top-kill to trees (especially young trees) will result in re-growth from the root crown or stump. *Slash removal implication:* avoid physically disturbing seed producing elm from March to May.

APPENDIX V

**RANGE-WIDE WILDLIFE HABITAT EVALUATION GUIDES (WHEG) for the SOUTHWESTERN WILLOW FLYCATCHER**

1. SWFL WHEG for applications Below 6,000 ft elevation

NRCS		Wildlife Habitat Evaluation Guide (WHEG)		June 2014	
Southwestern Willow Flycatcher (SWFL)					
Below 6000 ft Elevation					
Owner/Operator:		Date:			
County:		District:			
Assisted By:		Location:			
Field Office:					
Assessment Area Name:		Farm/Tract:			
<p>Southwestern willow flycatchers (SWFL) are neotropical migrants found nesting in dense mosaics of riparian vegetation (usually where surface water is present or soil is saturated). Nests are usually found in dense stands of medium-sized trees or shrubs such as willow or tamarisk, often with an overstory of cottonwood.</p>					
<p><b>Instructions:</b> The primary purpose of this Wildlife Habitat Evaluation Guide (WHEG) is to determine baseline acres of suitable nesting habitat for SWFL under landowner control, as specified in Biological Opinion #02E0000-2012-F-0013. This WHEG may be used for planning SWFL habitat restoration and management projects by identifying potential limiting factors and may also be used to rank projects. Before completing this WHEG, review the detailed information on evaluating SWFL habitat and definitions found below the WHEG. Prior to scoring the WHEG, develop a site map, delineate the expected assessment area(s), and print an aerial photo. An <b>Assessment Area (AA)</b> is a discrete patch of like vegetation and hydrology. Plant species and composition, age, and height should be similar in an assessment area. Ground water levels, surface water levels, and flooding timing, duration, and intensity should be similar in an assessment area. Fill in all yellow boxes as applicable. Interpolate scores as needed. <b>Bench</b> = Benchmark (current) condition. <b>After</b> = Post-implementation of conservation practices at maturity. Due to the wide variety of habitat used by the species across its range, the evaluator will need to interpret the questions to their situation. Evaluate only the cooperating party's land unless otherwise directed.</p>					
<p><b>Assessment Area Drawing:</b> identify water, dry channels, dominant vegetation, veg recruitment, disturbance, landmarks, etc.</p>					

WHEG Elements		SCORE		
1. HABITAT CONFIGURATION		Value	Bench	After
<i>Score for the cooperating party's land and not adjacent areas out of the landowners control.</i>				
a.	Two or more large patches consisting of dense (difficult to walk through) woody riparian vegetation. Patches are mostly > 33 feet wide and > 20 acres in size.	1.0		
b.	Two or more large patches consisting of dense (difficult to walk through) woody riparian vegetation. Patches are mostly > 33 feet wide and are > 10 acres but < 20 acres in size.	0.8-0.9		
c.	A multiple patch complex with one large patch consisting of dense (difficult to walk through) woody riparian vegetation. Large patch is mostly > 33 feet wide and least 10 acres in size. Additional patches are	0.7		
d.	Multiple patches consisting of dense (difficult to walk through) woody riparian vegetation. Patches are at least 33 feet wide and > 2.5 acres and < 4.5 acres in size.	0.5-0.6		
e.	A single patch of dense riparian vegetation at least 33 feet wide and > 2.5 acres, but < 4.5 acres in size, or is < 2.5 acres but is connected to other patches.	0.1-0.4		
f.	A single, narrow strip of riparian vegetation that does not extend from or connect to a larger patch and AVERAGE WIDTH is less than 33 feet wide and is < 2.5 acres and is not connected to another patch.	0.0		

Notes:

2. HABITAT STRUCTURE		SCORE	
<i>Estimate growing season height of canopy, density of understory, and recruitment in AA.</i>		Value	Bench After
a.	Mature multi-storied riparian vegetation with canopy heights ranging from approximately 35 to 65 feet tall, with mosaics of densely vegetated understories of shorter trees (> 15 feet tall, that are difficult to walk through).	1.0	
b.	Young stands of regenerating riparian vegetation with similar heights of vegetation approximately 15 feet in height (that are difficult to walk through).	0.7-0.9	
c.	Mature woody riparian vegetation with canopies > 15 feet with multiple canopy gaps containing younger trees < 15 feet in height.	0.5-0.6	
d.	Young stands of regenerating vegetation with varying heights, most < 15 feet in height.	0.3-0.4	
e.	Canopy height for entire patch is < 15 feet in height, consisting of mature, somewhat interconnected trees and with little to no regeneration.	0.2	
f.	Canopy of large trees > 35 feet with little understory or regeneration.	0.1	
g.	No connected trees. Little to no regeneration. Trees are not capable of reaching above 15 feet in height.	0.0	

Are multiple woody canopy layers present: YES NO

Describe recruitment:

3. WOODY HABITAT COMPOSITION		SCORE	
<i>Assess aerial canopy cover within AA with ocular estimates and aerial photos. Assess arundo as woody.</i>		Value	Bench After
a.	Woody riparian vegetation composed of native species (such as willow and cottonwood) and no exotic vegetation (such as tamarisk and Russian olive).	1.0	
b.	Woody riparian vegetation dominated by > 75% native vegetation (such as willow and cottonwood) with a smaller component of exotic vegetation (most likely tamarisk, and possibly Russian olive).	0.7-0.9	
c.	Woody riparian vegetation dominated > 50% native vegetation (such as willow and cottonwood) with a smaller component of exotic woody species (most likely tamarisk, possibly Russian olive, and < 20% arundo).	0.5-0.6	

d.	Woody riparian vegetation composed of > 50% exotic vegetation (mostly likely tamarisk, possibly Russian olive, and < 50% arundo).	0.1-0.4	
e.	Little to no woody riparian vegetation flycatchers use for nesting, or site potential is for herbaceous only. Abundant cattails, sedges & rushes, grasses, and/or arundo do not comprise flycatcher habitat.	0.0	

Dominant woody veg (top 3):

Woody plants: F. cottonwood, coyote willow, live tamarisk, dead/dying tamarisk, Russian olive, Gooding's willow, insert other: \_\_\_\_\_

Average canopy cover (circle one): 0-10%, 10-25%, 25-50%, 50-75%, 75-100%

Arundo (circle one): 0%, 1-5%, 5-20%, 20-50%, 50%+

4. WATER DEPLETIONS		SCORE	
<i>Determine the hydrology of the river system from onsite observations and upstream info.</i>		Value	Bench After
a.	No river diversion or groundwater pumping.	1.0	
b.	Limited river diversion or groundwater pumping that does not reduce the water available for riparian or lake bottom habitat regeneration, growth, maintenance, distribution, or abundance.	0.7-0.9	
c.	River diversion or groundwater pumping that reduces the water available for riparian or lake bottom habitat regeneration, growth, maintenance, distribution, or abundance. Minimum suitable habitat is	0.5-0.6	
d.	River diversion or groundwater pumping that reduces the water available for riparian habitat regeneration, growth, maintenance, distribution, or abundance. Minimum suitable habitat is only available in wettest years.	0.1-0.4	
e.	River diversion or groundwater pumping to the extent that water is not available for riparian habitat regeneration, growth, maintenance, distribution, or abundance.	0.0	

Onsite depletions:

Upstream depletions:

5. GENERAL HYDROLOGY (especially May 15-Aug 1)		SCORE		
<i>Determine the hydrology from observations within the AA.</i>		Value	Bench	After
a.	Perennial surface flow with elevated groundwater within or adjacent to assessment area.	1.0		
b.	Intermittent streams that provide surface water during the breeding season.	0.7-0.9		
c.	Mostly perennial surface flow, with some intermittent sections or short durations of intermittent flow and elevated groundwater maintains moist soils.	0.5-0.6		
d.	Intermittent or perennial surface flows during the breeding season with elevated groundwater.	0.1-0.4		
e.	No surface flow or rare occurrence of surface flow; breeding season in most years without moist soils and elevated groundwater.	0.0		
Supplemental hydrology (circle): side channels, springs, urban runoff, ag runoff, irrigation, other (describe): _____				
Beaver Activity (circle): chewed wood, dam, wood lodge, bank burrow, observed beaver, other (describe)				
6. FLOOD FREQUENCY		SCORE		
<i>Average flood frequency in AA as determined by field indicators.</i>		Value	Bench	After
a.	Regular flooding every 1.5 - 2 years. Floodplain wetlands (oxbows, backwater wetlands) are still hydrologically connected to the river. High flows in the river channel result in surface water saturation of these floodplain features.	1.0		
b.	Overbank flooding occurs every 3 - 4 years. Channel is slightly incised. Floodplain wetlands (oxbows, backwater wetlands) are still hydrologically connected to the river. High flows in the river channel result in surface water saturation of these floodplain features.	0.7-0.9		
c.	Flooding every 5 - 6 years. Most floodplain wetlands are wetted when river levels rise.	0.5-0.6		
d.	Flooding every 7 - 10 years. Only the deepest floodplain wetlands are wetted when river levels rise. Some runoff water available to help establish woody vegetation.	0.1-0.4		
e.	No flooding. The channel is deeply incised or confined by structures such as levees. Floodplain wetlands are no longer hydrologically connected to the river. Runoff cannot provide enough water to establish dense woody vegetation.	0.0		
Evidence (circle): debris on plants, recent watercourses/ponded water, currently flooded, other (describe): _____				

7. SITE DISTURBANCE		SCORE		
<i>Look for evidence of livestock and human caused disturbance within the AA.</i>		Value	Bench	After
a.	No human or livestock disturbance occurs in the assessment area. SWFL habitat quality factors are maintained with minimal disturbance. Access is limited to the non-breeding/brood rearing season. Land management, such as livestock grazing and fire wood harvest are conducted so that the timing and intensity avoids or minimizes disturbance. No vehicular recreational activities within or adjacent to assessment area. All disturbance activities occurs outside the breeding season. All grazing will be consistent with NRCS grazing plans specific to SWFL.	1.0		
b.	SWFL habitat quality factors are maintained with noticeable, short term impacts to habitat quality from land management such as livestock grazing, and fire wood harvest, and other land management. No vehicular recreational activities within or adjacent to patch. Grazing will follow NRCS approved grazing plan specific to SWFL management. Grazing plan may include the growing season 1 out of 3 years.	0.7-0.9		
c.	SWFL habitat quality factors are present but long term impacts to habitat quality are apparent. Land management decisions are applied without regard for the SWFL nesting season. Livestock grazing is conducted without an NRCS plan. No vehicular recreational activities within or adjacent to assessment area.	0.5-0.6		
d.	Low quality SWFL habitat due to human activities and land management. Physical and auditory disturbances during the nesting season are common. Vehicular recreational activities within or adjacent to assessment area.	0.1-0.4		
e.	Low quality SWFL habitat due to human activities and land management. Physical and auditory disturbances during the nesting season are common. Vehicular recreational activities within or adjacent to assessment area.	0.0		
Livestock (circle): cow pies, hoof prints, grazing on plants, cows observed, other (describe) _____				
Human (circle): vehicle tracks, garbage, people observed, fire rings, other (describe) _____				

SCORE TOTALS				
For NRCS Planning and Ranking			For Baseline Habitat Acres	
	BENCH	AFTER	BENCH	AFTER
FINAL SCORE (Zero on EI. 1-3 = 0)	0.00	0.00	0.00	0.00
Ave. AFTER minus BENCH			BENCH	AFTER
IMPROVEMENT SCORE	0.00		0.00	0.00

***Biological Assessment for Working Lands for Wildlife – Southwestern Willow Flycatcher***

**2. SWFL WHEG for applications Above 6,000 ft elevation**

NRCS		Wildlife Habitat Evaluation Guide (WHEG)		June 2014	
Southwestern Willow Flycatcher (SWFL)					
Above 6000 ft Elevation					
Owner/Operator:		Date:			
County:		District:			
Assisted By:		Location:			
Field Office:					
Assessment Area Name:		Farm/Tract:			
<p>Southwestern willow flycatchers (SWFL) are neotropical migrants found nesting in dense mosaics of riparian vegetation (usually where surface water is present or soil is saturated). Nests at high elevation (&gt; 6000 feet) sites are usually found in dense stands of medium-sized shrubby willows, and in some instances with an overstory of cottonwood. High elevation locations are known to occur in south-central Colorado, eastern Arizona, and portions of western and northern New Mexico.</p>					
<p><b>Instructions:</b> The primary purpose of this Wildlife Habitat Evaluation Guide (WHEG) is to determine baseline acres of suitable nesting habitat for SWFL under landowner control, as specified in Biological Opinion #02E0000-2012-F-0013. This WHEG may be used for planning SWFL habitat restoration and management projects by identifying potential limiting factors and may also be used to rank projects. Before completing this WHEG, review the detailed information on evaluating SWFL habitat and definitions found below the WHEG. Prior to scoring the WHEG, develop a site map, delineate the expected assessment area(s), and print an aerial photo. An <b>Assessment Area (AA)</b> is a discrete patch of like vegetation and hydrology. Plant species and composition, age, and height should be similar in an assessment area. Ground water levels, surface water levels, and flooding timing, duration, and intensity should be similar in an assessment area. Fill in all yellow boxes as applicable. Interpolate scores as needed. <b>Bench</b>= Benchmark (current) condition. <b>After</b>= Post-implementation of conservation practices at maturity. Due to the wide variety of habitat used by the species across its range, the evaluator will need to interpret the questions to their situation. Evaluate only the cooperating party's land unless otherwise directed.</p>					
<p><b>Assessment Area Drawing:</b> identify water, dry channels, dominant vegetation, veg recruitment, disturbance, landmarks, etc.</p>					
<b>WHEG Elements</b>					
<b>1. HABITAT CONFIGURATION</b>			<b>SCORE</b>		
<i>Score for the cooperating party's land and not adjacent areas out of the landowners control.</i>			Value	Bench	After
a.	This assessment area is part of a multiple patch complex and is composed of dense riparian vegetation, minimum of 10 feet wide, most patches > 0.25 acre in size, totaling over 10 acres in the aggregate. No more than 25 feet distance between the patches.		1.0		
b.	This assessment area is part of a multiple patch complex and is of dense riparian vegetation, minimum of 10 feet wide, most > 0.25 acre in size, totaling 4.5 to 10 acres in the aggregate. No more than 25 feet distance between the patches.		0.8-0.9		
c.	A single or multiple areas of riparian vegetation, minimum 10 feet wide, 2.5 to 4.5 acres total in size. No more than 50 feet distance between the patches.		0.7		
d.	A single or multiple areas of riparian vegetation, minimum 10 feet wide, 0.25 to 2.5 acres in size. No more than 50 feet distance between the patches.		0.5-0.6		
e.	A single, narrow strip of riparian vegetation or collection of any small patch that does not extend from or connect to a larger patch but is at least 10 feet wide and 0.25 acres in size.		0.1-0.4		

**Biological Assessment for Working Lands for Wildlife – Southwestern Willow Flycatcher**

f.	A single, narrow strip of riparian vegetation or collection of any small patch that does not extend from or connect to a larger patch and is < 10 feet wide and 0.25 acres in size.	0.0		
Notes:				

2. HABITAT STRUCTURE		SCORE		
Estimate growing season height of canopy, density of understory, and recruitment in AA.		Value	Bench	After
a.	Mature woody riparian vegetation dominated with canopy heights ranging from 10 to 23 feet tall, with mostly a single vegetative layer, no distinct overstory or understory. Typically, a dense branch and twig structure occurs in the lower 6.5 feet, with high live foliage density from the ground to the canopy. These areas are very hard to walk through.	1.0		
b.	Mature multi-storied riparian vegetation sites with canopy heights ranging from approximately 7 to 23 feet tall, with mosaics of densely vegetated understories of shorter willows > 15 feet tall. These areas are hard to walk through.	0.8-0.9		
c.	Young stands of regenerating riparian vegetation with similar heights of vegetation approximately 6 to 15 feet in height. These areas are moderately hard to walk through.	0.6-0.7		
d.	Tree overstory is > 50% dead or decadant trees, with new tree regeneration within nesting patch. The area is somewhat difficult to walk through.	0.5		
e.	Open canopy gallery with "park-like" conditions. No understory regeneration, but site is capable of achieving a multi-storied canopy, described above in a or b, through management and/or plantings. These areas are very easy to walk through.	0.1-0.4		
f.	Limited or no tree or tall shrub canopy within or adjacent to habitat patches. Little to no woody riparian vegetation flycatchers use for nesting, or site potential is for herbaceous only.	0.0		
Are multiple woody canopy layers present: YES NO				
Describe recruitment:				

3. WOODY HABITAT COMPOSITION		SCORE		
Assess aerial canopy cover within AA with ocular estimates and aerial photos		Value	Bench	After
a.	Woody riparian vegetation dominated by willow and no exotic vegetation.	1.0		
b.	Woody riparian vegetation dominated by > 75% willow with a smaller component of non-native vegetation (most likely Russian olive).	0.7-0.9		
c.	Woody riparian vegetation dominated > 50% willow with a smaller component of non-native species (most likely Russian olive).	0.5-0.6		
d.	Woody riparian vegetation composed of > 50% non-native (most likely Russian olive).	0.1-0.4		
e.	Little to no woody riparian vegetation flycatchers use for nesting (herbaceous vegetation, little to no vegetation, developed areas, or open water).	0.0		
Dominant woody veg (top 3):				
Other woody plants:				
Average canopy cover (circle one): 0-10%, 10-25%, 25-50%, 50-75%, 75-100%				

4. WATER DEPLETIONS		SCORE		
Determine the hydrology of the river system from onsite observations and upstream info.		Value	Bench	After
a.	No river diversion or groundwater pumping.	1.0		
b.	Limited river diversion or groundwater pumping that does not reduce the water available for riparian or lake bottom habitat regeneration, growth, maintenance, distribution, or abundance.	0.7-0.9		
c.	River diversion or groundwater pumping that reduces the water available for riparian or lake bottom habitat regeneration, growth, maintenance, distribution, or abundance. Minimum suitable habitat is maintained in most years.	0.5-0.6		
d.	River diversion or groundwater pumping that reduces the water available for riparian habitat regeneration, growth, maintenance, distribution, or abundance. Minimum suitable habitat is only available in wettest years.	0.1-0.4		
e.	River diversion or groundwater pumping to the extent that water is not available for riparian habitat regeneration, growth, maintenance, distribution, or abundance.	0.0		
Onsite depletions:				
Upstream depletions:				

***Biological Assessment for Working Lands for Wildlife – Southwestern Willow Flycatcher***

<b>5. GENERAL HYDROLOGY (especially May 15-Aug 1)</b>		<b>SCORE</b>		
<i>Determine the hydrology from observations within the AA.</i>		<b>Value</b>	<b>Bench</b>	<b>After</b>
a.	Perennial surface flow with elevated groundwater within or adjacent to assessment area.	1.0		
b.	Intermittent streams that provide surface water during the breeding season.	0.7-0.9		
c.	Mostly perennial surface flow, with some intermittent sections or short durations of intermittent flow and elevated groundwater maintains moist soils.	0.5-0.6		
d.	Intermittent or perennial surface flows during the breeding season with elevated groundwater.	0.1-0.4		
e.	No surface flow or rare occurrence of surface flow; breeding season in most years without moist soils and elevated groundwater.	0.0		
Supplemental hydrology (circle): side channels, springs, urban runoff, ag runoff, irrigation, other (describe): _____				
Beaver Activity (circle) : chewed wood, dam, wood lodge, bank burrow, observed beaver, other (describe)				

<b>6. FLOOD FREQUENCY</b>		<b>SCORE</b>		
<i>Average flood frequency in AA as determined by field indicators.</i>		<b>Value</b>	<b>Bench</b>	<b>After</b>
a.	Regular flooding every 1.5 - 2 years. Floodplain wetlands (oxbows, backwater wetlands) are still hydrologically connected to the river. High flows in the river channel result in surface water saturation of these floodplain features.	1.0		
b.	Overbank flooding occurs every 3 - 4 years. Channel is slightly incised. Floodplain wetlands (oxbows, backwater wetlands) are still hydrologically connected to the river. High flows in the river channel result in surface water saturation of these floodplain features.	0.7-0.9		
c.	Flooding every 5 - 6 years. Most floodplain wetlands are wetted when river levels rise.	0.5-0.6		
d.	Flooding every 7 - 10 years. Only the deepest floodplain wetlands are wetted when river levels rise. Some runoff water available to help establish woody vegetation.	0.1-0.4		
e.	No flooding. The channel is deeply incised or confined by structures such as levees. Floodplain wetlands are no longer hydrologically connected to the river. Runoff cannot provide enough water to establish dense woody vegetation.	0.0		
Evidence (circle): debris on plants, recent watercourses/ponded water, currently flooded, other (describe): _____				

<b>7. SITE DISTURBANCE</b>		<b>SCORE</b>		
<i>Look for evidence of livestock and human caused disturbance within the AA.</i>		<b>Value</b>	<b>Bench</b>	<b>After</b>
a.	No human or livestock disturbance occurs in the assessment area.	1.0		
b.	SWFL Habitat quality factors are maintained with minimal disturbance. Access is limited to the non-breeding/brood rearing season. Land management, such as livestock grazing and fire wood harvest are conducted so that the timing and intensity avoids or minimizes disturbance. No vehicular recreational activities within or adjacent to assessment area. All disturbance activities occurs outside the breeding season. All grazing will be consistent with NRCS grazing plans specific to SWFL management.	0.7-0.9		
c.	SWFL habitat quality factors are maintained with noticeable, short term impacts to habitat quality from land management such as livestock grazing, and fire wood harvest, and other land management. No vehicular recreational activities within or adjacent to patch. Grazing will follow NRCS approved grazing plan specific to SWFL management. Grazing plan may include the growing season 1 out of 3 years.	0.5-0.6		
d.	SWFL habitat quality factors are present but long term impacts to habitat quality are apparent. Land management decisions are applied without regard for the SWFL nesting season. Livestock grazing is conducted without an NRCS plan. No vehicular recreational activities within or adjacent to assessment area.	0.1-0.4		
e.	Low quality SWFL habitat due to human activities and land management. Physical and auditory disturbances during the nesting season are common. Vehicular recreational activities within or adjacent to assessment area.	0.0		
Livestock (circle): cow pies, hoof prints, grazing on plants, cows observed, other (describe) _____				
Human (circle): vehicle tracks, garbage, people observed, fire rings, other (describe) _____				

***Biological Assessment for Working Lands for Wildlife – Southwestern Willow Flycatcher***

SCORE TOTALS			For NRCS Planning and Ranking			For Baseline Habitat Acres		
			BENCH AFTER				BENCH AFTER	
FINAL SCORE (Zero on El. 1-3 = 0)	0.00	0.00			LOWEST SCORE (El. 1-3)	0.00	0.00	
			Ave. AFTER minus BENCH				BENCH AFTER	
IMPROVEMENT SCORE		0.00			COMBINED SCORE (El. 1-7)	0.00	0.00	

**Recommendation of Baseline Suitable SWFL Nesting Habitat:** The Baseline habitat value for the assessment area = ZERO (0) if any of BENCH scores for elements 1, 2 or 3 = 0, OR if the COMBINED SCORE of BENCH elements 1-7 < 2.0. If the ZERO value is not achieved and the COMBINED SCORE of BENCH is  $\geq 2.0$ , then the baseline value is the number of acres of the assessed area. See Scoring Examples below. Baseline acres must be confirmed by the state biologist or designee.

**Baseline: \_\_\_\_\_ acres baseline for \_\_\_\_\_ (name) assessment area.**

Send this WHEG (pages 1-5) and maps and pictures of the AA to the State Biologist or designee for confirmation.

Confirmation of Baseline	Signature	Date

SCORING EXAMPLES: (not based on actual sites)							
Example A	5 Ac	Example B	9.3 Ac	Example C	4.1 Ac	Example D	0.2 Ac
Element	Score	Element	Score	Element	Score	Element	Score
1	0.3	1	0.3	1	0.6	1	0
2	0.5	2	0.2	2	0.7	2	0.5
3	0.2	3	0.1	3	0.8	3	0.4
4	0.2	4	0.1	4	0.3	4	0.7
5	0.2	5	0.2	5	0.6	5	0.9
6	0.2	6	0.1	6	0.5	6	0.7
7	0.4	7	0.2	7	0.8	7	1.0
El. 1-3 Low	0.2	El. 1-3 Low	0.1	El. 1-3 Low	0.6	El. 1-3 Low	0
Combined	2.0	Combined	1.2	Combined	4.3	Combined	4.2

Example A = Baseline is 5 acres as Combined score  $\geq 2.0$  and no zeros in Elements 1-3  
 Example B = Baseline is Zero for the 9.3 AC as combined score < 2.0  
 Example C = Baseline is 4.1 Ac as Combined score > 2.0 and no zeros in Elements 1-3  
 Example D = Baseline is Zero for .5 Ac as element 1 is 0 (Though patch is higher quality, it is too small and isolated for nesting currently).