BUREAU OF RECLAMATION

# 2021 Annual Report for Activities under the Endangered Species Act Biological Opinion

**(For the period November 1, 2020, to December 31, 2021)**

**Lewiston Orchards Project, Lewiston, Idaho**

**Columbia-Pacific Northwest Region**

**Submitted to the National Oceanic and Atmospheric Administration National Marine Fisheries Service**

**Boise, Idaho**

**U.S. Department of the Interior** May 2022

# Mission Statements

The U.S. Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated Island Communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

**Cover photograph:** Sweetwater Creek Diversion

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# Acronyms and Abbreviations

| Acronym or Abbreviation | Definition |
|---|---|
| 2010 Opinion | National Oceanic and Atmospheric Administration National Marine Fisheries Service 2010 Biological Opinion |
| cfs | Cubic Feet per Second |
| ESA | Endangered Species Act |
| LOID | Lewiston Orchards Irrigation District |
| LOP | Lewiston Orchards Project |
| NOAA Fisheries | National Oceanic and Atmospheric Administration National Marine Fisheries Service |
| Parties | Lewiston Orchards Irrigation District General Manager; Nez Perce Tribe Project Lead; Reclamation Biologist and Project Manager |
| Reclamation | Bureau of Reclamation |
| Tribe | Nez Perce Tribe |

# 1. Introduction

On April 7, 2020, the Bureau of Reclamation (Reclamation) submitted a Biological Assessment to the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries) under the Endangered Species Act (ESA) for the operation and maintenance of the Lewiston Orchards Project (LOP). This Biological Assessment described a decision support structure to annually determine flows in Sweetwater and Webb creeks. Minimum, target, and opportunity flow levels were described, and modeling results estimated how often each flow level would be able to be met over 15 years. Each year an Annual Plan is developed cooperatively by the Lewiston Orchards Irrigation District (LOID) General Manager, Nez Perce Tribe (Tribe) Project Lead, Reclamation Biologist and Reclamation Project Manager (the Parties). In 2021, the available water supply allowed target flow levels to be met.

Part of the need for wells is to improve water reliability for the LOP. In dry years there may not be enough water available to equal the sustainable productive rate of the wells. This annual report covers the LOP operation and maintenance activities from November 1, 2020, to December 31, 2021, for published stream flows and irrigation operations. The LOID operated the surface water collection system from March 8, 2021, until October 31, 2021.

To enhance the LOP's ability to consistently meet minimum flow requirements, Reclamation and the LOID continue to operate and maintain water measurement and gate automation equipment at the headgates to the Sweetwater Canal and Webb Creek Diversion Dam. The gate automation equipment continually self-adjusts to maintain minimum streamflow past the diversion dam. Gate automation greatly improves the LOP's ability to maintain flow targets and minimize daily variability related to operations.

No injuries or mortalities of ESA-listed steelhead associated with operations were observed during the 2021 reporting period.

# 2. Flow Management

## 2.1 Minimum Bypass Streamflow Requirements in Sweetwater and Webb Creeks

### 2.1.1 Background

The flow regime is divided into minimum flows, target flows, and opportunity flows (Table 1). Minimum flows are based off the NOAA Fisheries 2010 Opinion (2010 Opinion) and are expected to be able to be provided every year. Target flows are based on adding offset flows from the pilot well to the minimum flows. Opportunity flows are voluntary additions to target flows when water is available in the system. Opportunity flows allow Reclamation, LOID, and the Tribe

the "opportunity" in the annual planning process to provide additional instream flows or retain additional carryover in Soldiers Meadow Reservoir. Over time, as Reclamation and LOID move toward full transfer of instream water rights to groundwater rights by constructing wells, more water can be provided instream and/or stored in Soldiers Meadow Reservoir to buffer future dry years.

There are five main time periods where the steelhead life stage or operational constraints require different instream flows; spring peak flow/spawning (February through April), transition to base flows/incubation (May), summer base flows/juvenile rearing (June through August), fall base flows/juvenile rearing (September and October), and winter/juvenile rearing season (November through January). Target flows have been developed for each of these time periods. Water availability in the system (natural instream flows and stored water at Soldiers Meadow Reservoir) may not be able to provide enough water to meet these target flows. If target flows cannot be met, all of the stored water in Soldiers Meadow Reservoir down to the minimum pool will be available for the benefit of steelhead and no stored water will be diverted to Reservoir A for irrigation use.

Minimum flow specifications for some months in Table 1 include an "I" (inflow) designator to reflect months when the Webb and Sweetwater creek diversions will not be operated (November to January) or when naturally occurring low flow conditions exist for periods of time in February, March, and April. Under the latter condition, when the inflows to the Webb and Sweetwater creek diversion dams are below the specified minimum flow, LOID will not be able to divert water and all inflow to the diversion dams will be left instream below the diversion dam. For Webb Creek, the "I" flow is composed of all runoff from the watershed between the Soldiers Meadow Dam and the Webb Diversion Dam. The "I" for Sweetwater Creek represents the value that is composed of all runoff from the watershed upstream of the Sweetwater Diversion Dam, except for any diversions from the West Fork diversion to Lake Waha.

Reclamation, LOID, and the Tribe agree that pumping water from Lake Waha to provide instream flows for steelhead is not prudent. Water pumped from Lake Waha can only be sent down Sweetwater Creek and the pump in Lake Waha is not variable, either provides 12 cubic feet per second (cfs) or nothing. This 12 cfs combined with natural instream flows would greatly exceed the 7 cfs optimal flows for juvenile rearing in upper Sweetwater Creek below the diversion (Reclamation 2009). If water is left in Lake Waha instead of pumped, it naturally seeps out through Sweetwater Springs and provides cold water for steelhead (see Morehead et al. 2005).

### 2.1.2 Annual Operational Plan

Reclamation, LOID, and the Tribe work cooperatively together to develop a plan each year on how much well offset water will be allocated between the two tributaries. This plan can change to respond to changing conditions as the year progresses. The plan formulation will rely on the "Lewiston Orchards Project Instream Flow Assessment for Sweetwater and Webb Creeks" (Reclamation 2009) and the "Lewiston Orchards Project Sweetwater and Webb Creek Flow Allocation Analysis Report" (Reclamation 2015) as well as new information and experience.

**Table 1. Instream flow minimum releases (cfs) for Sweetwater and Webb creeks at their diversions combined**

| Flow Release | No use of stored water to meet flows | | | | | | Stored water used to meet flows | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Juvenile Rearing | | | Spawning | | | Incubation | Juvenile Rearing | | | | |
| | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct |
| Minimum (up to 5 of 15 years | I (a) | I | I | 15.6-29.8/I(b) | 15.6-29.8/I | 15.6-29.8/I | 4.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| Target (at least 10 of 15 years) | | | | | | | 8.3 | 7.3 | 7.3 | 7.3 | 6 | 6 |
| Opportunity (maximum if available) | | | | Natural flow in excess of canal capacity (c) | | | 22.5 | 17 | 12.5 | 12.5 | 12.5 | 12.5 |

(a) Diversion dams are not operated from November through January. All stream flow reaching the diversion dams will be bypassed. For Webb Creek, the "I" flow is composed of all runoff downstream from Soldiers Meadow Dam; for Sweetwater Creek this value is composed of all runoff downstream from Lake Waha except for runoff diverted by the West Fork diversion.

(b) Months shown with a "[value]/I" specification (February, March, and April) are those in which either the specified stream flow will be provided or all inflow (I) to the Webb and Sweetwater diversion dams (as described above) will be bypassed, whichever is less. The specified minimum flow with just the pilot well online is 15.6 cfs and will increase up to a potential 29.8 cfs as each additional well that comes online is offset.

(c) Natural flows during spring peak flow/spawning (February, March, and April) will often exceed canal capacity by more than the target flows. The system does not have means to store this water and it remains instream.

The plan has two main decision points, prior to April 15 and prior to June 1. At each point, Reclamation, LOID, and the Tribe will determine if that year's conditions would likely be able to support target flows or if lower flows would be needed to retain the 300-acre-foot minimum pool in Soldiers Meadow Reservoir. If target flows cannot be met with the available water conditions, flows will be maximized to provide the greatest benefit to steelhead and LOID would not be able to divert stored water from Soldiers Meadow Reservoir to Reservoir A for irrigation use. As more wells come online, Reclamation, LOID, and the Tribe will decide how much of that offset can be used for opportunity flows or be stored in Soldiers Meadow Reservoir to buffer potential future dry years.

This annual planning strategy will allow for flexibility within an individual year while realizing the benefits of increased carryover in Soldiers Meadow Reservoir to buffer potential future dry years. This process will use reservoir storage, snowpack, weather forecasts and natural instream flows to develop a planned flow regime each year. Adaptive management of each annual plan based on weather and climate conditions as the irrigation season progresses will allow for flexibility in the event of precipitation events, excessive high summer air temperatures and/or unexpected maintenance or mechanical issues. A summary of the flows from the 2021 Annual Plan (Appendix A) are shown in Table 2.

**Table 2. Total 2021 instream flows for Sweetwater and Webb creeks**

| Flows | Spawning (Month) | | | Juvenile Rearing (Month) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** | **Oct** | **Nov, Dec, Jan** |
| Sweetwater Creek Base Bypass Flows* | 7.8 | 7.8 | 7.8 | 3 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | Bypass |
| Pilot Well (4.5 cfs) Less Domestic Component (0.7) | 1.8 | 1.8 | 1.8 | 2 | 1.5 | 1.0 | 1.0 | 1.0 | 1.0 | |
| Well 6 (4.5 cfs) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| **Total Sweetwater Creek Bypass Flows** | **9.6** | **9.6** | **9.6** | **5.0** | **4.0** | **3.5** | **3.5** | **3.5** | **3.5** | Bypass |
| | | | | | | | | | | |
| Webb Creek Base Bypass Flows | 4.0 | 4.0 | 4.0 | 1.5 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | Bypass |
| Pilot Well (4.5 cfs) Less Domestic Component (0.7) | 2.0 | 2.0 | 2.0 | 5.5 | 3.8 | 2.8 | 2.8 | 1.5 | 1.5 | |
| Well 6 (4.5 cfs) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| **Total Webb Creek Bypass Flows** | **6.0** | **6.0** | **6.0** | **7.0** | **4.8** | **3.8** | **3.8** | **2.5** | **2.5** | Bypass |
| **Water Exchange Flows (total of 9.0 cfs) Less Domestic (0.7)** | **3.8** | **3.8** | **3.8** | **7.5** | **5.3** | **3.8** | **3.8** | **2.5** | **2.5** | |

Current as of 06/01/2021

*Specified Stream Flow or all Stream Flow will be bypassed, whichever is less, measured below discharge for Lake Waha and Soldiers Meadow Reservoir.

Water Exchange Values will be conjunctively managed among the parties to make final determinations from January 1 to June 1 before finalized.

The proposed action states that Reclamation will monitor daily mean stream flows whenever the LOID is diverting water. Currently, 1-hour averages are posted for Sweetwater and Webb creeks onto Reclamation's public Hydromet page. Minimum flows are described as a mean daily average, with criteria that flows be adjusted when they fall more than 20 percent below the target as monitored on an hourly basis.

In past water years, Reclamation and LOID installed gate automation and water measurement equipment at the Sweetwater Diversion Dam and Webb Creek Diversion Dam to improve the ability to measure and maintain the target minimum stream flows. Although the gate automation equipment substantially improved the project's ability to meet instream flow requirements, occasional operational problems occur with the mechanical and electrical equipment. Operation or technical limitations may occur when equipment malfunctions or debris catches at the structures or around the gates. Debris can physically prevent the gate from adjusting and/or cause inaccurate measurement due to backwatering near the gauging equipment that sends information to the gate controls.

### 2.1.3 Data Collection

The stream flow data are collected at 1-hour intervals below the weirs at the Sweetwater and Webb diversion dams. The automated data loggers record the bypass stream flow released over the compound weirs installed on the top of the diversion dams and the 4-foot weir located in the sluiceways. The data logger is located on the diversion dam. Reclamation posts data from these measurement points at www.usbr.gov/pn/hydromet/.

### 2.1.4 Sweetwater Creek—Bypass Stream Flow Results for Spring Spawning Period March 1–May 31

It is important to note that the minimum flows are a mean daily average, with criteria that flows be adjusted when they fall more than 20 percent below the target. This criterion recognizes that some fluctuations are expected while meeting the target minimum flows. The Sweetwater diversion began operating March 8, 2021. Natural flow was below target levels for parts of this period. Target flows were met while LOID was diverting water (Figure 1). The raw data for the daily flows can be found in Appendix B. This appendix notes the target bypass flow rates and the corresponding hourly rate in Sweetwater Creek.

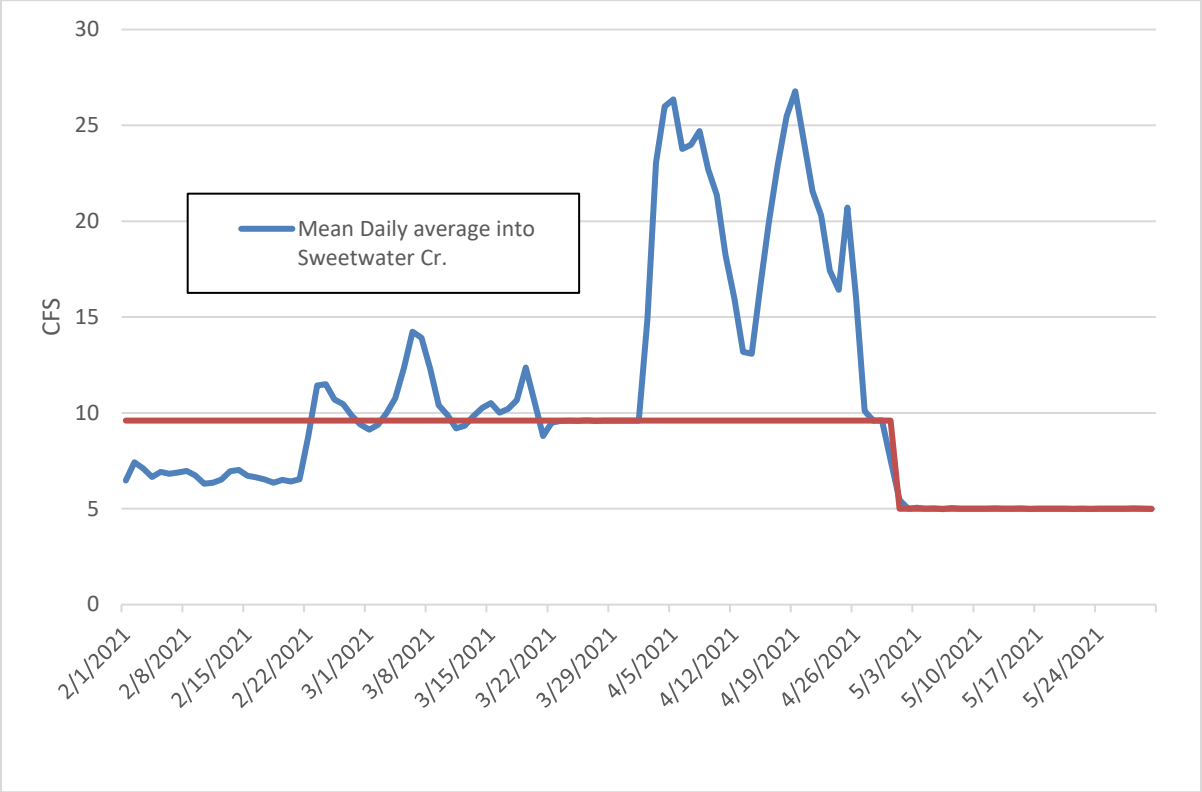


**Figure 1. Mean daily stream flow (cfs) measured past the Sweetwater Diversion Dam and bypass flow targets and flow targets with water exchange flows for the first half of the irrigation season (March 1 – May 31, 2021)**

### 2.1.5 Sweetwater Creek—Bypass Stream Flow Results for Juvenile Rearing Period June 1–October 31

The 2021 target flows below the Sweetwater Diversion were June at 4.0 cfs and July through October at 3.5 cfs (Table 2). During the majority of the juvenile rearing period, LOID met the target flows seen in Figure 2. On August 23, 2021, the sandgate breaker at Sweetwater Diversion tripped. There was no sand or other blockage that should have caused the issue. Automation was turned off and daily manual gate changes were made to meet the 3.5 cfs flows until the mechanical issue was resolved on August 31, 2021. Natural fluctuations in flow between daily visits caused some days to have a lower than 3.5 cfs mean flow. Up to a 20 percent fluctuation from expected daily means due to fluctuations in natural flow. This 20 percent fluctuation was not exceeded in 2021. The raw data can be found in Appendix B.

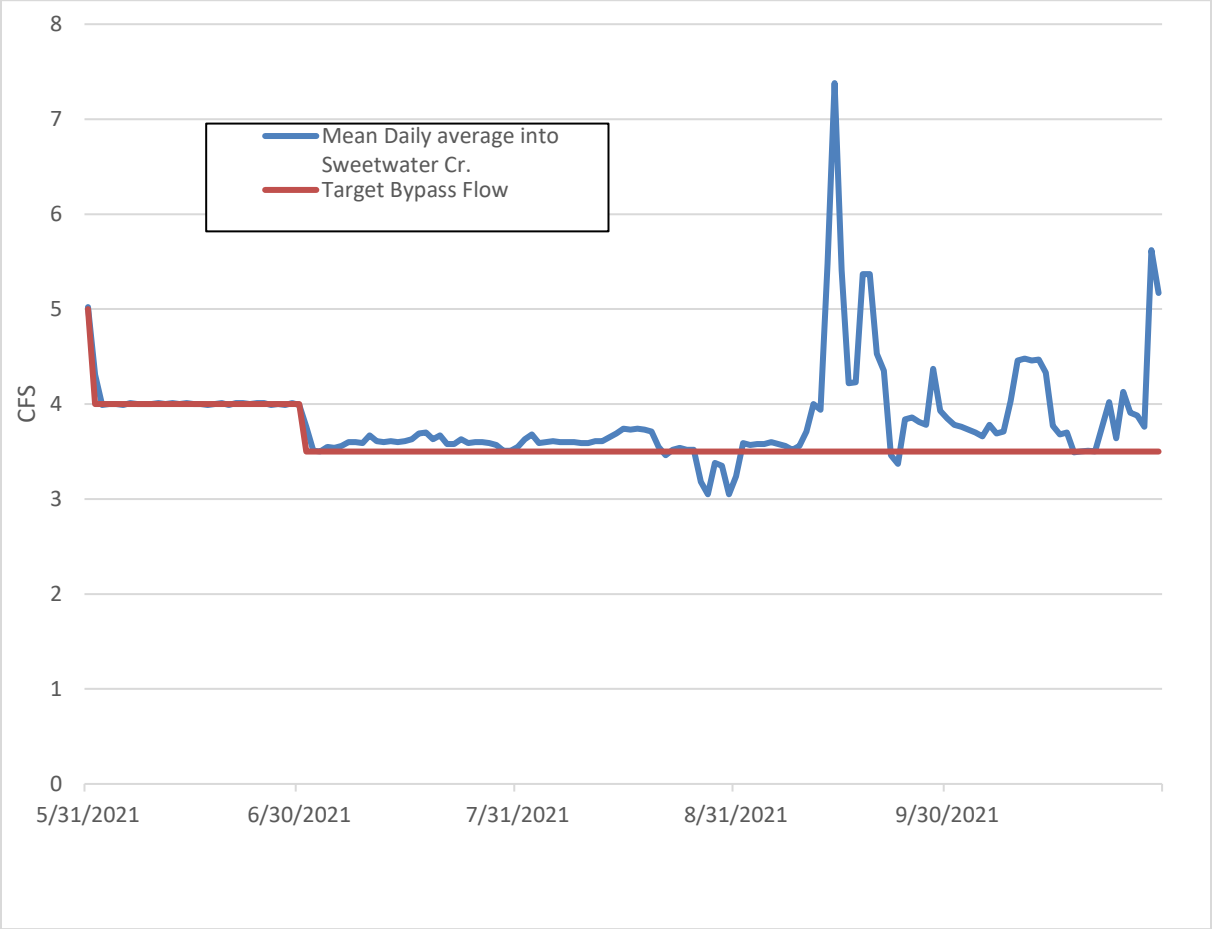


**Figure 2. Mean daily stream flow (cfs) measured past the Sweetwater Diversion Dam and bypass flow targets and flow targets with water exchange flows for the second half of the irrigation season (June 1 – October 31, 2021)**

### 2.1.6 Webb Creek—Minimum Bypass Stream Flow Requirements in Webb Creek

The Webb Creek diversion was operated from March 31, 2021, until October 31, 2021. Measured stream flows, in relation to the bypass flow targets are shown in Figure 3. LOID met the target flows as seen in Figure 3. The raw data for the daily flows can be found in Appendix B. This appendix notes the target bypass flow rates and the corresponding daily rate in Webb Creek.

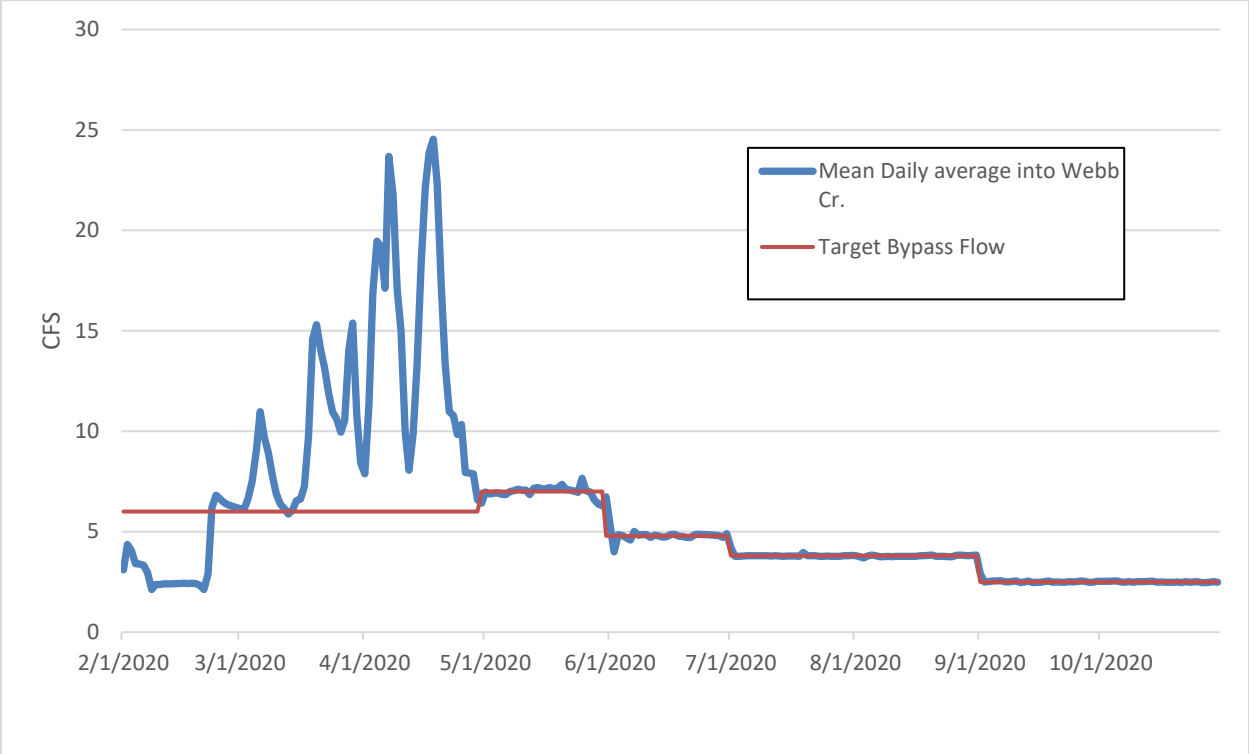


**Figure 3. Mean daily stream flow (cfs) measured past the Webb Creek Diversion Dam for the irrigation season (2021)**

## 2.2 Ramping Rates

Ramping of stream flows is intended to make gradual changes during gate operations that avoid stranding fish in dewatered or pooled areas when stream flows are reduced (diversion gates opened) or flushing fish downstream when increasing stream flows (diversion gates closed). These gradual alterations in stream flow are intended to allow fish that are rearing in the streams sufficient time to adjust to changes in stream habitat. Ramping rates proposed by Reclamation on May 31, 2017, and approved by NOAA Fisheries on June 14, 2017 (Thom 2017), guide the Proposed Action in the 2020 Biological Assessment (Table 3). These rates mimic the natural hydrologic variation and allow water to be used more efficiently to provide optimal spawning habitat in both Webb and Sweetwater creeks.

*Increases* per day in flow below the diversions are as listed below:

- At flows 0.00 to 4.00 cfs, the maximum gate adjustment will be 2.00 cfs per day.
- At flows 4.01 to 12.00 cfs, the maximum gate adjustment will be 4.00 cfs per day.
- At flows 12.01 to 25.00 cfs, the maximum gate adjustment will be 6.00 cfs per day.
- At flows greater than 25.00 cfs, the maximum gate adjustment will be 10.00 cfs per day.

*Decreases* in flow below the diversions are as listed below:

- At flows 0.00 to 4.00 cfs, the maximum gate adjustment will be 1.00 cfs per day.
- At flows 4.01 to 8.00 cfs, the maximum gate adjustment will be 2.00 cfs per day.
- At flows 8.01 to 15.00 cfs, the maximum gate adjustment will be 3.00 cfs per day.
- At flows 15.01 to 30.00 cfs, the maximum gate adjustment will be 5.00 cfs per day.
- At flows greater than 30.00 cfs, the maximum gate adjustment will be 10.00 cfs per day.

These ramping criteria will be used at all times unless equipment failure or malfunction occurs.

**Table 3. Ramping rates for the Sweetwater and Webb creeks**

| Flows (cfs) | Max Rate (cfs/day) |
|---|---|
| **Ramping Water Into the Sweetwater or Webb Canal** | |
| 0.00-4.00 | 1.00 |
| 4.01-8.00 | 2.00 |
| 8.01-15.00 | 3.00 |
| 15.01-30.00 | 5.00 |
| 30.01 or greater | 10.00 |
| | |
| **Ramping Water Out of the Sweetwater or Webb Canal** | |
| 0.00-4.00 | 2.00 |
| 4.01-12.00 | 4.00 |
| 12.01-25.00 | 6.00 |
| 25.01 or greater | 10.00 |

Ramping is a requirement directly associated with gate changes; other fluctuations in stream flow occur naturally from climatic and precipitation conditions and these fluctuations in stream flow would be natural hydrologic conditions in the stream.

In 2021, there are instances where stream flows fluctuate but are not associated with gate changes and therefore are not subject to ramping criteria.

## 2.3 Gravel Management Activities

Maintenance of the Sweetwater and Webb Creek diversion dams requires periodic removal of sediment that accumulates behind the dam. Sediment removal during this reporting period did not occur at Webb Diversion Dam. Material upstream of the Sweetwater Diversion Dam was

removed on October 20, 2021. This was in accordance with the gravel management plan developed by the Parties and approved by NOAA Fisheries on September 7, 2017 (Ries 2017).

# 3. Literature Cited


| Parenthetical Reference | Bibliographic Citation |
|---|---|
| Morehead et al. 2005 | Morehead, M.; J. Muskatirovic; and S. Peckham. 2005. Sweetwater Creek Natural Hydrograph Simulation. Prepared by University of Idaho, Boise, Idaho. |
| Reclamation 2009 | U.S. Bureau of Reclamation. 2009. Lewiston Orchards Project Instream Flow Assessment for Sweetwater and Webb Creek. Boise, Idaho. May 2009. |
| Reclamation 2015 | U.S. Bureau of Reclamation. 2015: Lewiston Orchards Project Sweetwater and Webb Creek Flow Allocation Analysis Report. U.S. Bureau of Reclamation, June 2015. |
| Ries 2017 | Ries, B. 2017. Email from Bob Ries, Fishery Biologist (NOAA Fisheries West Coast Region, Moscow, Idaho) to James Taylor, Environmental Compliance Group Manager (Reclamation, Boise, Idaho). Subject: Re: Sediment Management Plan for LOP. September 7, 2017. |
| Thom 2017 | Thom, B. 2017. Letter from Barry Thom, Regional Administrator (NOAA Fisheries West Coast Region, Portland, Oregon) to James Taylor (Reclamation, Boise, Idaho) and Barney Metz (Lewiston Orchards Irrigation District, Lewiston, Idaho). Subject: Proposed Adjustment to Ramping Rate, Sweetwater and Webb Creek Diversion Dams, Lewiston Orchards Project, Idaho. |

# Appendices

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# Appendix A

## 2021 Annual Plan
## Lewiston Orchards Project Water Exchange and Title Transfer Project
## Water Exchange Schedule

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# 2021 Annual Plan

## Lewiston Orchards Project Water Exchange and Title Transfer Project
## Water Exchange Schedule

In 2014, the U.S. District Court issued an order staying litigation through January 2020 in the Endangered Species Act (ESA) case, Nez Perce Tribe (Tribe) vs. National Oceanic and Atmospheric Administration (NOAA) Fisheries and the Bureau of Reclamation (Reclamation). The order is based on a 2014 Term Sheet Agreement that provides a framework for collaboration to address issues related to the Lewiston Orchards Project (LOP). The primary focus of the 2014 Term Sheet Agreement is to advance the LOP Water Exchange and Title Transfer Project (Project) as a potential comprehensive solution to LOP system issues concerning ESA-listed steelhead, Tribal cultural and natural resources, and irrigation water supply reliability.

The 2014 Term Sheet Agreement expired on January 31, 2020. On December 19, 2019, the Tribe, NOAA Fisheries, and Reclamation filed a Joint Notice to the courts acknowledging the progress of the Project and the Parties' collective commitment to continue to work together to implement the objectives of the Project beyond the expiration of the 2014 Term Sheet Agreement.

In accordance with the 2014 Term Sheet Agreement, Water Exchange Appendix, and ongoing consultation with NOAA Fisheries on the Operation and Maintenance of the LOP; the Tribe, Lewiston Orchards Irrigation District (LOID), and Reclamation (collectively the Parties) have collaboratively developed the following 2021 Annual Plan, which establishes water exchange in the critical months for steelhead spawning/rearing and recognizes LOID's domestic component of the pilot well (also referred to as Well No. 5).

The proposed action in Reclamation's 2020 Biological Assessment (BA) provides more in-stream flow for steelhead compared with the proposed action under the 2010 Biological Opinion. NOAA Fisheries has been involved in the development of the proposed action and is not expected to require any major changes to the proposed action in the Biological Opinion. Providing flows as outlined in the 2020 BA while NOAA Fisheries develops a new Biological Opinion, does not preclude any reasonable and prudent alternatives that may be part of the forthcoming Biological Opinion.

Reclamation submitted the 2020 BA to NOAA Fisheries on April 7, 2020. Reclamation anticipates receiving a final Biological Opinion from NOAA Fisheries in 2021.

## Minimum Instream Flows

The 2020 BA for the Operation and Maintenance of the LOP states:

> *The proposed flow regime is divided into minimum flows, target flows and opportunity flows (Table 1). Minimum flows are based off the 2010 [Biological] Opinion and are expected to be able to be provided every year. Target flows are based on adding offset flows from the pilot well to the minimum flows. Opportunity*

*flows are voluntary additions to target flows when water is available in the system. Opportunity flows allow Reclamation, LOID and the NPT [Tribe] the "opportunity" in the annual planning process to provide additional in-stream flows or retain additional carryover in Soldiers Meadow Reservoir. Over time, as Reclamation and LOID move toward full transfer of in-stream water rights to groundwater rights by constructing wells, more water can be provided in-stream and/or stored in Soldiers Meadow Reservoir to buffer future dry years.*

*Minimum flow specifications for some months in Table 1 include an "I" (inflow) designator to reflect months when the Webb and Sweetwater creek diversions will not be operated (November to January) or when naturally occurring low flow conditions exist for periods of time in February, March and April. Under the latter condition, when the inflows to Webb and Sweetwater Creek diversion dams are below the specified minimum flow, LOID will not be able to divert water and all inflow to the diversion dams will be left in-stream below the diversion dam.*

**Table 1. Instream flow releases (cfs) for Sweetwater and Webb creeks at their diversions, combined.**

<table>
<tr><th rowspan="3">Flow Release</th><th colspan="6">No use of stored water to meet flows</th><th colspan="6">Stored water used to meet flows</th></tr>
<tr><th colspan="3">Juvenile Rearing</th><th colspan="3">Spawning</th><th>Incubation</th><th colspan="5">Juvenile Rearing</th></tr>
<tr><th>Nov</th><th>Dec</th><th>Jan</th><th>Feb</th><th>Mar</th><th>Apr</th><th>May</th><th>Jun</th><th>Jul</th><th>Aug</th><th>Sep</th><th>Oct</th></tr>
<tr><td>Minimum (up to 5 of 15 years)</td><td rowspan="3">I (a)</td><td rowspan="3">I</td><td rowspan="3">I</td><td rowspan="2">15.6-29.8/I (b)</td><td rowspan="2">15.6-29.8/I</td><td rowspan="2">15.6-29.8/I</td><td>4.5</td><td>3.5</td><td>3.5</td><td>3.5</td><td>3.5</td><td>3.5</td></tr>
<tr><td>Target (at least 10 of 15 years)</td><td>8.3</td><td>7.3</td><td>7.3</td><td>7.3</td><td>6</td><td>6</td></tr>
<tr><td>Opportunity (maximum if available)</td><td colspan="3">Natural flow in excess of canal capacity (c)</td><td>22.5</td><td>17</td><td>12.5</td><td>12.5</td><td>12.5</td><td>12.5</td></tr>
</table>

(a) Diversion dams are not operated from November through January. All stream flow reaching the diversion dams will be bypassed. For Webb Creek, the "I" flow is composed of all runoff downstream from Soldiers Meadow Dam; for Sweetwater Creek this value is composed of all runoff downstream from Lake Waha except for runoff diverted by the West Fork diversion.
(b) Months shown with a "[value]/I" specification (February, March and April) are those in which either the specified stream flow will be provided or all inflow (I) to the Webb and Sweetwater diversion dams (as described above) will be bypassed, whichever is less. The specified minimum flow with just the pilot well online is 15.6cfs and will increase up to a potential 29.8cfs as each additional well that comes online is offset.
(c) Natural flows during spring peak flow/spawning (February, March and April) will often exceed canal capacity by more than the target flows. The system does not have means to store this water and it remains in-stream.

## 2021 Flows

Water availability in 2021 is anticipated to allow for flows to be provided at the target flow levels throughout the irrigation season. However, reservoir storage and natural flows are lower in 2021 than in recent years and weather conditions may require a drop in flows below target levels at some point to ensure the minimum 300 acre ft is retained in Soldiers Meadow reservoir at the end of irrigation season. Natural flows and reservoir surface evaporation are hard to predict and will play a role in the availability of water to meet target flows in 2021. The parties will continue to share information on weather and reservoir levels on a monthly basis, at a minimum throughout the irrigation season and cooperatively decide to reduce flows if necessary.

Well 6 may become operational during the 2021 irrigation season. The parties will also meet to discuss options for the offset water from this well if/when it becomes operational.

## Incremental Add-in

The incremental add-ins were not carried forward into the 2020 BA from the 2010 Biological Opinion for the Operation and Maintenance of the LOP.

## Water Exchange Flows

Water exchange flows are integrated into the proposed action of the 2020 BA. When water is available in the system, exchange flows will either be provided in-stream that year or carried over in Soldiers Meadow Reservoir for use in a potential future dry year.

As described in the 2014 Term Sheet Agreement, this Annual Plan was developed collaboratively by the Parties. The Parties agree that this Annual Plan is for the 2021 Water Year and the team will reevaluate and develop a new plan annually.

# Appendix B

## Sweetwater and Webb Creeks Flow Tables

**(This is a separate Excel data file available for data sharing and is included as an attachment with the official electronic submission of this report to NOAA Fisheries)**

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