Operation of Segregation Weir in Clear Creek

This is Activity 3 of contract "Fisheries Monitoring Activities in Sacramento River, Clear Creek and Battle Creek required by NMFS OCAP Biological Opinion."

Fact Sheet Number

2019-01

Project Description

Install and maintain a temporary picket weir to prevent fall-run Chinook from accessing spring-run Chinook spawning grounds, thereby reducing the potential for hybridization of the runs and negative impacts from redd super-imposition and other forms of competition.

Project Need

Whiskeytown Dam blocks passage for spring Chinook resulting in their spawning downstream in areas accessible to fall Chinook. Hybridization and competition with fall Chinook will decrease the fitness and number of spring Chinook. Without the weir, the small number of spring Chinook would probably be overwhelmed by the fall Chinook population which is 100 times larger. Increasing the population of spring Chinook so that it can survive independently of other populations is required for recovery and de- listing of spring Chinook in the Central Valley ESU. This activity is required in the NMFS Recovery Plan. Data collected at the weir is used to meet other BiOp requirements which are used to manage water releases and habitat restoration.

Project Objectives

Install and monitor temporary picket weir from late August to early November to spatially separate spring and fall Chinook. Improve adult spring Chinook population estimates by collecting carcasses on the weir to determine population age structure, genetic determination of run, stream of natal origin of adults, and juvenile life history based on adult otoliths. Allow estimates of juvenile spring Chinook production using an upstream rotary screw trap, which are otherwise unavailable.

Schedule of Project Milestones

Date	Milestone
10/01/2018	Field work continues from previous FY
11/01/2018	Weir removed from Clear Creek
08/23/2019	Install and maintain weir and collect carcasses and other data
09/30/2019	Annual Report

Expected FY 2019 Project Cost

$0 – FY19 Agreement amount = $37,490.90 (but funding received in previous years, and cost savings, will be sufficient to complete the work)

Is this Project for a CVP/SWP Biological Opinion or Water Right Decision Compliance? If so, Which Specific Requirement?

This project is used to develop adult escapement and juvenile production estimates required in Sections 11.2.1.3.7 and 11.2.1.3.8.a of the CVP/SWP BiOp. The project is described in the Biological Assessment for the BiOp as a part of the CVP.

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Delta Smelt Culture Facility Renovation and Expansion

UCD Fish Culture and Conservation Laboratory (FCCL): Renovation/Expansion – Fact Sheet

Fact Sheet Number

2019_02

Project Description

This project renovates and improves the Fish Conservation and Culture Laboratory (FCCL) facility responsible for maintaining a genetically diverse population of Delta Smelt within a refuge setting which represents a population-bank for future rehabilitation of the species. The FCCL facility improvements will assist in a more effective way of preventing the extinction of a listed fish species and provide scientific information for use in recovery efforts with which to train the next generation of scientists who will work to help improve scientific understanding and science-based management of public resources.

Project Need

The FCCL facility was developed to its current condition through a series of small ad hoc improvements and has not benefitted from master planning efforts. All research and refuge efforts conducted at the site are housed in temporary facilities, i.e., trailers and cargo containers.

The site also suffers from infrastructure deficiencies in electrical service, emergency power, and water pumping and treatment. Certain aspects of the existing facility need improvements to satisfy regulatory compliance requirements to bring the program into alignment with animal care requirements, biosecurity, environmental regulations, workplace safety standards, and access compliance.

This project will complete the desperately needed improvements and expansion of the entire FCCL facility that is focused on the successful breeding and genetic management of Delta Smelt to prevent the extinction of a listed fish species and provide scientific information for use in recovery efforts.

Project Objectives

1. Complete the expanded refugial facility.
2. Build a new refuge population rearing facility.
3. Build a new research facility.

Schedule of Project Milestones (When Will Data Collection, Analyses, and Reporting Elements be Completed?)

Date	Milestone
10/01/2016	Initiate final design drawings
12/01/2016	Initiate solicit bids and award construction process
02/28/2017	Complete design drawings
07/31/2017	Award construction contract
08/01/2017	Start sitework
06/30/2019	Completion Date

Is This Project for a CVP/SWP Biological Opinion or Water Right Decision Compliance? If so, Which Specific Requirement?

USFWS Conservation Recommendation.

2019 Expected Expenditure

$650,596

Investigator

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Reclamation Point of Contact: Andrew Schultz, Ph.D. U.S. Bureau of Reclamation Bay-Delta Office

Delta Smelt Culture Facility Renovation and Expansion

UCD Fish Culture and Conservation Laboratory (FCCL): Renovation/Expansion – Fact Sheet

Fact Sheet Number

2019_02

Project Description

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Project Need

The FCCL facility was developed to its current condition through a series of small ad hoc improvements and has not benefitted from master planning efforts. All research and refuge efforts conducted at the site are housed in temporary facilities, i.e., trailers and cargo containers.

The site also suffers from infrastructure deficiencies in electrical service, emergency power, and water pumping and treatment. Certain aspects of the existing facility need improvements to satisfy regulatory compliance requirements to bring the program into alignment with animal care requirements, biosecurity, environmental regulations, workplace safety standards, and access compliance.

This project will complete the desperately needed improvements and expansion of the entire FCCL facility that is focused on the successful breeding and genetic management of Delta Smelt to prevent the extinction of a listed fish species and provide scientific information for use in recovery efforts.

Project Objectives

1. Complete the expanded refugial facility.
2. Build a new refuge population rearing facility.
3. Build a new research facility.

Schedule of Project Milestones (When Will Data Collection, Analyses, and Reporting Elements be Completed?)

Date	Milestone
10/01/2016	Initiate final design drawings
12/01/2016	Initiate solicit bids and award construction process
02/28/2017	Complete design drawings
07/31/2017	Award construction contract
08/01/2017	Start sitework
06/30/2019	Completion Date

Is This Project for a CVP/SWP Biological Opinion or Water Right Decision Compliance? If so, Which Specific Requirement?

No.

Investigator

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Feasibility of Using Carbon Dioxide to Remove Piscivorous Fish from the Tracy Fish Collection Facility Primary Channel

Fact Sheet Number

2019_03

Project Description

Approximately 2,268 kg (5,000 lbs) of dry ice was injected in front of the trash rack on the north side of the primary channel. Peak CO2 concentrations at the north and south side of the primary channel were estimated to be 192.0 mg/L and 1.8 mg/L, respectively. Acoustic tracks of tagged Striped Bass in the primary channel showed that all fish actively avoided the CO2 in the north side of the primary channel for approximately 30 mins, although this behavior could also be attributed to an avoidance response to the turbulence, disturbance, and bubbles produced during dry ice injection. Despite this, regardless of whether fish were actively avoiding high CO2 concentrations in the water or avoiding the turbulence and disturbance from bubbles created by dry ice injection, acoustically tagged striped bass did show an avoidance response to dry ice injection. This suggests that the use of CO2 may be effective for removing fish from the primary channel at the TFCF. Even if fish are not anesthetized by the CO2 concentration achieved in the primary channel, it may be possible to move them into the bypass pipes and secondary channel where Wu and Bridges (2014) have shown they can be readily removed from the TFCF system.

Project Need

Action IV.4.1(1)(a) of the 2009 NMFS BiOp mandates that Reclamation complete studies to determine methods for removal of predators in the primary channel at the TFCF with the goal of implementing measures to reduce pre-screen predation in the primary channel to ten percent or less (NMFS 2009). The use of CO2 was recently found to effectively remove fish, including piscivorous predators, from the bypass pipes and secondary channel at the TFCF (Wu and Bridges 2014). Also, preliminary data for all water temperatures combined suggests that CO2 concentrations of approximately 150 mg/L are optimal for the removal of Striped Bass from the bypass pipes and secondary channel at the TFCF, considering removal efficiency and survival. This suggests that the periodic use of CO2 at a concentration of approximately 150 mg/L may also be efficacious for the removal of piscivorous fish from the primary channel at the TFCF. Due to this, the feasibility of using CO2 at a concentration of approximately 150 mg/L to remove piscivorous fish from the primary channel will be investigated.

Project Objectives

Determine if a CO2 concentration of approximately 150 mg/L can be reasonably obtained in the primary channel at the TFCF, within 30 min, considering the volume of water that needs to be treated and the amount of dry ice necessary.

Determine if a CO2 concentration of approximately 150 mg/L increases the number of piscivorous fish removed from the primary channel during a 30-min treatment period.

Estimate the efficiency of removal for acoustic tagged Striped Bass in the primary channel at the TFCF using a CO2 concentration of approximately 150 mg/L over a 30-min period.

Schedule of Project Milestones (When Will Data Collection, Analyses, and Reporting Elements be Completed?)

It is assumed that the contract for dry ice delivery will remain active and that no other projects or studies will take priority or precedence during the FY 2019 research period. A Tracy Series Report will be prepared and published upon completion of the study. Updates and presentations of progress will be provided internally and upon request by TTAT and other interagency technical forums. At the earliest, data collection is expected to take place in May 2018 and will likely continue into 2020. A draft report is expected to be produced by December 2020.

Expected FY 2019 Project Cost and Financial Information

FY19 Budget $40,232

Is This Project for a CVP/SWP Biological Opinion or Water Right Decision Compliance? If so, Which Specific Requirement?

Action is related to NMFS BiOp RPA Action IV.4.1(1)(a)

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Determining Optimal Carbon Dioxide Concentration for Implementation of Carbon Dioxide Predator Removals in the Bypass Pipes and Secondary Channel at the Tracy Fish Collection Facility

Fact Sheet Number

2019_10

Project Description

To improve the overall salvage process and efficiency of the TFCF it is necessary to minimize fish loss throughout the facility. Many factors, including predation, contribute to the total fish loss at the TFCF. Predators accumulate throughout the facility, including in front of the trash rack, the primary channel, the bypass pipes, the secondary channel, and the holding tanks.

Project Need

Predation may be significant within the primary bypass pipes and secondary channel because Striped Bass continue to reside within them. Removing these fish with the historic method is dangerous for employees, likely decreases daily salvage, and likely causes damage to the fish and/or fish mortality. The goal of this proposal is to determine optimal CO2 concentrations for the implementation of CO2 predator removals in the bypass pipes and secondary channel at the TFCF considering removal efficiency and 96-h post-treatment survival.

Project Objectives

Determine optimal CO2 concentration for a 15-minute exposure relative to removal efficiency and survival.

Schedule of Project Milestones (When Will Data Collection, Analyses, and Reporting Elements be Completed?)

There was minimal progress made for this project during the 2017-2018 research periods due to the fact that other projects took priority. Data will be collected to determine optimal CO2 concentrations for the implementation of CO2 predator removals in the bypass pipes and secondary channel at the TFCF over the next two years. Updates will also be provided at TTAT and CVFFRT meetings. A draft report for peer review is anticipated to be completed by December 2019. The primary deliverable will be an article published as a Tracy Series Report. Information will be gained on the successes and limitations of this alternate predator removal technique at the TFCF. This knowledge will help guide future development and implementation of predator removal procedures at the TFCF and other fish facilities.

Expected FY 2019 Project Cost and Financial Information

FY19 Budget $57,496

Is This Project for a CVP/SWP Biological Opinion or Water Right Decision Compliance? If so, Which Specific Requirement?

Action is related to NMFS BiOp RPA Action IV.4.1

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Estimation of Biomass Capacity of the Tracy Fish Collection Facility Fish-Haul Trucks Based on Oxygen and Aeration System Capabilities

Fact Sheet Number

2019_04

Project Description

After salvage, fish are maintained in holding tanks until transport back to the Sacramento-San Joaquin Delta. The schedule of fish hauling is dependent on salvage rates, debris loading, and special-status-species procedures. Prior to transport, fish accumulated in a holding tank are collected in a haul-out bucket and transferred to a fish-haul truck tank. Fish are then trucked 49.9 km from the TFCF to one of two release sites located at the confluence of the Sacramento and San-Joaquin Rivers and away from the immediate influence of south Delta pumping facilities.

Project Need

New fish-haul trucks have been designed, fabricated, and are being used at the TFCF. This new equipment must be evaluated to estimate the biomass capacity based on the oxygen and aeration system capabilities, as well as published oxygen consumption, TAN production, and CO2 production rates. Evaluation of this equipment will increase the likelihood that the millions of fish that are salvaged annually, including the threatened Delta Smelt (*Hypomesus transpacificus*) and endangered Winter-run Chinook Salmon (Reclamation's Tracy Fish Salvage Records 2009), are transported to release sites under appropriate water quality parameters.

Project Objectives

Measure the rate of O2 rise in the new fish-haul trucks while operating the air system only, O2 system only, and both the air and O2 systems simultaneously.

Use measured oxygen production rates along with published estimates of fish oxygen consumption, TAN production, and CO2 production, to develop a mass balance equation to estimate biomass capacity of the new fish-haul trucks while operating the air system only, O2 system only, and both the air and O2 systems simultaneously.

Schedule of Project Milestones (When Will Data Collection, Analyses, and Reporting Elements be Completed?)

It is assumed that no other projects will take priority during the FY 2019 research period and that there will be time to analyze data and develop a report.

Expected FY 2019 Project Cost and Financial Information

FY19 Budget $48,400

Is This Project for a CVP/SWP Biological Opinion or Water Right Decision Compliance? If so, Which Specific Requirement?

Action is related to NMFS BiOp RPA Action IV.4.3

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Assessing the Efficacy of a Modified Fish Salvage Release Scheme to Reduce Predation Loss of Juvenile Salmonids at State and Federal Salvage Release Sites

Fact Sheet Number

2019_05

Project Description

Starting late 2016, an interagency working group assessed the release site predation problem and worked together to develop possible tools and management/operational solutions. Since that time, our core research group (Reclamation, California Department of Water Resources, and private consultant biologists) have been developing tools to meet our goals of a) developing a consistent and reliable tool to measure release site predation, and b) reducing release site predation. The group has identified variables affecting salvaged fish survival, including frequency of releases, water temperature, and predator abundance, to name a few. Pilot and proof-of-concept phase research efforts have revealed limitations associated with acoustic telemetry studies. Field demonstrations and computer simulations, which eliminated acoustic telemetry and netting studies from contention, now point to predator feeding experiments as the key research tool to measure release site predation loss.

Project Need

Survival of salvaged fish at Delta release sites is likely dependent on water temperature, seasonal predator and prey assemblage variability, diurnal behavioral changes, frequency of site-specific releases (*e.g.*, number of releases per day), tides, river discharge, and total abundance of fish in each release. Miranda *et al.* (2010) conducted a release site predation study from 2007 – 2008, which concluded predation of salvaged fish does occur at California Department of Water Resources (DWR) and other fish salvage release sites, and that predatory fishes tend to remain near the release sites when the number of fish being released is consistently high. Salvaged fish were also vulnerable to bird predation when released during the daylight hours. The study determined that predation at release could have a substantial effect on salvaged fish survival. However, the study did not attempt to estimate a precise rate of predation mortality, which is a metric that is highly sought after by regulatory agencies as well as operating agencies (Reclamation and DWR).

Project Objectives

Continually refine tethering technique to measure near-field release site predation.

Assess a modified release scheme strategy (13 day release site break) to reduce release site predation.

Determine if there are other management actions that can be undertaken to reduce release site predation by 50% of current levels.

Schedule of Project Milestones (When Will Data Collection, Analyses, and Reporting Elements be Completed?)

We will assess predation rates on tethered fish once a month for three months in summer 2019 (May, June and July) at Curtis Landing Release Site and possible 1-2 other release sites, as well as up to three control sites. At the end of each 3-day sampling week, we will perform a hook and line and electrofishing survey to evaluate the predator assemblage at each site. Hydroacoustics surveys will also be performed each week at each of the sites. Predator assemblage data from hook and line and electrofishing surveys will be applied to the hydroacoustics output to develop a measure of the predator assemblage (species composition, body size, and density). By performing these efforts each month, we can develop a snapshot of predator densities over the juvenile salmon salvage season as it corresponds to fluctuations in predation rates at the release and control sites.

Experimental fall-run Chinook Salmon or Rainbow Trout will be procured from a CDFW state fish hatchery by early March 2019 and stored at the Tracy Aquaculture Facility (TAF). Golden Shiners will be purchased from Golden State Bait and stored at the TAF. Denver TSC staff will keep two boats on hand in a Delta marina, and will travel to the release sites to conduct tethered studies monthly for six months. Tethered fish studies will occur for three days per month January 2019 through April 2019, and nine days per month May and June 2019. Hook and line surveys, electrofishing surveys, and hydroacoustic surveys will occur at all sites from January to June, 2019.

Expected FY 2019 Project Cost and Financial Information

FY19 Budget $313,480

Is This Project for a CVP/SWP Biological Opinion or Water Right Decision Compliance? If so, Which Specific Requirement?

Action is directly related to NMFS BiOp RPA Action IV.4.3

Investigators

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Evaluation of Hydrolox™ Traveling Screen at the Secondary Channel using Larval and Juvenile Delta Smelt

Fact Sheet Number

2019_06

Project Description

As part of Reclamation's effort in attaining a whole facility efficiency of 75 percent, the secondary louvers (2.5 cm opening) were replaced with a traveling water screen with smaller screen opening (1.5 mm width x 50 mm length) in 2014. Delta Smelt larvae and juveniles are expected to be guided successfully (salvaged) to the holding tanks with this new screen. Data collected from this study will determine how velocity affect larval and juvenile Delta Smelt secondary channel efficiency. The field data collection portion of the study was completed in 2016 and funds are being requested for laboratory sample processing (25 percent remaining), data analyses and report writing.

Project Need

The new traveling water screen's efficiency in guiding Delta Smelt larvae, juveniles, and adults to the holding tanks is unknown. Furthermore, the State Water Resources Control Board Decision 1485 (*i.e.*, D-1485) and the current 2009 NMFS Biological Opinion mandate that the secondary channel be operated at salmon criteria, or 3.0-3.5 fps, between February and May, months when larval and juvenile Delta Smelt are observed at the TFCF. It is unknown, however, how this speed and the new traveling screen interact and affect the diversion of larval and juvenile Delta Smelt to the holding tanks.

Project Objectives

Determine if secondary channel water velocity affect the salvage of Delta Smelt larvae and juvenile to the holding tank.

Schedule of Project Milestones (When Will Data Collection, Analyses, and Reporting Elements be Completed?)

Year 1: PIT tag array installation and pilot level efforts.
Years 2-3: Full scale study implementation

Following Year 1 Pilot-level Efforts, implement a full-scale study that includes:

- Equipment installation/maintenance, as necessary. Additional PIT tag arrays will be considered to identify areas of potential loss within the facility, where warranted.
- Procurement/care of test fish following the aforementioned guidelines.
- Scheduled fish releases corresponding to the total number of fish/replicates determined from scoping period..

Analysis of the data with the appropriate metrics to determine whole-facility efficiency with the corresponding level of precision.

Dissemination of results: a final Tracy Series report will describe whole-facility efficiency and the associated standard error

Expected FY 2019 Project Cost and Financial Information

FY19 Budget $48,800

Is This Project for a CVP/SWP Biological Opinion or Water Right Decision Compliance? If so, Which Specific Requirement?

Action is related to NMFS BiOp RPA Action IV.4

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Use of Predation Detection Acoustic Tags to Estimate Juvenile Chinook Salmon Facility Efficiency at the Tracy Fish Collection Facility

Fact Sheet Number

2019_11

Project Description

Efforts to estimate whole facility efficiency at the TFCF using acoustic telemetry have been completed previously. In an effort to supplement efficiency and predation estimates provided by Karp *et al.* (2017), a preliminary, proof-of-concept experiment using Predation Detection Acoustic Tags is being proposed. Predation Detection Acoustic Tags include a fuse of digestible (polysaccharide and gelatin) material that dissolves when the tag comes in contact with digestive fluids in a predator's stomach, which creates an open circuit that alters the tag signal and indicates that predation has occurred (Schultz *et al.* 2017). During this experiment, Chinook Salmon acoustically tagged with PDATs will be released at the trash boom upstream of the TFCF and tracked to estimate participation (fish that passed the TFCF trash rack and entered the primary channel), facility efficiencies (whole facility efficiency, primary louver efficiency, and secondary screen efficiency), predation, pre-screen loss to predation (between the TFCF trash boom and trash rack), and passage time of salvaged fish (from the trash boom to the holding tanks) under a range of pumping conditions at the JPP.

Project Need

The use of PDATs potentially allows for more definitive fate determination than photonic, floy, or Passive Integrated Transponder (PIT) tags. Due to this, PDATs will be used to complete whole facility efficiency experiments at the TFCF with juvenile Chinook Salmon. Replicates will be completed at each possible JPP pumping condition (1, 2, 3, 4, or 5 pumps in operation). In an attempt to reduce the number of unknown fate assignments, an expanded hydrophone array upstream of the TFCF will be utilized. Acoustic tag detections will be used to determine fish fate and determine where losses are occurring. This data will be used to increase accuracy in the facility loss calculation and to identify areas where reducing mortality can increase facility efficiency.

Project Objectives

Estimate facility efficiency, primary channel louver efficiency, secondary channel screen efficiency, predation, pre-screen loss to predation, participation, and passage time for juvenile Chinook Salmon at varying JPP pumping conditions.

Determine if there is a main source of juvenile Chinook Salmon loss within the TFCF system.

Determine if the use of PDAT tags (HTI-Vemco USA, Inc.) and an expanded hydrophone array upstream of the TFCF reduces the number of unknown fates.

Investigate PDAT trigger time and compare to published results from Schultz et al. (2017).

Schedule of Project Milestones (When Will Data Collection, Analyses, and Reporting Elements be Completed?)

Data will be collected for this study over the next two years. Updates will be provided at TTAT and Central Valley Fish Facility Review Team meetings. A draft report for editor review is anticipated to be completed by December 2019. The primary deliverable will be an article published as a Tracy Series Report.

Expected FY 2019 Project Cost and Financial Information

FY19 Budget $70,680

Is This Project for a CVP/SWP Biological Opinion or Water Right Decision Compliance? If so, Which Specific Requirement?

Action is related to NMFS BiOp RPA Action IV.4.1

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Whole Facility Efficiency Evaluation for Chinook Salmon at the Tracy Fish Collection Facility

Fact Sheet Number

2019_09

Project Description

This study is a continuation of the Whole Facility Efficiency Evaluation for Chinook Salmon at the Tracy Fish Collection Facility from FY18. Initial pilot evaluations have been postponed pending equipment installation at the TFCF. A solicitation for services/equipment installation of a double array passive integrated transponder (PIT) antenna at the trashrack and single PIT antenna in one holding tank at the TFCF is in process. Subsequent equipment efficiency evaluations are tentatively planned for FY9. Proposed herein is a phased approach of TFCF whole facility efficiency evaluation using PIT tag arrays and tagged juvenile Chinook Salmon. The use of PIT tags/arrays presents a previously unutilized method for evaluating facility efficiency. The goals of using this technology are to address concerns from previous studies, such as low sample sizes, and identify with greater precision estimates of swimout/participation. An initial scoping year is proposed, followed by a second-year full-scale evaluation—after a determination of the potential success of using PIT tag arrays.

Project Need

The 2009 NMFS Biological Opinion mandates the TFCF must meet a 75 percent screening efficiency. While Chinook Salmon salvage efficiency has been previously evaluated, structural changes to the screening mechanisms have occurred (e.g., Hydrolox™ screen), and previous studies often either did not incorporate an associated error with the reported measurements, or data was insufficient to provide a confidence interval within acceptable limits. Following installation of PIT tag arrays at the trash rack and in the holding tanks in FY19, equipment efficiency will be evaluated. A full-scale evaluation of Chinook Salmon salvage efficiency is proposed for FY 2020–21. Based on variance estimates from initial pilot-level efforts, the full-scale evaluation will ideally provide a salvage efficiency estimate accurate to 10 percent (95 percent confidence interval). These results will determine whether facility efficiency meets the requirements of the biological opinion and whether further facility salvage evaluations will be necessary to pinpoint areas of loss.

Project Objectives

Provide input to contractor responsible for equipment installation to ensure product will meet the needs outlined in this project proposal.

Evaluate PIT tag antenna efficiency at the primary channel and holding tanks.

Determine salvage efficiency of Chinook Salmon under normal operating conditions

Schedule of Project Milestones (When Will Data Collection, Analyses, and Reporting Elements be Completed?)

Year 1: PIT tag array installation and pilot level efforts.
Years 2-3: Full scale study implementation.

Following Year 1 Pilot-level Efforts, implement a full-scale study that includes:

- Equipment installation/maintenance, as necessary. Additional PIT tag arrays will be considered to identify areas of potential loss within the facility, where warranted.
- Procurement/care of test fish following the aforementioned guidelines.
- Scheduled fish releases corresponding to the total number of fish/replicates determined from scoping period.

Analysis of the data with the appropriate metrics to determine whole-facility efficiency with the corresponding level of precision.

Dissemination of results: a final Tracy Series report will describe whole-facility efficiency and the associated standard error..

Expected FY 2019 Project Cost and Financial Information

FY19 Budget $29,648

Is This Project for a CVP/SWP Biological Opinion or Water Right Decision Compliance? If so, Which Specific Requirement?

Action is related to NMFS BiOp RPA Action IV.4

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