ALASKA ENERGY AUTHORITY

# HYDROPOWER OPPORTUNITIES

Bryan Carey, PE
Director, Owned Assets

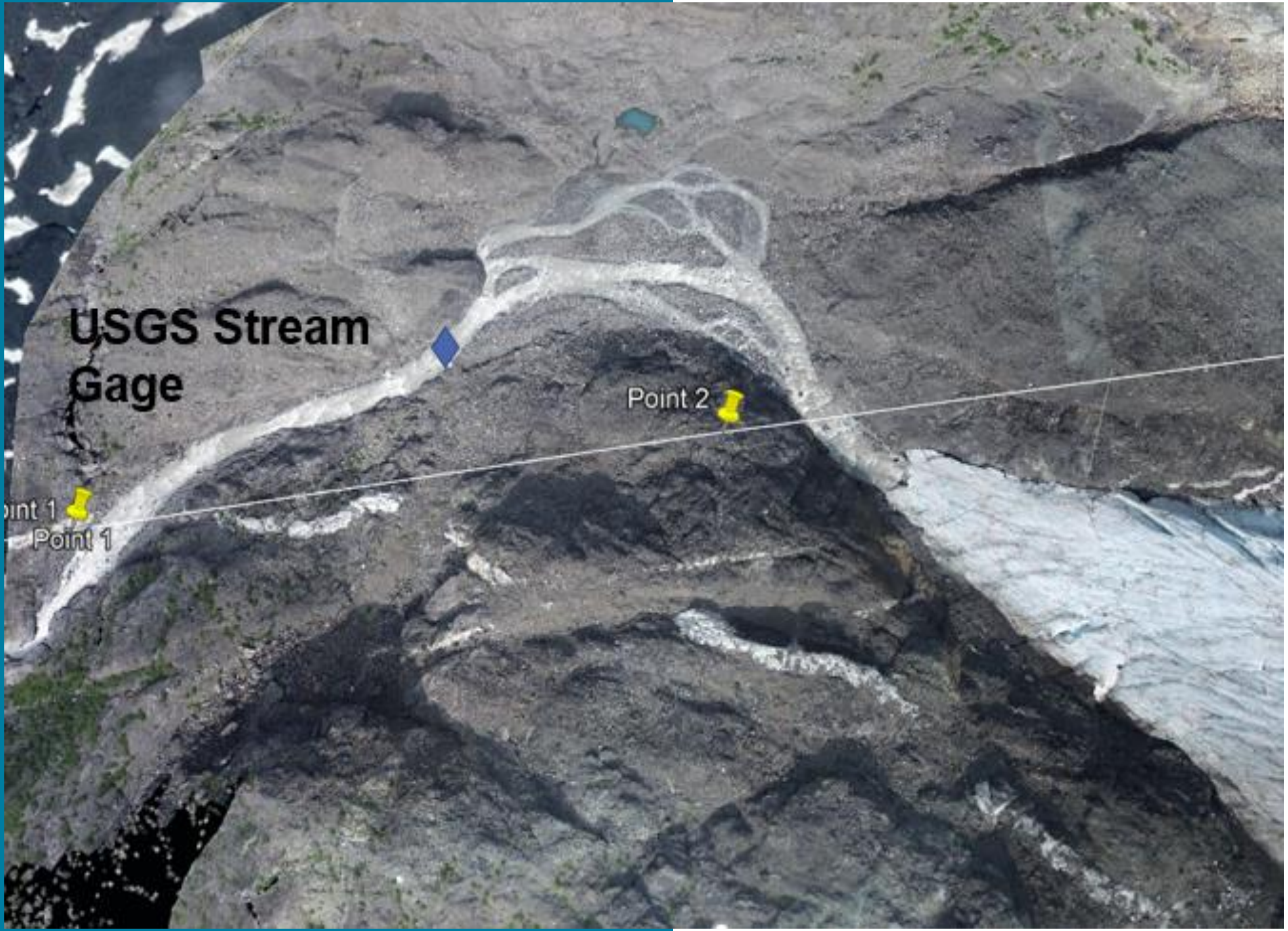
Alaska Dam Owners
FERC Portland Regional Office
February 21, 2023


ALASKA ENERGY AUTHORITY

# Dixon Glacier

# Dixon Diversion Project

- AEA is investigating generating energy from the outflow of Dixon Glacier five miles southwest of the Bradley Lake Hydroelectric Project
- The Dixon Diversion Project would be largest renewable energy project in Alaska since Bradley Lake was completed in 1991




# Dixon Diversion Project

- August 2021 Dixon Glacier terminus
- Drainage area is ~20 square miles
- Land above line State of Alaska
- Land below line Wilderness Refuge

ALTERNATIVE 1

# Bradley Lake

- 4.7 mile tunnel from intake to Bradley Lake
- Water goes through Bradley Lake powerhouse
- Raise spillway/dam to hold more water
- Entire project on State land


ALTERNATIVE 2

ALASKA ENERGY AUTHORITY

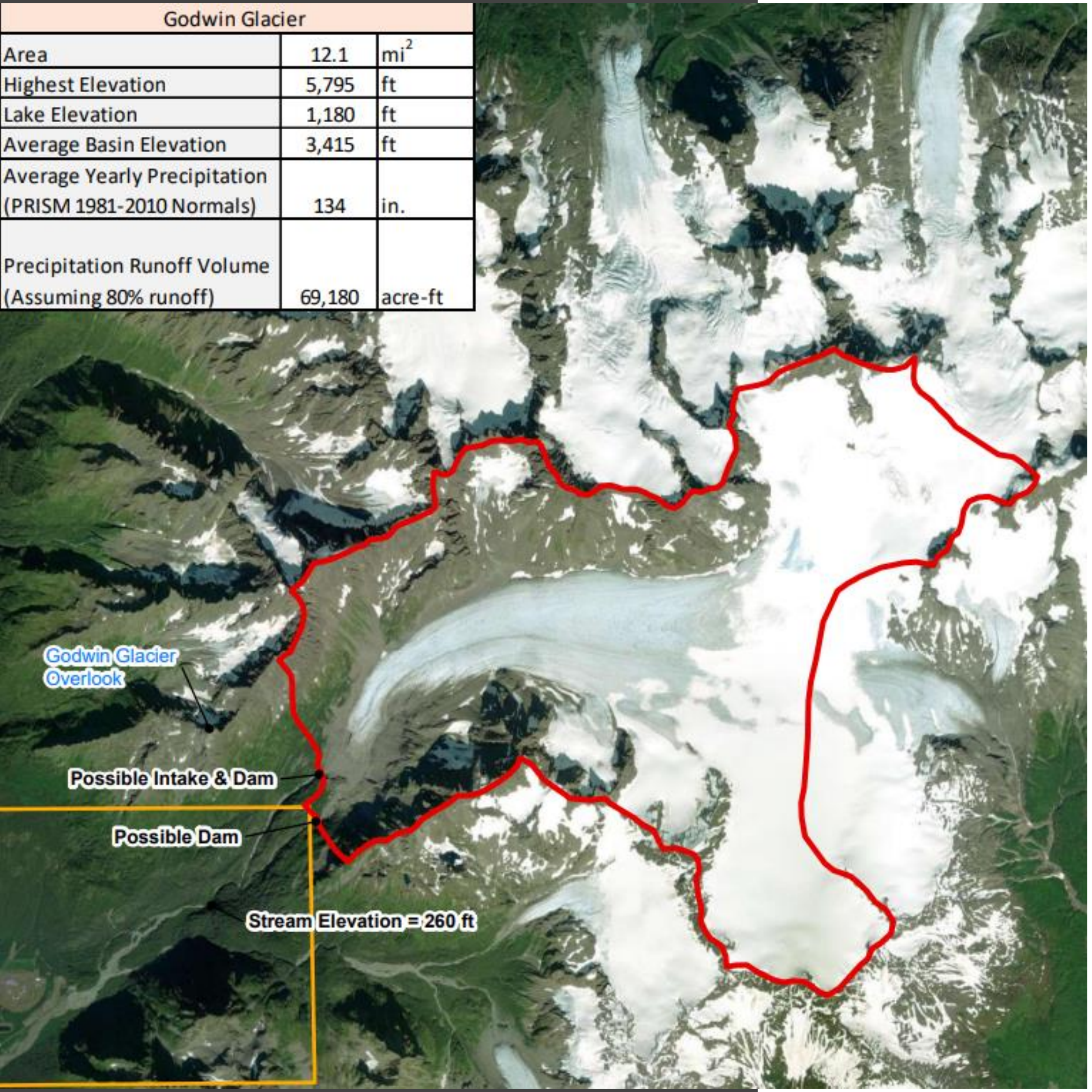
# Martin River

- 2.8 mile power tunnel from intake to Martin River
- 55 MW power plant at Martin River at assumed upper limit of anadromous fish extent
- Transmission lines to connect with Bradley Lake transmission
- Raise spillway at Bradley Lake
- Entire project on State land

# Energy Potential

- Bradley Lake Alternative after reduction from assumed minimum in-stream flow 120,000 – 200,000 MWh
- Martin River Alternative after reduction from assumed minimum in-stream flow 100,000 – 160,000 MWh

| Godwin Glacier | | |
|---|---|---|
| Area | 12.1 | $mi^2$ |
| Highest Elevation | 5,795 | ft |
| Lake Elevation | 1,180 | ft |
| Average Basin Elevation | 3,415 | ft |
| Average Yearly Precipitation (PRISM 1981-2010 Normals) | 134 | in. |
| Precipitation Runoff Volume (Assuming 80% runoff) | 69,180 | acre-ft |



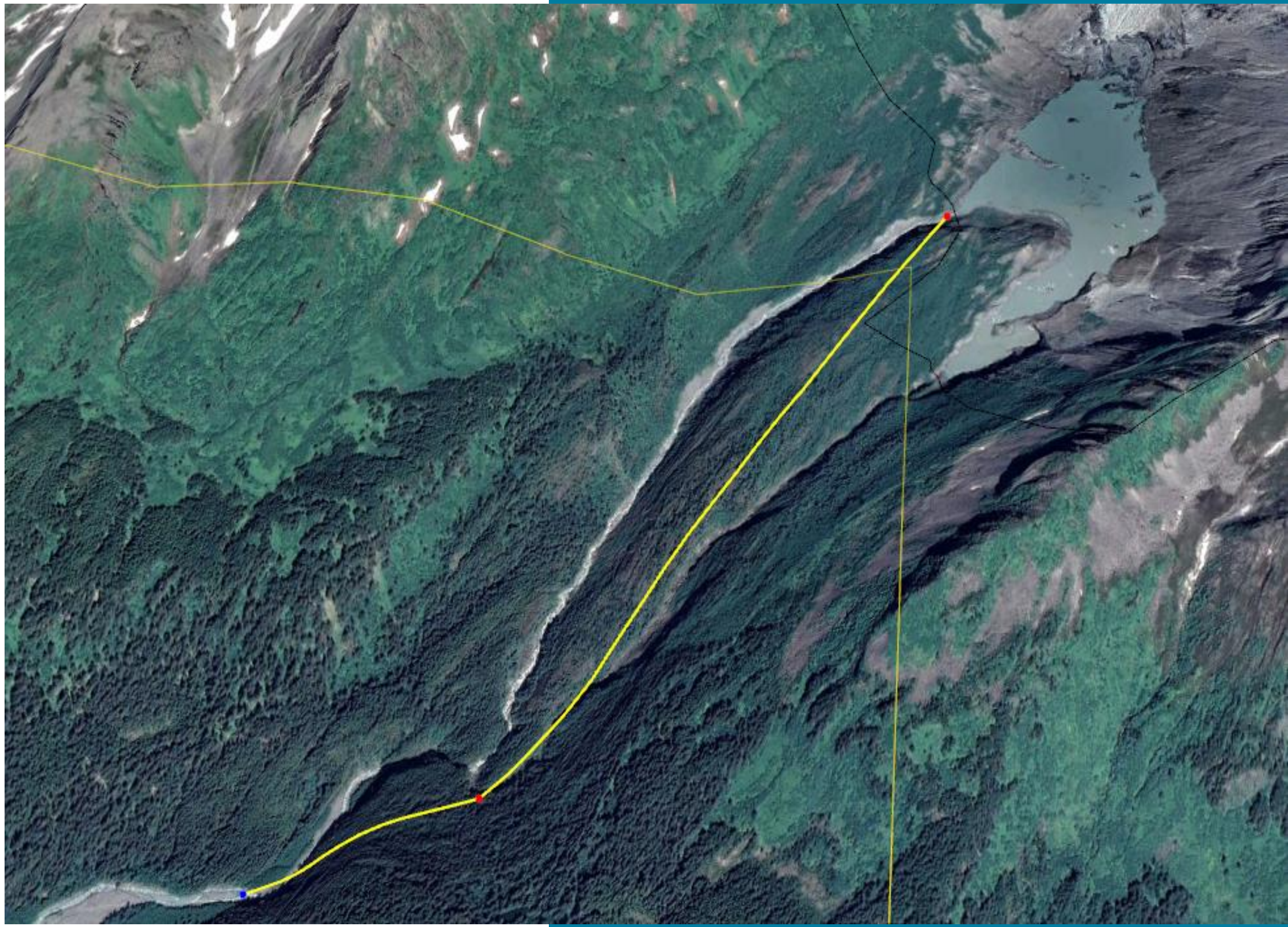

ALASKA ENERGY AUTHORITY

# Godwin

- If average ice melt 10 feet/year then an additional 77,000 ac-ft above annual precipitation for coming decades
- Power plant less than 2 miles from roads and 115 kVA lines
- Port to bring in equipment and materials

# Godwin

- Inlet elevation 1180′
- Power plant elevation 260′
- River drop ~920 feet over 1.5 miles
- Expect no fish in this section
- Could place intake downstream of lake and be on State land for entire project



ALASKA ENERGY AUTHORITY

AEA provides **energy solutions** to meet the unique needs of Alaska's rural and urban communities.

## Alaska Energy Authority


813 W Northern Lights Blvd.
Anchorage, AK 99503

Main: (907) 771-3000
Fax: (907) 771-3044

info@akenergyauthority.org

akenergyauthority.org

@alaskaenergyauthority

@alaskaenergyauthority