

DRAFT

Conservation Measures for Covered Fish Species

This handout presents draft conservation measures for the covered fish species (conservation measures for the wildlife and plant species were provided at the February 3 and March 3, 2010 Stakeholder Committee meetings). Revisions in response to comments received to this and the January, February and March versions will be addressed in the compiled draft Chapter 5. The draft of conservation measures are presented at three ecological scales (i.e., landscape-, natural community-, and species-levels). To provide context, conservation measures are preceded by the draft biological goals and objectives for each ecological scale. Draft conservation measures for landscape- and natural community-level biological goals and objectives are incomplete—only those goals, objectives, and conservation measures that support achieving the biological objectives for the covered fish species are addressed in this handout.

The biological goals and objectives and conservation measures are draft and are expected to undergo revisions as the Butte Regional HCP/NCCP planning progresses.

Landscape-Level Goals, Objectives, and Conservation Measures

Goals and Objectives

Goal LAND1: Preserve large landscapes with the range of physical and biological attributes necessary to sustain covered species abundance and habitat, to preserve native biodiversity, and to provide a sufficient range of conditions to accommodate future anticipated shifts in distributions of covered species and natural communities with climate change.

Objective LAND1.1: Establish a preserve system of protected lands in the Planning Area that brings protected status to an additional extent of covered natural communities in the minimum patch sizes indicated in Table 5.X.

Table 5.X. Objectives and Minimum Patch Sizes for Preserved Natural Communities

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Natural Community	Extent to Preserve (acres)	Minimum Patch Size (acres)
Oak woodland	To come	300 ¹
Oak Savanna	To come	300 ²
Grassland	To come	400 ³
Swale complex and vernal pools	To come	400 ⁴
Riparian forest and scrub	To come	25 ⁵
Riparian scrub	To come	10 ⁵
Agricultural land (irrigated crop and pasture)	To come	160 ³
Agricultural land (rice)	To come	160 ³
Emergent wetlands	To come	No minimum.
Aquatic	To come	<u>To come</u>
<u>Floodplain</u> ⁶	<u>To come</u>	<u>To come</u>

¹~~Comprised of oak woodland or combined oak woodland and oak savanna patches.~~

²~~Comprised of oak savanna or combined oak savanna and oak woodland patches.~~

³~~Comprised of grassland or combined grassland and swale complex and vernal pools.~~

⁴~~Comprised of swale complex and vernal pools or combined swale complex and vernal pools and grassland.~~

¹Comprised of oak woodland or combined oak woodland and oak savanna patches except where present in preserved floodplain.

²Comprised of oak savanna or combined oak savanna and oak woodland patches except where present in preserved floodplain.

³Comprised of grassland or combined grassland and swale complex and vernal pools.

⁴Comprised of swale complex and vernal pools or combined swale complex and vernal pools and grassland.

⁵Except where present in preserved floodplain.

⁶Floodplain is a landscape position and is comprised of natural communities that are present on preserved floodplains. The preservation objective for floodplain is comprised of the preservation objectives for each of the natural communities and is not in addition those objectives.

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Goal LAND3: Maintain and enhance connectivity among preserves to provide for the movement of native organisms among habitat areas and to facilitate genetic exchange among populations.

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Objective LAND3.3: Maintain or improve upstream and downstream passage for covered and other native fish in Pine Creek, Rock Creek, Mud Creek, Big Chico Creek, Lindo channel, Little Chico Creek, Butte Creek, Little Dry Creek, and Feather River.

Goal LAND4: Maintain and rehabilitate ecosystem processes that support covered species and their habitats.

1 **Objective LAND4.2:** Support implementation of water quality improvement
2 programs that serve to reduce the loads of toxic contaminants into waters that
3 support covered plants, amphibians, ~~and~~-fish, ~~and~~and aquatic foodweb processes.

4
5 **Objective LAND4.3:** Restore floodplain processes along rivers and streams.

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7 **Objective LAND4.4:** Preserve [] acres of floodplain along the Sacramento and
8 Feather Rivers.

9
10 **Objective LAND4.5:** Maintain or improve the water quality of runoff entering
11 streams supporting covered fish species from preserved lands.

12 Conservation Measures

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14 **LAND CM5: Conduct post-acquisition ecological surveys of preserved habitats to**
15 **identify habitat enhancement and management requirements.** Following acquisition
16 of preserve parcels, the Implementing Entity will conduct surveys to assess the level of
17 ecological condition of preserved species habitats and supporting ecosystem processes. If
18 appropriate based on results of the assessment, the Implementing Entity will identify and
19 implement actions ~~to be implemented~~ to enhance habitat functions for the target covered
20 species, including actions that maintain and improve the water quality of runoff entering
21 streams supporting covered species, and any subsequent ongoing management actions
22 that necessary to maintain habitat functions over time. Identified habitat and
23 enhancement actions will be incorporated into preserve-specific management plans (see
24 LAND CM6).

25 **Land CM7: Improve fish passage.** The Implementing Entity will conduct an
26 assessment of Pine Creek, Rock Creek, Mud Creek, Big Chico Creek, Lindo Channel,
27 Little Chico Creek, Butte Creek, Little Dry Creek, and Feather River to identify locations
28 where passage of covered fish species is physically impeded. The Implementing Entity
29 will coordinate with NMFS, USFWS, and DFG to prioritize each of the identified
30 locations for implementing actions to improve fish passage based on the likely magnitude
31 of benefits for the covered fish species. Based on priority, the Implementing Entity will
32 contact landowners where the impediments are located to enter into cooperative
33 agreements to implement actions necessary to modify stream channels to improve
34 conditions for fish passage.

35
36 **Land CM8: Improve urban stormwater water quality.** The Implementing Entity will
37 provide up to \$[] in funding to the City of Chico, City of Oroville, City of Gridley and
38 City of Biggs under National Pollutant Discharge Elimination System (NPDES) MS4
39 stormwater permits to implement actions from and in addition to their respective
40 stormwater management plans designed to improve the water quality of urban runoff
41 entering Big Chico Creek, Lindo Channel, Little Chico Creek, Sycamore/Mud Creek,
42 Butte Creek and the Feather River. Actions in addition to those in existing
43 plans/programs will be implemented if they are expected to benefit covered species.

1 Potential types of actions that could be funded under this measure include, but are not
2 limited to:

- 3 • construction of stormwater retention ponds for the capture of stormwater;
- 4 • construction of stormwater retention irrigation holding ponds for the capture and
5 irrigation use of stormwater;
- 6 • design and establishment of vegetated buffer strips to slow runoff velocities and
7 capture sediments and other pollutants;
- 8 • design and construction of bioretention systems (grass buffer strips, sand bed,
9 ponding area, mulch layer, planting soil, and plants) to slow runoff velocities and
10 for removal of pollutants from stormwater;
- 11 • construction of stormwater curb extensions adjacent to existing commercial
12 businesses that are likely to contribute oil and grease runoff;
- 13 • establishment of stormwater media filters to remove particulates and pollutants;
- 14 • provisioning of funds for moisture monitors to be installed during construction of
15 sprinkler systems at commercial sites that will eliminate watering when
16 unnecessary; and
- 17 • providing support for establishment of on-site infiltration systems in lieu of new
18 storm drain connections for new construction, such as pervious pavement in place
19 of asphalt and concrete in parking lots and along roadways, and downspout
20 disconnections to redirect roof water to cisterns on existing developed properties,
21 including residential.

22 To implement this conservation measure, the Implementing Entity will enter into binding
23 Memoranda of Agreement (MOAs) or similar instruments with the Cities. Individual
24 stormwater entities will be responsible for conducting the monitoring necessary to assess
25 the effectiveness of supported elements of their stormwater management plans.

26

27 **Aquatic Natural Community**

28 **Goals and Objectives**

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30 **Goal AQUA1:** Maintain and enhance functional aquatic communities to benefit covered
31 species and biodiversity.

32

33 **Objective AQUA1.1:** Preserve acres of existing unprotected grassland and
34 oak savanna and woodland communities that support ~~stock~~-ponds suitable
35 for native amphibian breeding.

36

1 **Objective AQUA1.2:** Preserve █ linear miles of existing unprotected reaches of
2 Pine Creek, Rock Creek, Mud Creek, Big Chico Creek, Lindo Channel, Little
3 Chico Creek, Butte Creek, Little Dry Creek, and Feather River.

4
5 **Objective AQUA1.3:** Restore ponds and associated emergent wetlands within
6 the Basin Landform (~~Southern Rice, Northern Rice, Basin and~~ Sacramento River
7 CAZs) suitable for giant garter snake habitat on preserved lands.

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9 **Objective AQUA1.4:** Reduce loads of contaminants in protected streams that
10 may be toxic to aquatic biota.

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12 **Objective AQUA1.5:** Improve ~~water temperature and overhead shaded riverine~~
13 aquatic (SRA) and instream cover conditions along █ linear miles of protected
14 streams.

15
16 **Objective AQUA1.6:** ~~Remove or modify in-stream structures that pose a barrier~~
17 to increase the ~~upstream and downstream movement extent~~ of covered and other
18 ~~native fish species to provide for the passage of fish.~~ **Objective AQUA1.7:**
19 ~~Remove █ linear feet of armored channel banks along Pine Creek, salmonid~~
20 spawning habitat in Rock Creek, Mud Creek, Big Chico Creek, ~~Lindo Channel,~~
21 Little Chico Creek, Butte Creek, Little Dry Creek, and Feather River ~~to restore~~
22 ~~erosional and depositional processes and improve the supply of spawning gravels.~~

23
24 **Objective AQUA1.7:** Remove, modify, or screen █ unscreened diversions on
25 Big Chico Creek, Butte Creek, and Feather River.

26
27 **Objective AQUA1.8:** Enhance ~~protected~~ preserved stock ponds to improve
28 habitat structure and hydrologic conditions for covered species.

29 Conservation Measures

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31 A total of 2,506 miles of stream channels, 487 stock ponds, and 8,307 acres of open water
32 provide aquatic habitat for covered species. The strategy for preservation of aquatic
33 communities is aimed at meeting the conservation needs of the Chinook salmon, Central
34 Valley steelhead, Sacramento splittail, green sturgeon, river lamprey, foothill yellow-
35 legged frog, western spadefoot toad, northwestern pond turtle, giant garter snake, bald
36 eagle, and American peregrine falcon.

37
38 **AQUA CM1: Establish agreements with water and irrigation districts to**
39 **maintain appropriate water flows in permanent water conveyance canals.** The
40 Implementing Entity would work with water and irrigation districts that own, operate,
41 and maintain water conveyance facilities to ensure that appropriate flows are present to
42 support the requirements of covered species.
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1 To maintain giant garter snake use, water flows in water conveyance canals must be
2 maintained at appropriate levels. Reducing flows can restrict movement and isolate
3 individuals and populations. Over time, this limits reproductive potential and reduces
4 dispersal capabilities. Maintaining suitable water flows during the active period of the
5 year will facilitate movement and with implementation of habitat protection and
6 enhancement measures will potentially expand the distribution and population of giant
7 garter snakes within the Basin CAZs.

8 **AQUA CM2: Conduct surveys in preserved stream corridors to establish baseline**
9 **ecological conditions.** Within 2 years of acquisition, The Implementing Entity will
10 conduct surveys of preserved stream corridors to determine existing environmental
11 conditions, including instream and channel bank structure, and habitat functions for
12 covered fish and other native species. Results of analyses of survey data will be used to
13 guide development and implementation of habitat enhancement and management
14 measures and provide the basis for assessing the effectiveness of enhancement and
15 management measures based on effectiveness monitoring.

16
17 **AQUA CM3: Enhance the habitat functions for covered and other native species on**
18 **up to 1 linear miles of preserved stream corridors.** Based on results of post-
19 acquisition ecological and base conditions surveys (see LAND CM5 and AQUA CM2),
20 the Implementing Entity will conduct surveys to map and assess the characteristics of
21 SRA and instream cover and barriers to fish passage. Based on the assessment, the
22 Implementing Entity will prioritize locations for restoring and enhancing riparian
23 vegetation and channel structure and improving fish passage. Actions to improve habitat
24 and fish passage conditions will be implemented in the highest priority locations.

25 **AQUA CM4: Conduct surveys of preserved ponds establish baseline ecological**
26 **conditions.** Within 2 years of acquisition, the Implementing Entity will conduct surveys
27 of preserved ponds to determine existing environmental conditions, including the
28 composition and extent of terrestrial, emergent, and aquatic vegetation, habitat functions
29 for covered and other native species, and water control structures. Results of analyses of
30 survey data will be used to guide development and implementation of habitat
31 enhancement and management measures and provide the basis for assessing the
32 effectiveness of enhancement and management measures based on effectiveness
33 monitoring.

34
35 **AQUA CM5: Enhance the habitat functions for covered and other native species on**
36 **in preserved ponds.** Based on results of post-acquisition ecological and base conditions
37 surveys (see LAND CM5 and AQUA CM4), the Implementing Entity will identify ponds
38 for which the function for covered and other native species can be substantially enhanced.
39 The Implementing Entity will identify enhancement and implement actions to be
40 undertaken and monitor the ecological results of the actions. Based on analysis of
41 monitoring results, the Implementing Entity may adjust enhancement actions to improve
42 their effectiveness through the adaptive management decision making process (see
43 Section 5.X).

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2 **AQUA CM6: Restore covered fish species spawning and rearing habitat.** Based on
3 results of post-acquisition ecological surveys (see LAND CM5), the Implementing Entity
4 will identify potential locations within preserved lands along the Feather River that
5 support site conditions suitable for restoration of covered fish species spawning and
6 rearing habitat. Once identified, the Implementing Entity will prepare and implement
7 restoration plans. Restoration actions, depending on site conditions, could include
8 creating low flow channels, lowering floodplain surfaces to increase the frequency and
9 duration of floodplain inundation, improving the quality of river edge/channel margins,
10 and creating backwaters. Effectiveness monitoring will be conducted as described in
11 Section 5.X, *Monitoring and Research Plan*, to collect the information necessary to
12 evaluate the effectiveness of restoration methods and species use of restored habitats.
13 Based on analyses of monitoring results, the Implementing Entity may adjust restoration
14 methods through the adaptive management decision making process.

15
16 **AQUA CM7: Remove riprap from along █ miles of streams that support salmonid**
17 **spawning habitat.** The Implementing Entity will remove riprap from █ miles of
18 channel banks along Pine Creek, Rock Creek, Mud Creek, Big Chico Creek, Lindo
19 Channel, Little Chico Creek, Butte Creek, Little Dry Creek, and/or Feather River to:
20

- 21 ▪ Increase recruitment of salmonid spawning gravels;
- 22 ▪ Rehabilitate erosional and depositional processes and provide for channel
23 meander;
- 24 ▪ Restore natural bank substrates to provide for the establishment of riparian
25 vegetation; and
- 26 ▪ Increase the diversity and complexity of channel margin and instream habitats for
27 covered fish and other native species.

28 Anticipated actions to implement this conservation measure include, but are not limited
29 to:

- 30 ▪ mapping the location of riprapped channel banks along Rock Creek, Mud Creek,
31 Big Chico Creek, Lindo Channel, Little Chico Creek, Butte Creek, Little Dry
32 Creek, and Feather River;
- 33 ▪ prioritizing locations for riprap removal based on the likely biological benefits
34 and practicability (e.g., the potential for adverse effects on flood control); and
- 35 ▪ physical removal of riprap materials from banklines and replacement with natural
36 materials.

37
38 **AQUA CM8: Augment salmonid and sturgeon spawning gravels with placement of**
39 **up to █ cubic yards of gravel in streams that support salmonid and sturgeon**
40 **spawning habitat.** The Implementing Entity will place up to █ cubic yards of
41 salmonid spawning gravels (█-█ mm in size) in Rock Creek, Mud Creek, Big Chico

1 Creek, Lindo Channel, Little Chico Creek, Butte Creek, Little Dry Creek, and/or Feather
2 River to increase the extent of salmonid spawning habitat.

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4 Anticipated actions to implement this conservation measure include, but are not limited
5 to:

- 6 ▪ mapping the location of existing salmonid spawning habitats;
- 7 ▪ assessing the condition of existing spawning habitat areas to determine if their
8 function could be substantially increased with augmentation of gravels;
- 9 ▪ conducting assessments to identify suitable locations for restoring or creating
10 spawning habitat with placement of spawning gravels;
- 11 ▪ Prioritizing locations for riprap removal based on the likely biological benefits
12 and practicability (e.g., the potential for adverse effects on flood control); and
- 13 ▪ placement of spawning gravel in the highest priority channel locations.

14
15 The Implementing Entity will monitor enhanced and restored or created spawning habitat
16 to determine if they support salmonid spawning and to determine if additional
17 augmentations may be required to maintain the habitats over time (see Section 5.X).
18 Because placed spawning gravels may be transported downstream over time in some
19 locations, the Implementing Entity may choose to allocate a portion of the █ cubic yards
20 of spawning gravel to maintain previously enhanced and restored or created spawning
21 habitats.

22
23 **AQUA CM9: Modify and screen diversions.** The Implementing Entity will modify or
24 screen █ unscreened diversions on Big Chico Creek, Butte Creek, and Feather River to
25 reduce the risk for entrainment of larval and juvenile salmonids, sturgeon, splittail, and
26 lamprey. Anticipated actions to implement this conservation measure include, but are not
27 limited to:

- 28 ▪ coordinating with independent diverters, water districts, NMFS, U.S. Bureau of
29 Reclamation's Anadromous Fish Screen Program, and DFG's Fish Screen and
30 Passage Program to prioritize unscreened diversions based on the expected level
31 of reduction in entrainment risk for the covered fish species that would be
32 accorded by modifying or screening each of the diversions;
- 33 ▪ entering into cooperative agreements with owners of high priority diversions and
34 designing diversion modifications or screens;
- 35 ▪ and installation of modifications and screens.

1 Sacramento Splittail

3 Goals and Objectives

5 **Goal SASP1:** Maintain or increase the availability and quality of Sacramento splittail
6 habitat to potentially increase the abundance and distribution of Sacramento splittail
7 within the planning area.

9 The following landscape-level and natural community-level biological objectives also
10 contribute towards achieving this goal: [to come].

12 **Objective SASP1.1:** Protect █ acres of undeveloped floodplain and channel
13 margin spawning and rearing habitat that is hydrologically connected to the
14 Sacramento and Feather Rivers.

16 **Objective SASP1.2.** Restore █ acres of Sacramento splittail spawning and
17 rearing habitat along the Feather River ~~by creating low flow channels, lowering~~
18 ~~floodplain surfaces to increase the frequency and duration of floodplain~~
19 ~~inundation, improving the quality of river edge/channel margins, and creating~~
20 ~~backwaters.~~

22 Conservation Strategy and Relationship to Landscape- and Community-Level 23 Conservation Measures

25 The strategy for Sacramento splittail conservation focuses on the preservation and
26 restoration of spawning and rearing habitat, which is only present along the Sacramento
27 River and Feather River. The general conservation approach for Sacramento splittail
28 involves implementing actions to preserve and restore its spawning and rearing habitat
29 through landscape-level and natural community-level conservation measures that
30 preserve its habitats along the Sacramento and Feather Rivers. In addition, the
31 preservation and management of large portions of these river watersheds within the
32 Planning Area is expected to maintain and improve the water quality of runoff entering
33 splittail habitats. Large scale preservation of the watershed is also expected to maintain
34 or improve the quality and quantity of inorganic and organic materials entering riverine
35 habitats in support of aquatic foodweb processes.

37 Additional Conservation Measures

39 No additional conservation measures are proposed at this time.

1 Central Valley Steelhead

3 Goals and Objectives

5 **Goal CVST1:** Maintain or increase the availability and quality of Central Valley
6 steelhead habitat to potentially increase the abundance and distribution of Central Valley
7 steelhead in the planning area.

9 The following landscape-level and natural community-level biological objectives also
10 contribute towards achieving this goal: [to come].

12 ~~Objective CVST1.1: Protect [] acres of undeveloped floodplain rearing habitat~~
13 ~~that is hydrologically connected to steelhead streams.~~ **Objective CVST1.1:**
14 Protect [] miles of steelhead rearing and spawning habitat along in Rock Creek,
15 Mud Creek, Big Chico Creek, Lindo Channel, Little Chico Creek, Butte Creek,
16 Little Dry Creek, and/or the Feather River.

18 **Objective CVST1.2:** Increase the supply of spawning gravels recruited into
19 creeks/waterways supporting steelhead runs compared to existing conditions.

21 ~~Objective CVST1.3: Remove, modify, or screen [] diversions on streams~~
22 ~~supporting steelhead runs to reduce~~ Decrease the risk for entrainment of juvenile
23 steelhead: at diversions.

25 Conservation Strategy and Relationship to Landscape- and Community-Level 26 Conservation Measures

28 The strategy for Central Valley steelhead conservation focuses on the preservation and
29 restoration of its spawning and rearing habitats. The general conservation approach for
30 steelhead involves implementing actions to preserve and restore its spawning and rearing
31 habitat through landscape-level and natural community-level conservation measures that
32 preserve its habitats along in Rock Creek, Mud Creek, Big Chico Creek, Lindo Channel,
33 Little Chico Creek, Butte Creek, Little Dry Creek, and the Feather River. In addition, the
34 preservation and management of large portions of these stream watersheds within the
35 Planning Area is expected to maintain and improve the water quality of runoff entering
36 steelhead habitats. Large scale preservation of the watershed is also expected to maintain
37 or improve the quality and quantity of inorganic and organic materials entering riverine
38 habitats in support of aquatic foodweb processes.

40 Additional Conservation Measures

42 No additional conservation measures are proposed at this time.

1 Central Valley Spring Run Chinook Salmon

3 Goals and Objectives

5 **Goal SRCH1:** Maintain or increase the availability and quality of Central Valley spring-
6 run Chinook salmon to potentially increase the abundance and distribution of Central
7 Valley spring-run Chinook salmon within the planning area.

9 The following landscape-level and natural community-level biological objectives also
10 contribute towards achieving this goal: [to come].

12 **Objective SRCH1.1:** Protect acres of undeveloped floodplain Chinook
13 salmon rearing habitat ~~that is hydrologically connected to Chinook salmon~~
14 ~~streams along the Sacramento and Feather Rivers.~~

16 **Objective SRCH1.2:** Increase the supply of spawning gravels recruited into
17 creeks waterways supporting Chinook salmon runs compared to existing
18 conditions.

20 **Objective SRCH1.3:** ~~Remove, modify, or screen diversions on streams~~
21 ~~supporting salmon runs to reduce~~ Decrease the risk for entrainment of juvenile
22 spring-run Chinook salmon ~~at diversions.~~

24 ~~**Objective SRCH1.4:** Support implementation of existing programs to restore Chinook~~
25 ~~salmon habitat along rivers and creeks within the planning area.~~

27 Conservation Strategy and Relationship to Landscape- and Community-Level 28 Conservation Measures

30 The strategy for spring-run Chinook salmon conservation focuses on the preservation and
31 restoration of its spawning and rearing habitats. The general conservation approach for
32 Chinook salmon involves implementing actions to preserve and restore its spawning and
33 rearing habitat through landscape-level and natural community-level conservation
34 measures that preserve its habitats along in Pine Creek, Rock Creek, Mud Creek, Big
35 Chico Creek, Lindo Channel, Butte Creek, and the Feather River. In addition, the
36 preservation and management of large portions of these stream watersheds within the
37 Planning Area is expected to maintain and improve the water quality of runoff entering
38 Chinook salmon habitats. Large scale preservation of the watershed is also expected to
39 maintain or improve the quality and quantity of inorganic and organic materials entering
40 riverine habitats in support of aquatic foodweb processes.

42 Additional Conservation Measures

44 No additional conservation measures are proposed at this time.

1 Sacramento River Winter Run Chinook Salmon

3 Goals and Objectives

5 **Goal WRCH1:** Maintain or increase the availability and quality of Sacramento River
6 winter-run Chinook salmon to potentially increase the abundance and distribution of
7 Sacramento River winter-run Chinook salmon.

9 **Objective WRCH1.1:** Support implementation Protect acres of existing programs to
10 restore undeveloped floodplain Chinook salmon rearing habitat along the Sacramento
11 River.

13 Conservation Strategy and Relationship to Landscape- and Community-Level 14 Conservation Measures

16 The strategy for winter-run Chinook salmon conservation focuses on the preservation and
17 restoration of its rearing habitat in the Sacramento River. In addition, the preservation
18 and management of large portions of the Sacramento River's watershed within the
19 Planning Area is expected to maintain and improve the water quality of runoff entering
20 winter-run Chinook salmon habitat. Large scale preservation of the watershed is also
21 expected to maintain or improve the quality and quantity of inorganic and organic
22 materials entering riverine habitats in support of aquatic foodweb processes.

24 Additional Conservation Measures

26 No additional conservation measures are proposed at this time.

28 Central Valley Fall/Late-Fall Run Chinook Salmon

30 Goals and Objectives

32 **Goal FRCHI:** Maintain or increase the availability and quality of Central Valley
33 fall/late-fall run Chinook salmon to potentially increase the abundance and distribution of
34 Central Valley fall/late-fall run Chinook salmon in the planning area.

36 The following landscape-level and natural community-level biological objectives achieve
37 this goal: [to come].

39 Objective FRCH1.1: Protect acres of undeveloped floodplain Chinook
40 salmon rearing habitat along the Sacramento and Feather Rivers.

42 Objective FRCH1.2: Increase the supply of spawning gravels recruited into
43 waterways supporting Chinook salmon runs compared to existing conditions.

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Objective FRCH1.3: Decrease the risk for entrainment of juvenile fall/late-fall run Chinook salmon at diversions.

Conservation Strategy and Relationship to Landscape- and Community-Level Conservation Measures

The strategy for Central Valley fall/late-fall run Chinook salmon conservation focuses on the preservation and restoration of its spawning and rearing habitats. The general conservation approach for Chinook salmon involves implementing actions to preserve and restore its spawning and rearing habitat through landscape-level and natural community-level conservation measures that preserve its habitats along Rock Creek, Mud Creek, Big Chico Creek, Little Chico Creek, Butte Creek, the Sacramento River, and the Feather River. In addition, the preservation and management of large portions of these stream watersheds within the Planning Area is expected to maintain and improve the water quality of runoff entering Chinook salmon habitats. Large scale preservation of the watershed is also expected to maintain or improve the quality and quantity of inorganic and organic materials entering riverine habitats in support of aquatic foodweb processes.

Additional Conservation Measures

No additional conservation measures are proposed at this time.

Green Sturgeon

Goals and Objectives

Goal GRST1: Maintain or increase the availability and quality of green sturgeon habitat to potentially increase the abundance and distribution of green sturgeon in the planning area.

Objective GRST1.1: Protect green sturgeon spawning, rearing, and migration habitats along the Sacramento and Feather Rivers.

The following landscape-level and natural community-level biological objectives achieve this goal: [to come].

Conservation Strategy and Relationship to Landscape- and Community-Level Conservation Measures

The strategy for green sturgeon focuses on the preservation of its spawning, rearing, and migration habitats in the Sacramento and Feather Rivers. In addition, the preservation and management of large portions of the Sacramento and Feather River watersheds

1 within the Planning Area is expected to maintain and improve the water quality of runoff
2 entering its habitats. Large scale preservation of the watershed is also expected to
3 maintain or improve the quality and quantity of inorganic and organic materials entering
4 riverine habitats in support of aquatic foodweb processes.

6 **Additional Conservation Measures**

8 No additional conservation measures are proposed at this time.

10 **River Lamprey**

12 **Goal RILA1:** Maintain or increase the availability and quality of river lamprey habitat
13 to potentially increase the abundance and distribution of river lamprey in the planning
14 area.

16 The following landscape-level and natural community-level biological objectives achieve
17 this goal: [to come].

19 **Objective RILA1.1: Protect river lamprey spawning, rearing, and migration**
20 **habitats along the Sacramento and Feather Rivers.**

22 **Conservation Strategy and Relationship to Landscape- and Community-Level** 23 **Conservation Measures**

25 The strategy for river lamprey focuses on the preservation of its spawning, rearing, and
26 migration habitats in the Sacramento and Feather Rivers. In addition, the preservation
27 and management of large portions of the Sacramento and Feather River watersheds
28 within the Planning Area is expected to maintain and improve the water quality of runoff
29 entering its habitats. Large scale preservation of the watershed is also expected to
30 maintain or improve the quality and quantity of inorganic and organic materials entering
31 riverine habitats in support of aquatic foodweb processes.

33 **Additional Conservation Measures**

35 No additional conservation measures are proposed at this time.