

Staff Report 34

APPLICANT:

Reclamation District No. 108

PROPOSED ACTION:

Issuance of a General Lease – Public Agency Use

AREA, LAND TYPE, AND LOCATION:

Sovereign land in the Sacramento River channel and floodplain, near Redding and Anderson, Shasta County.

AUTHORIZED USE:

Restoration and rehabilitation of the bed of the Sacramento River channel and floodplain, to improve wildlife and aquatic habitats at five sites previously authorized by the Commission (Salt Creek, Market Street, Redding Riffle, Keswick, and Turtle Bay Island); and three sites not previously authorized by the Commission (Rockwads Phase One, Middle Creek, and Stillwater), as shown on Exhibit A and B.

TERM:

10 years; beginning February 28, 2023.

CONSIDERATION:

The public use and benefit; with the State reserving the right at any time to set a monetary rent if the Commission finds such action to be in the State's best interest; dredged materials may not be sold.

SPECIFIC LEASE PROVISIONS:

- In performing the restoration and rehabilitation operations, the Lessee will adhere to Best Management Practices to control turbidity and protect aquatic resources and habitats from excessive siltation in the general vicinity of the Project.

- Lessee acknowledges that grading materials from the Lease Premises are the property of the State of California and shall not be sold, and that Lessee is not authorized to grade for purposes of commercial resale, environmental mitigation credits, or other private benefit without Lessor's prior written consent.
- Within 60 days of completing the restoration and rehabilitation project, Lessee will provide Lessor with photographs, a set of "as built" plans, and written confirmation which evidence completion of the project and identify the contours of the restoration, rehabilitation, and enhancement activities on and adjacent to state land. Lessor shall then replace Exhibit A, Land Description, and Exhibit B, Site and Location Map, to the Lease as necessary to accurately reflect the final location of the authorized restoration and rehabilitation. Once approved by the Lessor's Executive Officer or designee, the revised Exhibits shall replace the Exhibits incorporated in the Lease at the time of Lease execution. The replaced Exhibits shall be incorporated in the Lease as though fully set forth therein.

BACKGROUND:

On October 1, 2002, the Commission authorized issuance of a 20-year General Lease – Public Agency Use, to the United States Bureau of Reclamation (USBR), for continued placement and maintenance of clean gravel for the rehabilitation and restoration of King Salmon and winter-run Chinook Salmon spawning grounds at nine sites on the Sacramento River, near Redding, in Shasta County ([Item 38, October 1, 2002](#)). On February 9, 2016, the Commission authorized an amendment of Lease No. PRC 5482, to modify lease terms and conditions and remove Section 3, Upper Sacramento River Gravel Restoration Site drawing; replace Exhibit A, Land Description, and Exhibit B, Site and Location Map; revise Section 2, Special Provisions to include dredging/construction activity; include two additional sites in the Sacramento River known as North Cypress Side Channel and Kapusta 1a; include dredging activities as needed to create side channels; and to create nearshore benches ([Item 13, February 9, 2016](#)). On August 9, 2016, the Commission authorized an amendment of Lease No. PRC 5482, to replace Exhibit A, Land Description, and Exhibit B, Site and Location Map; and include 11 additional sites in the Sacramento River known as Salt Creek, Turtle Bay Island, Kutras Lake, South Cypress Side Channel, Tobiasson Island, Shea Island and Levee, South Shea Levee, Kapusta, Anderson River Park, Lake California, and Rio Vista ([Item 10, August 9, 2016](#)). On August 8, 2020, Lease No. PRC 5482 expired.

In Fall 2022, Commission staff received a request from USBR, to allow Reclamation District No. 108 (District) to begin restoration activities at several locations with time sensitive restoration needs. The most urgent sites include, but are not limited to:

Market Street, Redding Riffle, Salt Creek, and Rockwads Phase One. These sites are affiliated with the Sacramento River Salmonid Spawning and Rearing Habitat Restoration Project (Project) and Upper Sacramento River Anadromous Fish Habitat Restoration Program, funded by USBR and implemented by the District and other regional entities. On November 21, 2022, Commission staff issued a Letter of Non-Objection to USBR and the District, for the subject sites and associated restoration activities during the period of December 1, 2022 through June 30, 2023, while Commission staff was processing the lease application for said use. The letter was signed and returned by the District and supported by Lease Application No. 3875.

In November 2022, the District applied for a General Lease - Public Agency Use, for restoration and rehabilitation of the bed of the Sacramento River channel and floodplain to improve the wildlife and aquatic habitats at five sites previously authorized by the Commission (Salt Creek, Market Street, Redding Riffle, Keswick, and Turtle Bay Island); and three sites not previously authorized by the Commission (Rockwads Phase One, Middle Creek, and Stillwater). These sites are located in Shasta County and affiliated with the Sacramento River Salmonid Spawning and Rearing Habitat Restoration Project.

The proposed activities will have a lasting beneficial impact on aquatic, terrestrial, and riparian species by improving existing degraded habitat and providing additional new habitat for Chinook Salmon and steelhead. The public benefit will be a healthy length of river and its associated floodplain for years to come. Further, the project will enhance habitats and sustainability of the salmon, thereby increasing fish populations in the Sacramento River and the larger environmental ecosystem. The proposed action is considered beneficial because it will enhance fisheries, which is a recognized Public Trust use.

PROJECT DESCRIPTION:

The overarching goal of the Project is to enhance Chinook Salmon and steelhead spawning and rearing habitats through restoration measures, including the creation of additional side-channel and spawning habitats along the Sacramento River. The Project's work activities are summarized in Exhibit C – Project Description Summaries. These activities fall under the larger Upper Sacramento River Anadromous Fish Habitat Restoration Program.

STAFF ANALYSIS AND RECOMMENDATION:

AUTHORITY:

Public Resources Code sections 6005, 6216, 6301, 6303, 6501.1, and 6503; California Code of Regulations, title 2, sections 2000 and 2003.

PUBLIC TRUST AND STATE'S BEST INTERESTS:

The proposed project will enhance habitats and sustainability, thereby increasing fish populations in the Sacramento River and the larger ecosystem. The proposed action is considered beneficial because it will enhance fisheries, which is a recognized Public Trust use. Furthermore, the action will not impede or impair any other Public Trust uses in the area.

The project will enhance the fishing experience by restoring the habitat in the river. This wildlife and aquatic habitat restoration project is a water-dependent use that is consistent with the common law Public Trust Doctrine. As such, Commission staff believes this particular use of public land, by the District for a public benefit is consistent with the common law Public Trust Doctrine. Waterborne activities such as rafting, kayaking, and fishing are possible through nearby access points. The public can fish in the Sacramento River using boating vehicles such as kayaks and canoes. The project area will include signage and remote personnel to monitor safety measures. Signage will be placed upstream to alert boaters about project related equipment in the vicinity. As needed, project work will pause operations to accommodate safe passage of boaters and recreators in the river. Project activities will occur on weekdays when public recreation is at a minimum level. Further, signage will be placed on the adjacent upland at the entrance driveway leading to the project areas. Restoration activities will not impede public access.

The lease includes certain provisions protecting the public's use of the proposed lease area by requiring the Applicant to obtain necessary permits. The lease also has a limited term of 10 years that allows the Commission flexibility to determine if the Public Trust needs of the area have changed over time.

CLIMATE CHANGE:

The project areas are not tidally influenced and therefore, would not be subject to sea level rise. However, as stated in [*Safeguarding California: 2018 Update*](#) (California Natural Resources Agency 2018), climate change is projected to increase the frequency and severity of natural disasters related to flooding, drought, and storms. In rivers, more frequent and powerful storms can result in increased flooding conditions and damage from storm-created debris. Conversely,

prolonged droughts could dramatically reduce river flow and water levels, leading to loss of public access and navigability. Climate change will further influence riverine areas by changing erosion and sedimentation rates, and flooding and storm flow, as well as runoff, will likely increase scour, decreasing bank stability at a faster rate.

Due to these potential changes, additional gravel placement may be needed in the future due to higher levels of flood exposure and more frequent storm events. Pursuant to the proposed lease, the Applicant acknowledges that the lease premises are located in areas that may be subject to effects of climate change.

CONCLUSION:

For all the reasons above, staff believes the issuance of this lease will not substantially interfere with Public Trust needs at this location, at this time, and for the foreseeable term of the proposed lease; is consistent with the Public Trust Doctrine; and is in the best interests of the State.

OTHER PERTINENT INFORMATION:

1. Approval or denial of the application is a discretionary action by the Commission. Each time the Commission approves or rejects a use of sovereign land, it exercises legislatively delegated authority and responsibility as trustee of the State's Public Trust lands as authorized by law. If the Commission denies the application, the Applicant will not be authorized to perform restoration and rehabilitation measures as defined in project documents. The lessee has no right to a new lease or a renewal of any previous lease.
2. This action is consistent with the "Leading Climate Change Activism," "Meeting Evolving Public Trust Needs," and "Committing to Collaborative Leadership" Strategic Focus Areas of the Commission's 2021-2025 Strategic Plan.
3. An application from the U.S. Department of the Interior, Bureau of Reclamation (Lease Number 5482) for 17 sites in the bed of the Sacramento River as part of the Upper Sacramento River Anadromous Fish Habitat Restoration Program will be considered under a separate action at the February 28, 2023 Commission meeting.
4. Staff recommends that the Commission find that this activity is exempt from the requirements of the California Environmental Quality Act (CEQA) as a categorically exempt project. The project is exempt under Class 7, Actions by

Regulatory Agencies for Protection of Natural Resources; California Code of Regulations, title 14, section 15307.

Authority: Public Resources Code section 21084 and California Code of Regulations, title 14, section 15300.

EXHIBITS:

- A. Land Description
- B. Site and Location Map
- C. Project Description Summaries

RECOMMENDED ACTION:

It is recommended that the Commission:

CEQA FINDING:

Find that the activity is exempt from the requirements of CEQA pursuant to California Code of Regulations, title 14, section 15061 as a categorically exempt project, Class 7, Actions by Regulatory Agencies for Protection of Natural Resources; California Code of Regulations, title 14, section 15307.

PUBLIC TRUST AND STATE'S BEST INTERESTS:

Find that the proposed lease will not substantially impair the public rights to navigation and fishing or substantially interfere with the Public Trust needs and values at this location, at this time, and for the foreseeable term of the lease; and is in the best interests of the State.

AUTHORIZATION:

1. Authorize issuance of a General Lease – Public Agency Use to the Applicant beginning February 28, 2023, for a term of 10 years, to authorize the restoration and rehabilitation of eight sites in the bed of the Sacramento River channel and floodplain to improve wildlife and aquatic habitats, as described in Exhibit A and shown on Exhibit B (for reference purposes only) attached and by this reference made a part hereof; consideration: public use and benefit; with the State reserving the right at any time to set a monetary rent if the Commission finds such action to be in the State's best interests; such permitted activity is contingent upon Applicant's compliance with applicable permits, recommendations, or limitations issued by federal, state, and local

governments; grading material shall be used for the benefit of the Project and may not be sold.

2. Authorize the Executive Officer or designee to replace Exhibits in the lease and review and approve "as-built" plans and post-completion reports detailing the final location of the restoration and rehabilitation activities, following project completion.

EXHIBIT A

A 3875

LAND DESCRIPTION

Eight parcels of State owned submerged lands lying in the bed of the Sacramento River, County of Shasta, State of California, more particularly described as follows:

PARCEL 1 (Keswick)

A parcel of State owned submerged lands lying in the bed of the Sacramento River, adjacent to fractional Section 21, T32N, R5W, MDM, as shown on the Official Government Township Plat approved on January 19, 1870, Shasta County, State of California, described as follows:

Bounded on the north by a line parallel with and 1000 feet southerly of the centerline of the Keswick Dam Road crossing the Sacramento River;

Bounded on the south by a line parallel with and 1250 feet southerly of the centerline of the Keswick Dam Road crossing the Sacramento River;

Bounded on the east by the Low Water of the right bank of the Sacramento River;

Bounded on the west by the Low Water of the left bank of the Sacramento River.

PARCEL 2 (Middle Creek)

A parcel of State owned submerged lands lying in the bed of the Sacramento River, adjacent to fractional Section 28, T32N, R5W, MDM, as shown on the Official Government Township Plat approved on January 19, 1870 Shasta County, State of California, described as follows:

Bounded on the east by a line extended southerly and northerly to Low Water of the right and left banks of the Sacramento River, said line being perpendicular to a point lying 800.00 feet westerly of the prolongation of the most northerly line of that parcel shown on "Survey of 2 Parcels in Sections 1, 2, and 3 of the P.B. Reading Grant" (sheet 1 of 2), recorded on July 9, 1952 in Book 13 of Land Surveys at Page 20, Shasta County Recorder, said northerly line described as "S 69° 21' 40" E 123.00 feet";

Bounded on the west by a line extended southerly and northerly to Low Water of the right and left banks of the Sacramento River, said line being perpendicular to a point lying 1300.00 feet westerly of the prolongation of the most northerly line of that parcel shown on "Survey of 2 Parcels in Sections 1, 2, and 3 of the P.B.

Reading Grant" (sheet 1 of 2), recorded on July 9, 1952 in Book 13 of Land Surveys at Page 20, Shasta County Recorder, said northerly line described as "S 69° 21' 40" E 123.00 feet";

Bounded on the south by the Low Water of the right bank of the Sacramento River;

Bounded on the north by the Low Water of the left bank of the Sacramento River.

PARCEL 3 (Salt Creek)

A parcel of State owned submerged lands lying in the bed of the Sacramento River, adjacent on the left bank to fractional Section 28, T32N, R5W, MDM, as shown on the Official Government Township Plat approved on January 19, 1870 and adjacent on the right bank to Lot 37, as shown on the Map of the Rancho Buenaventura, approved July 18, 1856, Shasta County, State of California, described as follows:

Bounded on the west by a line extended southerly and northerly to Low Water of the right and left banks of the Sacramento River, said line being perpendicular to a point lying 200.00 feet easterly of the prolongation of the most northerly line of that parcel shown on "Survey of 2 Parcels in Sections 1, 2, and 3 of the P.B. Reading Grant" (sheet 1 of 2), recorded on July 9, 1952 in Book 13 of Land Surveys at Page 20, Shasta County Recorder, said northerly line described as "S 69° 21' 40" E 123.00 feet";

Bounded on the east by a line extended southerly and northerly to Low Water of the right and left banks of the Sacramento River, said line being perpendicular to a point lying 600.00 feet easterly of the prolongation of the most northerly line of that parcel shown on "Survey of 2 Parcels in Sections 1, 2, and 3 of the P.B. Reading Grant" (sheet 1 of 2), recorded on July 9, 1952 in Book 13 of Land Surveys at Page 20, Shasta County Recorder, said northerly line described as "S 69° 21' 40" E 123.00 feet";

Bounded on the south by the Low Water of the right bank of the Sacramento River;

Bounded on the north by the Low Water of the left bank of the Sacramento River.

PARCEL 4 (Market Street)

A parcel of State owned submerged lands lying in the bed of the Sacramento River, adjacent on the left bank to fractional Section 25, T32N, R5W, MDM, as shown on the Official Government Township Plat approved on January 19, 1870 and adjacent on the right bank to Lot 37, as shown on the Map of the Rancho

Buenaventura, approved July 18, 1856, Shasta County, State of California, described as follows:

Bounded on the east by a line parallel with and 500 feet easterly of the centerline of the Market Street Bridge;

Bounded on the west by a line parallel with and 250 feet westerly of the centerline of the Market Street Bridge;

Bounded on the south by the Low Water of the right bank of the Sacramento River;

Bounded on the north by the Low Water of the left bank of the Sacramento River.

PARCEL 5 (Redding Riffle)

A parcel of State owned submerged lands lying in the bed of the Sacramento River, adjacent on the left bank to fractional Section 25, T32N, R5W, MDM, as shown on the Official Government Township Plat approved on January 19, 1870 and adjacent on the right bank to Lot 37, as shown on the Map of the Rancho Buenaventura, approved July 18, 1856, Shasta County, State of California, described as follows:

Bounded on the east by a line parallel with and 350 feet westerly of the centerline of the Sundial Bridge and its southerly prolongation;

Bounded on the west by a line parallel with and 900 feet westerly of the centerline of the Sundial Bridge and its southerly prolongation;

Bounded on the south by the Low Water of the right bank of the Sacramento River;

Bounded on the north by the Low Water of the left bank of the Sacramento River.

PARCEL 6 (Turtle Bay Island)

A parcel of State owned submerged lands lying in the bed of the Sacramento River, adjacent on the left bank to Section 31, T32N, R4W, MDM, as shown on the official Government Township Plat approved on January 19, 1870 and adjacent on the right bank to Lot 37, as shown on the Map of the Rancho Buenaventura, approved July 18, 1856, Shasta County, State of California, described as follows:

Bounded on the west by a line extended southerly and northerly to Low Water of the right and left banks of the Sacramento River and lying perpendicular to and 400.00 feet westerly from the east end of the course "South 80° 37' 00" East

1149.86 feet” of Parcel 1 as shown on Parcel Map No. 2013-00871 (sheet 6 of 12), recorded on December 17, 2013 in Book 38 of Parcel Maps at Page 100, Shasta County Recorder;

Bounded on the southwest by a line extended southeasterly and northwesterly to Low Water of the right and left banks of the Sacramento River and lying perpendicular to the northeast terminus of a course “South 36° 46’ 00” West 337.65 feet” of Parcel 1 as shown on Parcel Map No. 2013-00871 (sheet 6 of 12), recorded on December 17, 2013 in Book 38 of Parcel Maps at Page 100, Shasta County Recorder;

Bounded on the west by the Low Water of the right bank of the Sacramento River;

Bounded on the northeast and southeast by the Low Water of the left bank of the Sacramento River.

PARCEL 7 (Phase1_Rockwads)

A parcel of State owned submerged lands lying in the bed of the Sacramento River, adjacent on the left bank to fractional Section 18, T31N, R4W, MDM, as shown on the Official Government Township Plat approved on March 31, 1855 and adjacent on the right bank to Lot 38, as shown on the Map of the Rancho Buenaventura, approved July 18, 1856, Shasta County, State of California,

Bounded on the northwest by a line parallel with and 400 feet northwesterly of the centerline of the South Bonnyview Bridge;

Bounded on the southeast by a line parallel with and 300 feet southeasterly of the centerline of the South Bonnyview Bridge;

Bounded on the southwest by the Low Water of the right bank of the Sacramento River;

Bounded on the northeast by the Low Water of the left bank of the Sacramento River.

PARCEL 8 (Stillwater)

A parcel of State owned submerged lands lying in the bed of the Sacramento River, adjacent on the left bank to fractional Section 7, T30N, R3W, MDM, as shown on the official Government Township Plat approved on January 19, 1870 and adjacent on the right bank to Lot 37, as shown on the Map of the Rancho Buenaventura, approved July 18, 1856, Shasta County, State of California, described as follows:

Bounded on the east by a line parallel with and 200 feet easterly of the centerline of the Deschutes Road crossing the Sacramento River.

Bounded on the west by a line parallel with and 2500 feet westerly of the centerline of the Deschutes Road crossing the Sacramento River.

Bounded on the south by the Low Water of the right bank of the Sacramento River;

Bounded on the north by the Low Water of the left bank of the Sacramento River.

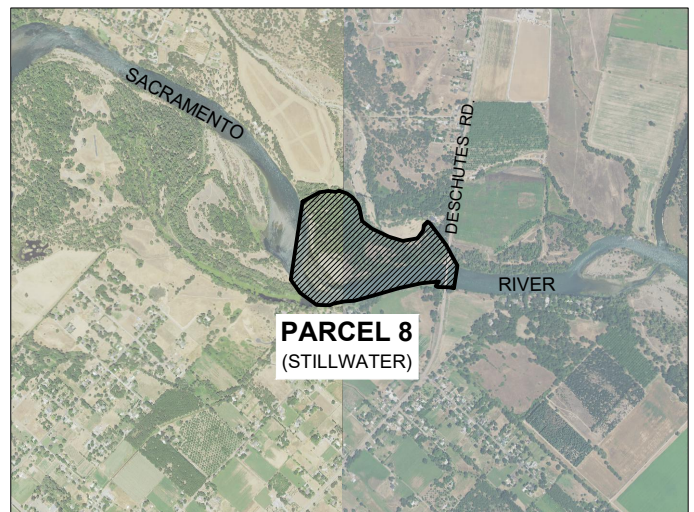
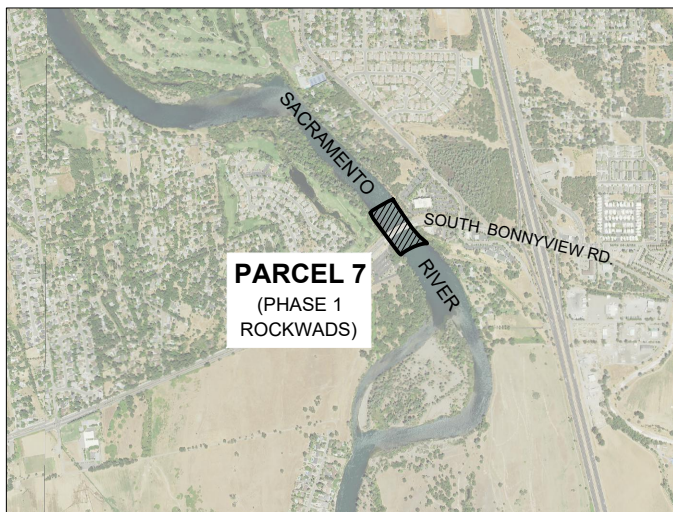
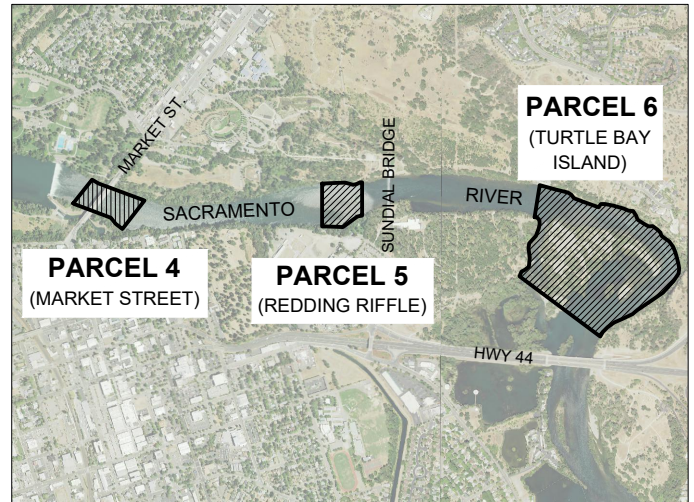
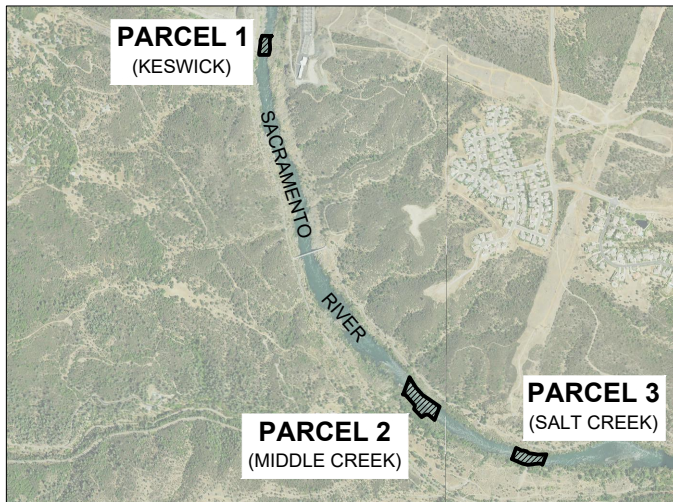
END OF DESCRIPTION

Prepared 12/28/2022 by the California State Lands Commission Boundary Unit.



NO SCALE

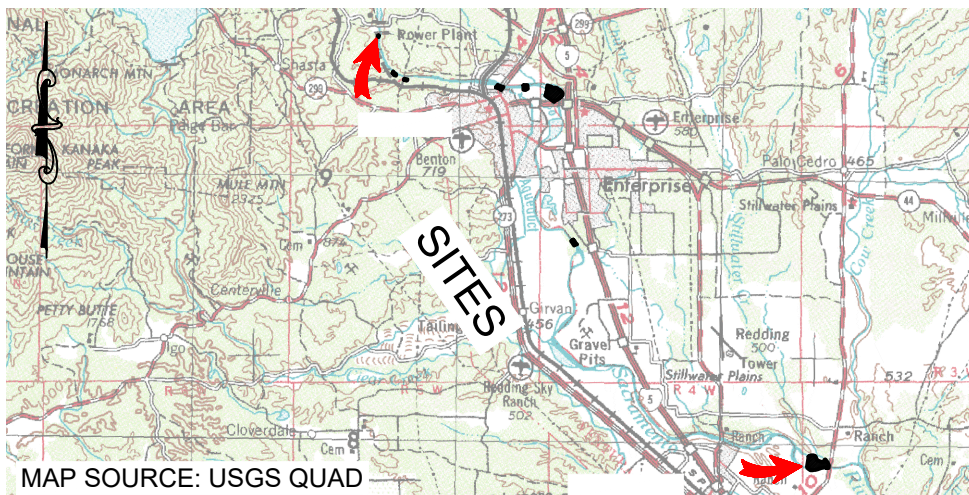
SITE



SACRAMENTO RIVER, NEAR REDDING AND ANDERSON

NO SCALE

LOCATION



THIS EXHIBIT IS SOLELY FOR PURPOSES OF GENERALLY DEFINING THE LEASE PREMISES, IS BASED ON UNVERIFIED INFORMATION PROVIDED BY THE LESSEE OR OTHER PARTIES AND IS NOT INTENDED TO BE, NOR SHALL IT BE CONSTRUED AS, A WAIVER OR LIMITATION OF ANY STATE INTEREST IN THE SUBJECT OR ANY OTHER PROPERTY.

Exhibit B

A 3875
RECLAMATION
DISTRICT NO. 108
GENERAL LEASE -
PUBLIC AGENCY USE
SHASTA COUNTY



TS 12/28/2022

EXHIBIT C
Project Description Summaries
(A3875: Reclamation District 108)

PROJECT PURPOSE AND GOALS

The proposed project is designed for habitat restoration and preservation of the Chinook Salmon and steelhead. The Project's overarching goal is to increase spawning and development areas for salmon, thereby boosting sustainability.

According to project-related documents, the restoration activities include, but are not limited to:

Market Street: The Project activities include disbursement of existing spawning gravel and placement of new gravel in the Sacramento River, to create additional spawning locations and creation of spawning riffles adjacent to deeper refugia. The riffles will consist of a core of larger cobble, sourced from the river at this location, covered by imported or reclaimed spawning gravel.

- Adjacent to the bank, an approximately 2-foot area of larger cobble will be removed for restoration of the riffle cores and replaced with spawning gravel to create additional areas for spawning.
- A temporary berm of spawning gravel will be placed around the project area to slow water velocity and to manage turbidity resulting from restoration activities. Following completion of the restoration activities, the berm will be repurposed as spawning gravel augmentation at this site.
- Approximately 2,000 cubic yards of existing riverbed will be excavated and utilized for the riffle bars or temporary berms. Up to 5,500 cubic yards of spawning gravel will be imported from a commercial source to create the spawning habitat and temporary berms. All material will be utilized on site, with no excess material hauled offsite.

Redding Riffle: The Project activities include disbursement of existing spawning gravel and placement of new gravel in the Sacramento River, to create additional spawning areas. The project includes creation of spawning riffles which consist of a core of larger cobble sourced from the river at this location covered by imported or reclaimed spawning gravel.

- A temporary berm of spawning gravel will be placed around the project area to slow water velocity and to manage turbidity resulting from restoration activities. The berm will be repurposed as spawning gravel augmentation at this site.

- Approximately 25,000 cubic yards of spawning gravel will be imported from a commercial source to create the habitat.

Salt Creek: The Project activities include placement of approximately 25,000 cubic yards of new spawning gravel in the Sacramento River and on the adjacent bank, to enhance spawning locations. Gravel will be delivered by truck and material dumped on the bank or directly into the river.

Rockwads Phase One: The Project activities include placement of approximately 20 rockwad structures in the river, supplementing prior work completed in 2017. The structures will be placed in an area within approximately 300-feet upstream and downstream of the South Bonnyview Bridge. The structures consist of fine woody material attached to boulders customized in size and buried in deep holes under the riverbed. This measure will provide cover for juvenile salmonid to shelter from water velocity and larger predators.

Keswick: The Project activities will include importing fish spawning gravel, dumping it near the edge of an embankment more than 100 feet above the river, and then pushing it into the river where it will naturally migrate downstream and replenish spawning areas. Gravel injections serve to replace spawning gravel in the river system that is no longer naturally available due to Shasta and Keswick Dam. The Project will import approximately 20,000 tons of washed, clean spawning gravel over a period of three weeks in a location historically utilized for this purpose.

Middle Creek: The Project activities include excavation, screening excavated material to develop spawning gravel, then placing spawning gravel along the right bank of the mainstem Sacramento River at river mile 301. Approximately 16,000 cubic yards of material will be excavated from previously placed spawning gravel at the mouth of Middle Creek and suitable areas downstream. The project length is approximately 450 feet from the mouth of Middle Creek to the downstream terminus.

- In the area below Middle Creek, the right bank of the Sacramento River would be excavated and laid back about 80 ft landward and re-contoured at a 3:1 side slope. Excavated material will be processed and all spawning sized gravel will be re-used and placed back into the mainstem or stockpiled for future spawning gravel enhancement activities. Material not suitable for spawning gravel will be placed on site and contoured to fit with surroundings.

Stillwater: The project activities include restoring up to two perennial side channels on the site with associated placement of instream habitat structures to provide juvenile salmonid rearing and spawning habitat. Side channel creation will be by excavation and grading.

- One side channel will be up to 3,500 feet long and will be designed to have variable widths (up to 50 feet) and depths (1 to 3 feet at 3,250 cubic feet per second in the main channel). The second side channel will be 1,500 feet long with similar widths and depths.
- Floodplain and side channel habitats will be created, reconnected, and modified by excavation using heavy equipment (i.e., bulldozers, front end loaders, excavators).
- Where the excavated material has the appropriate size distribution it will be sorted and placed into side channel or main channel areas to enhance habitat features.
- Remaining materials will be distributed over the floodplain. Low elevation, gently sloping benches will be created along channels in opportune areas to provide juvenile rearing habitat through a range of flows. No material will be brought in to or hauled-off from the project.

Turtle Bay Island: The Project activities include restoring up to four additional perennial side channels on the 17-acre island with associated placement of instream habitat structures to provide juvenile salmonid rearing and spawning habitat. Side channel creation on the island will be by excavation and grading.

- Each will be restored up to 1,000 feet long and will be designed to have variable widths (up to 50 feet) and depths (1 to 3 feet at 3,250 cubic feet per second in the main channel).
- Floodplain and side channel habitats will be created, reconnected, and modified by excavation using heavy equipment (i.e., bulldozers, front end loaders, excavators).
- Where the excavated material has the appropriate size distribution it will be sorted and placed into side channel or main channel areas to enhance habitat features. Remaining materials will be distributed over the floodplain to assist in vegetating the area.
- Low elevation, gently sloping benches will be created along channels in opportune areas to provide juvenile rearing habitat through a range of flows. Up to 7,500 CY of spawning gravel may be imported. No material will be hauled-off from the project.