

Kern River No. 1 Hydroelectric Project

FERC Project No. 1930

FERC Site Visit

August 1, 2023

Kern River No. 1 Hydroelectric Project Overview

FERC License

- FERC Project No. 1930
- Issued June 1998
- 30-year license term
- Expires May 31, 2028
- Total installed capacity is 26.3 megawatts (MW)
- Located on western slope of the Sierra Nevada in Kern County (approximately 15 miles east of City of Bakersfield)
- Project occupies federal lands within the Sequoia National Forest



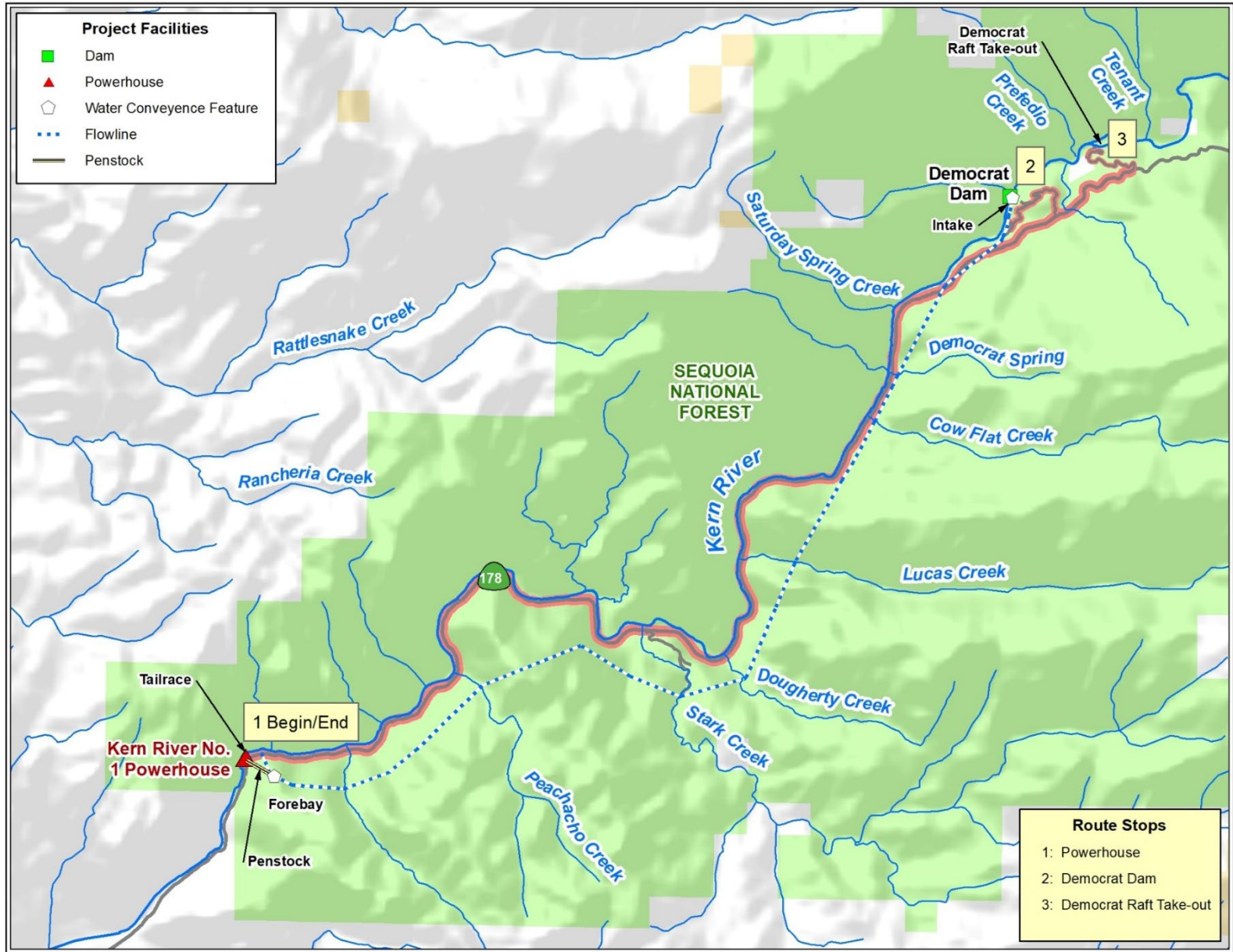
Kern River No. 1 Hydroelectric Project Overview

Operations

- Run-of-River Operations
- Inflow controlled by USACE reservoir operations at Isabella Dam
- Amount and timing of diversions are a function of Lake Isabella releases, water rights, flowline and powerhouse capacities, and MIFs requirements
- Project diversion rights of up to 412 cfs
- Minimum instream flow (MIF) requirements:
 - June 1 – September 30 - 50 cfs release or inflow, whichever is less
 - October 1 – May 31 - 15 cfs release or inflow, whichever is less



Site Visit Route



Kern River No. 1 Hydroelectric Project

Route Stop #1

Powerhouse

Facilities

- Dam
- ▲ Powerhouse
- Water Conveyance Feature
- Tunnel
- Flume
- Conduit
- Sandbox
- Penstock
- Spillway
- Tailrace
- Gage
- Ancillary Facility
- Ancillary Feature
- Powerline
- Communication / Powerline
- FERC Boundary

Transportation

- Project Road
- Other Road
- Project Trail
- ⊗ Gate

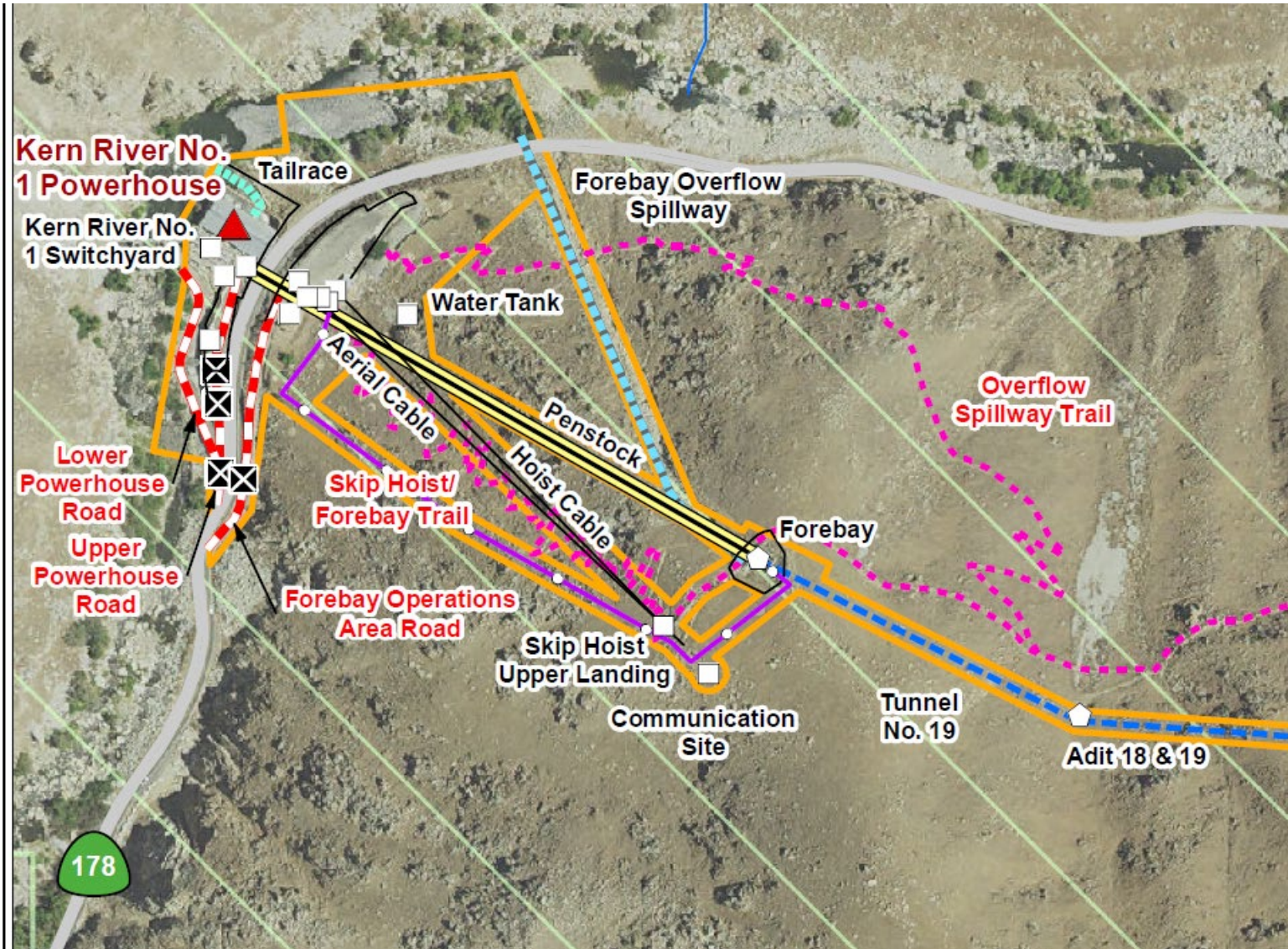
Other Features

- Watercourse

Land Jurisdiction*

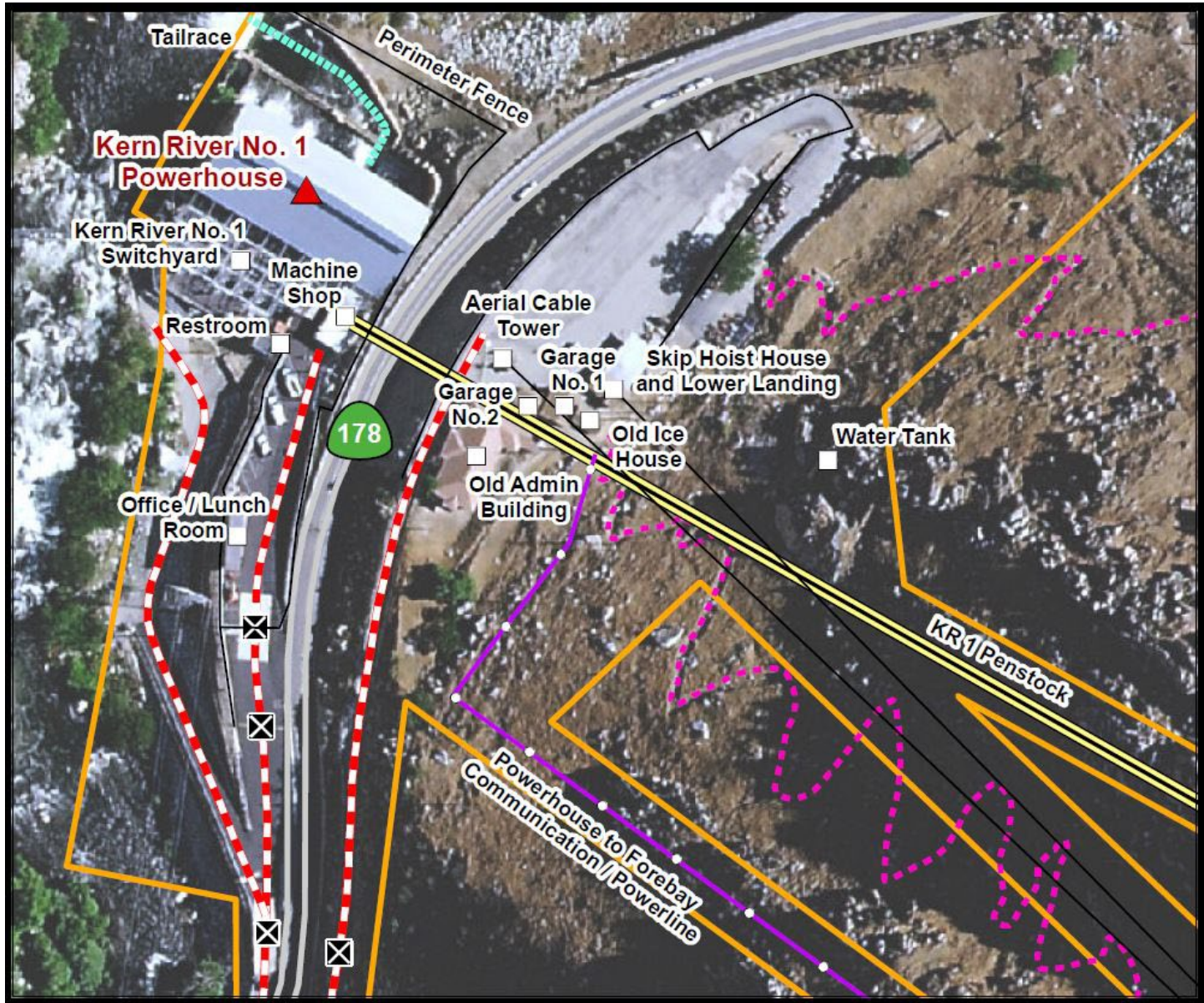
- U.S. Forest Service

*SOURCE: BLM 2021



Kern River No. 1 Hydroelectric Project

Route Stop #1
Powerhouse



Kern River No. 1 Hydroelectric Project Facilities

Route Stop #1

Powerhouse

- 4 impulse turbines
- Total installed capacity 26.3 MW
- Tailrace is impounded by Kern Canyon Project (FERC Project No. 178) diversion pool (non-Project facility)



Kern River No. 1 Hydroelectric Project

Route Stop #1

Forebay

- 45-foot-long, 33-foot-wide, and 11-foot-deep concrete gravity structure that impounds water (less than 1 ac-ft) to regulate flow to the powerhouse.
- Water enters the forebay via Tunnel No. 19 and flows into the primary of two reinforced concrete bays.
- Primary bay contains the penstock intake that is fitted with a trashrack.
- Secondary bay serves as a spillway from primary bay, exiting via a 1,362-foot spillway overflow pipe, supported by concrete piers, that discharges into the Kern River.



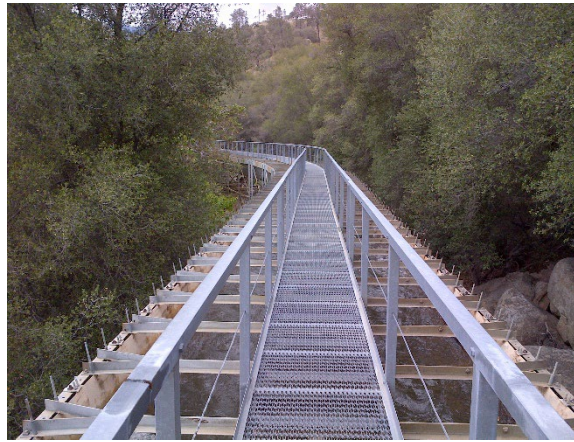
Kern River No. 1 Hydroelectric Project Facilities

Conveyance System

- 8.5 miles long
- Consists of sandbox, flumes, tunnels, adits, conduits, forebay, forebay overflow spillway, and penstock



Forebay Spillway Pipe



Flume



Covered Conduit

Kern River No. 1 Hydroelectric Project Facilities

Route Stop #2

Democrat Dam

- Located - 10.2 miles of upstream powerhouse
- 58-foot-high concrete overflow gravity dam
- Crest is 204 feet long and serves as spillway



Kern River No. 1 Hydroelectric Project Facilities

Route Stop #2

Democrat Dam Impoundment

- 27 surface acres
- 247 acre-feet (af) gross storage capacity
- No usable storage
- Water diverted into intake structure with combined capacity of 412 cubic feet per second (cfs)



Kern River No. 1 Hydroelectric Project Facilities

Route Stop #3 - Democrat Raft Take-Out



Kern River No. 1 Hydroelectric Project Facilities

Other Project Facilities

- Project Access Roads 8 access roads (2.35 miles)
- Project Trails and 10 access trails (4.73 miles)
- Communication and Power Lines
- Gaging Stations
 - Kern River near Democrat Springs - located 0.4 mile downstream of Democrat dam
 - Kern River No. 1 Conduit near Democrat Springs - located on flowline near Cow Flat Creek
 - Kern River near Democrat Springs + Conduit - data computed by combining the data collected in the bypass reach and the flowline (inflow)



Cow Flat Creek Gage

Kern River No. 1 Hydroelectric Project

Contact Information

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