FISH PASSAGE & RIVER RESTORATION

THE STIBNITE GOLD PROJECT

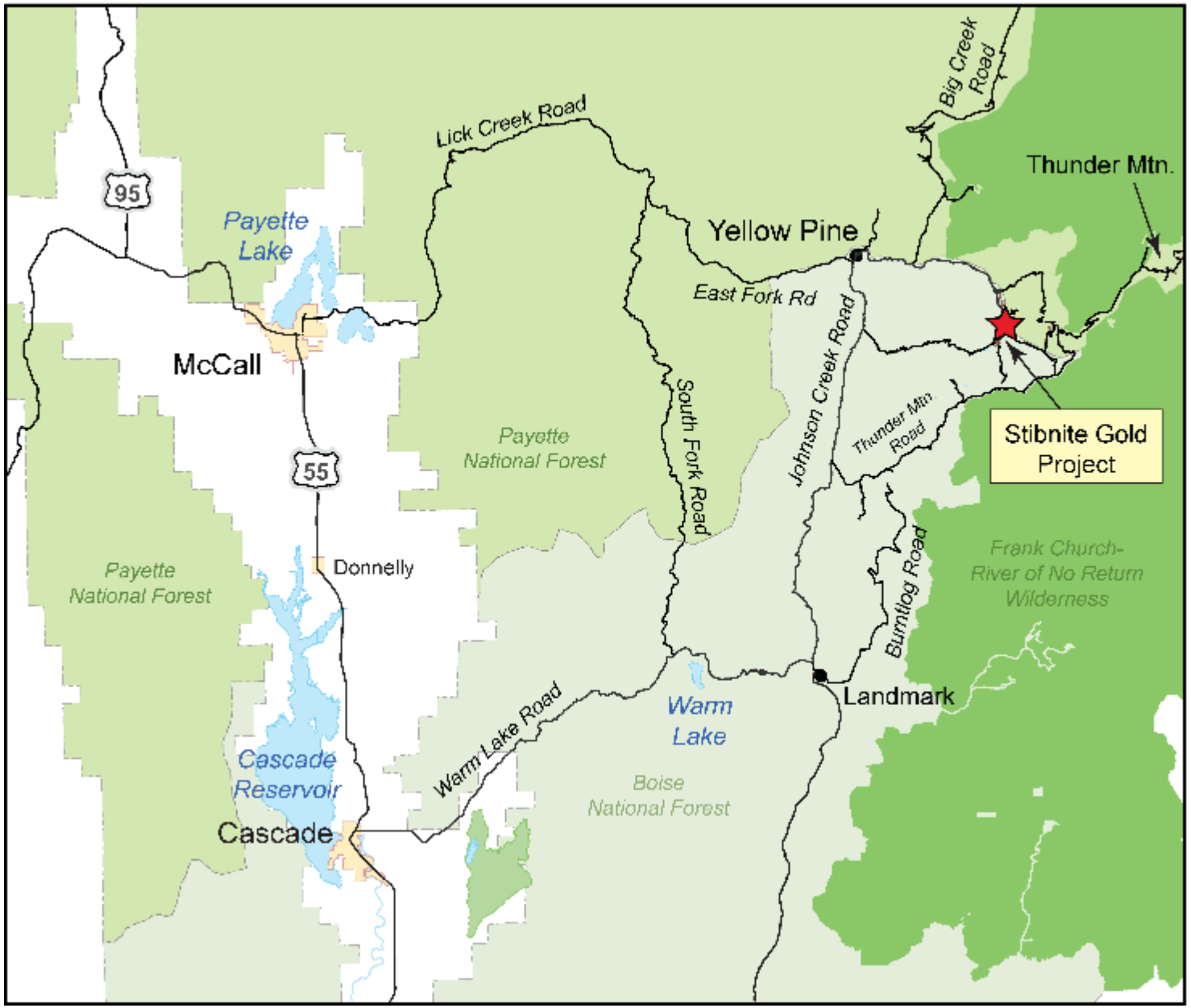
Valley County, Idaho

Q3 2020

OUTLINE

- Stibnite Gold Project Overview
- Fish Tunnel
- Stream Restoration
- Q & A
- Up Next

STIBNITE GOLD PROJECT



HISTORIC STIBNITE MINING DISTRICT

1890s
The Thunder Mountain gold rush brings mining to the area

1900-1930
The town of Stibnite is established

1938
Mining at Yellow Pine pit stops salmon migration upstream

1941-1950
The town of Stibnite booms when antimony & tungsten were declared critical & strategic minerals

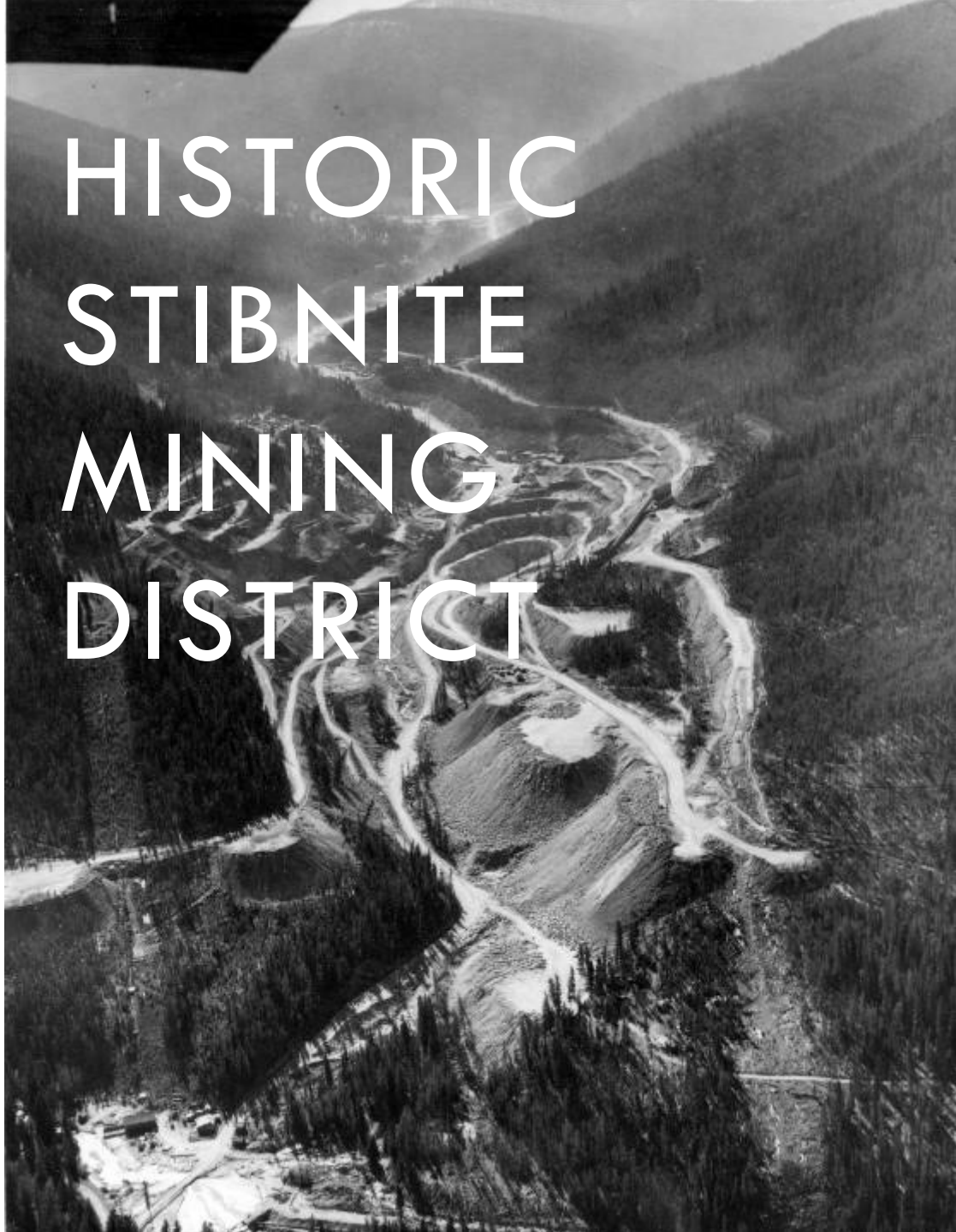
1953-1960
With WWII & the Korean War over, mining slowed and Stibnite slowly faded

1960s
Earthen dam failure resulting in hundreds of tons of sediment eroding into surrounding streams & rivers, even to this day

1970s-1990s
Periodic mining by multiple owners and operators

1990s – 2000s
All mining stopped, U.S. Gov't conducts some limited clean-up

2009-2011
Midas Gold consolidated land ownership & began evaluating the geology & environment within the Stibnite Gold Project area



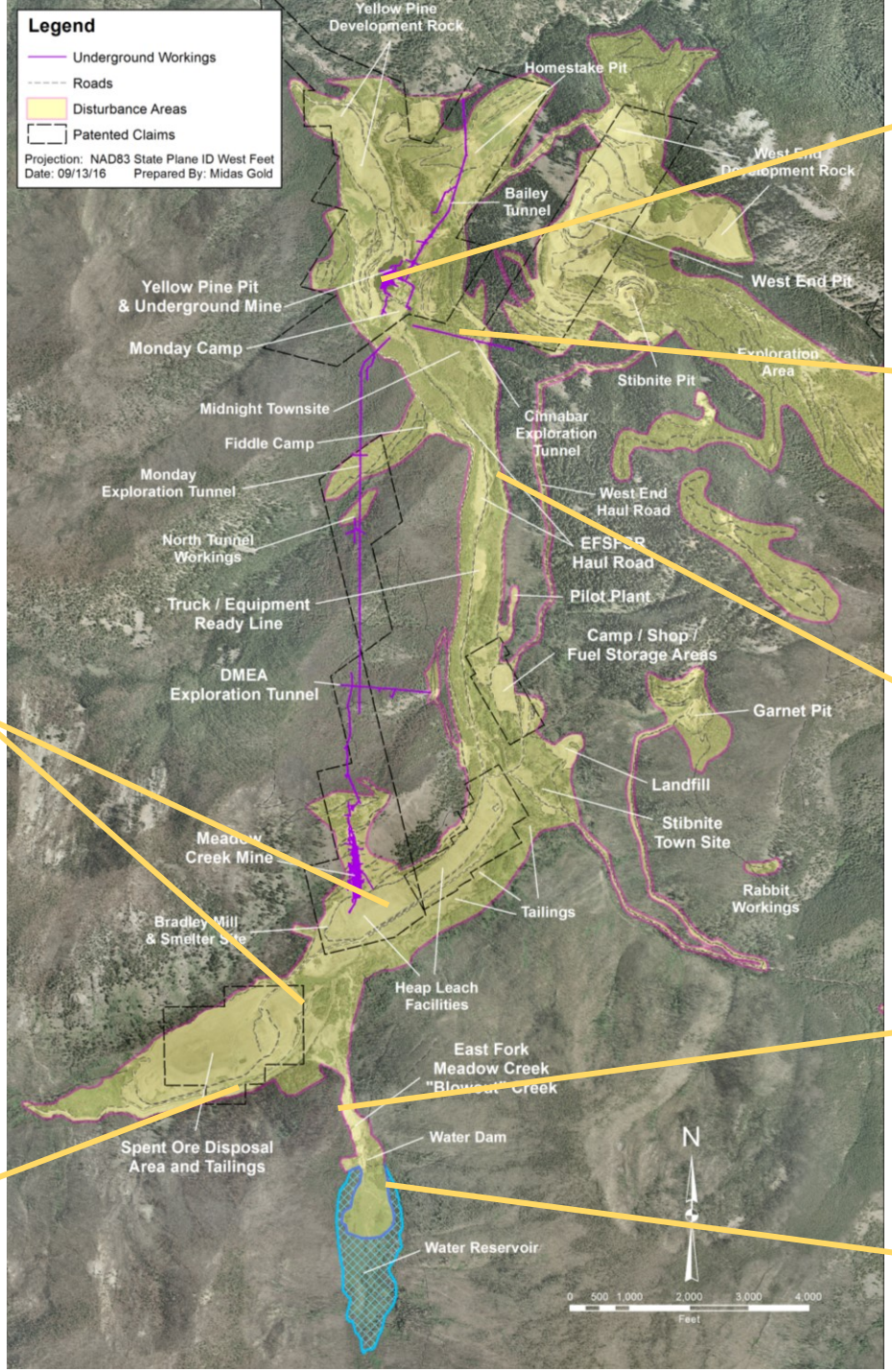
THE US SENATE CONGRESSIONAL RECORD. 1952

“In the opinion of the Munitions Board, the discovery of that tungsten mine at Stibnite, Idaho in 1942 shortened World War II by at least 1 year and saved the lives of a million American soldiers.”

HISTORIC LEGACY

TAILINGS
10.5 million tons of legacy spent ore and unlined tailings interact with the water table

MEADOW CREEK
4,900 ft rock lined ditch with limited habitat function



YELLOW PINE PIT
The East Fork of the South Fork dumps into a legacy mine pit. Currently, ~80 feet of sediment has collected at the bottom

FISH PASSAGE
Fish migration is blocked by the Yellow Pine pit

HABITAT
13,000+ ft poor habitat quality

BLOWOUT CREEK
Largest source of sedimentation in the watershed

BLOWOUT CREEK VALLEY
14-foot drop in water table, loss of wetlands function

LEGACY
BLOWOUT CREEK

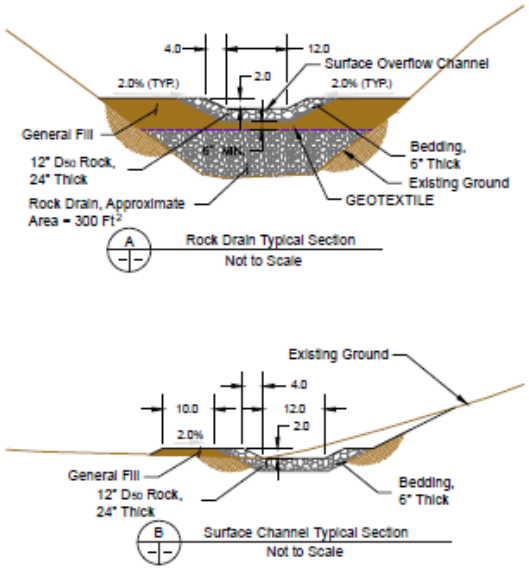
Water reservoir failed in 1965.

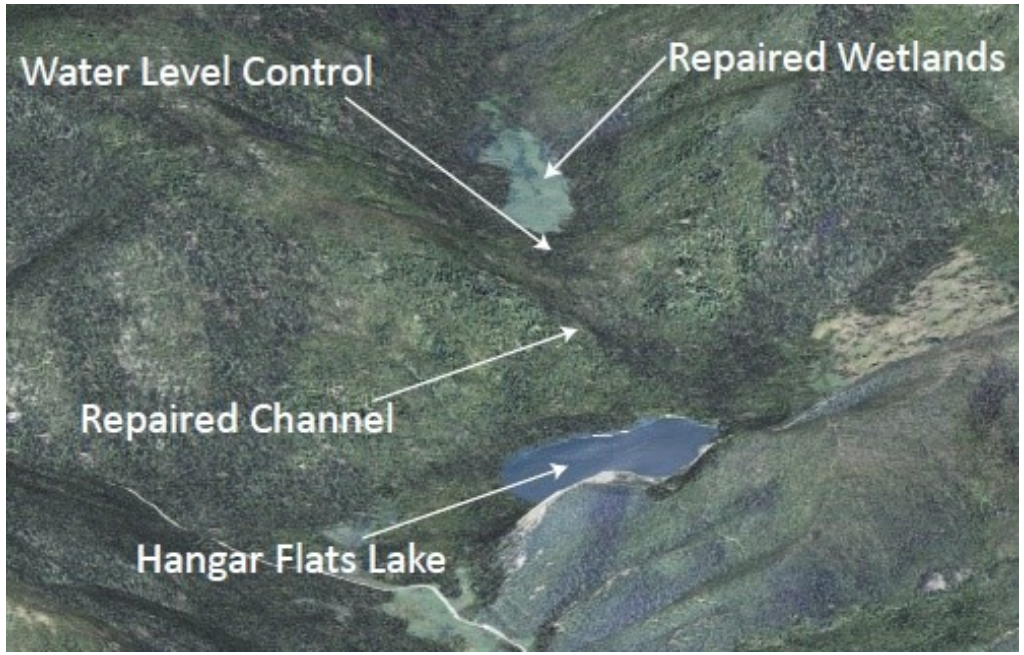
TODAY

The failed dam caused the most significant source of sediment in the watershed. It degrades water quality and fish habitat and diminishes wetlands functionality.

BLOWOUT CREEK RESTORATION

CURRENT	INTERMEDIATE	RESTORATION



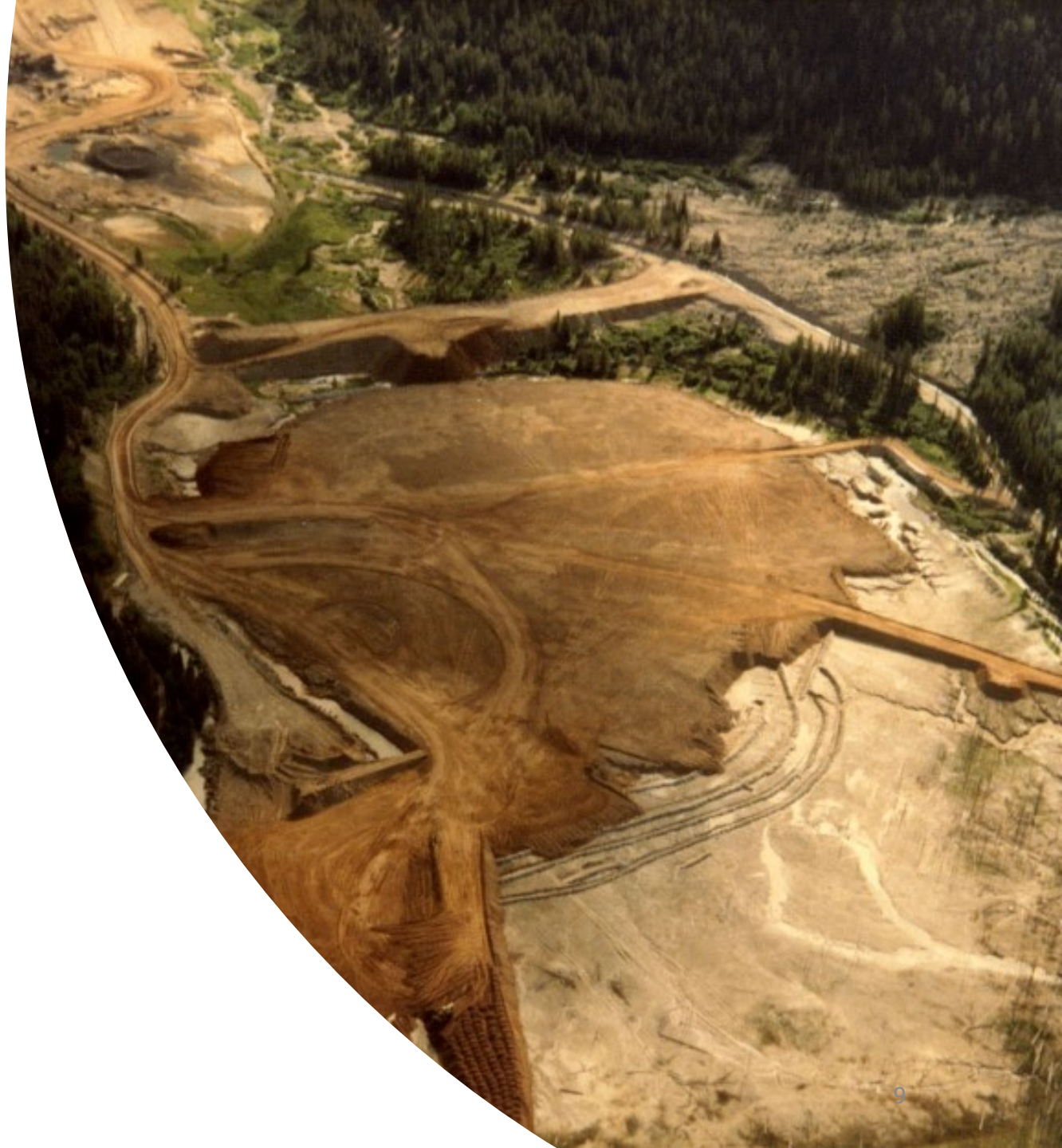


Long term solution to improve water quality, stabilize the water table and re-establish wetlands habitat.

LEGACY

SPENT ORE DISPOSAL AREA

Tailings (beige) were covered with spent heap leach ore (brown) after being deposited, unlined, in the Meadow Creek Valley.



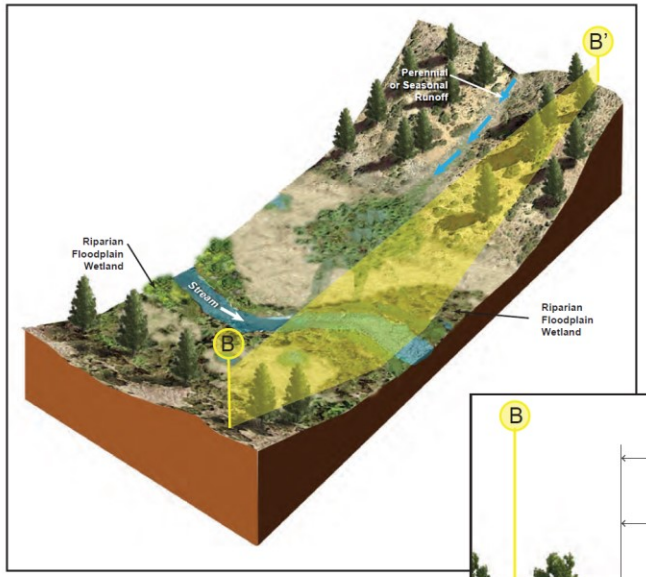
TODAY

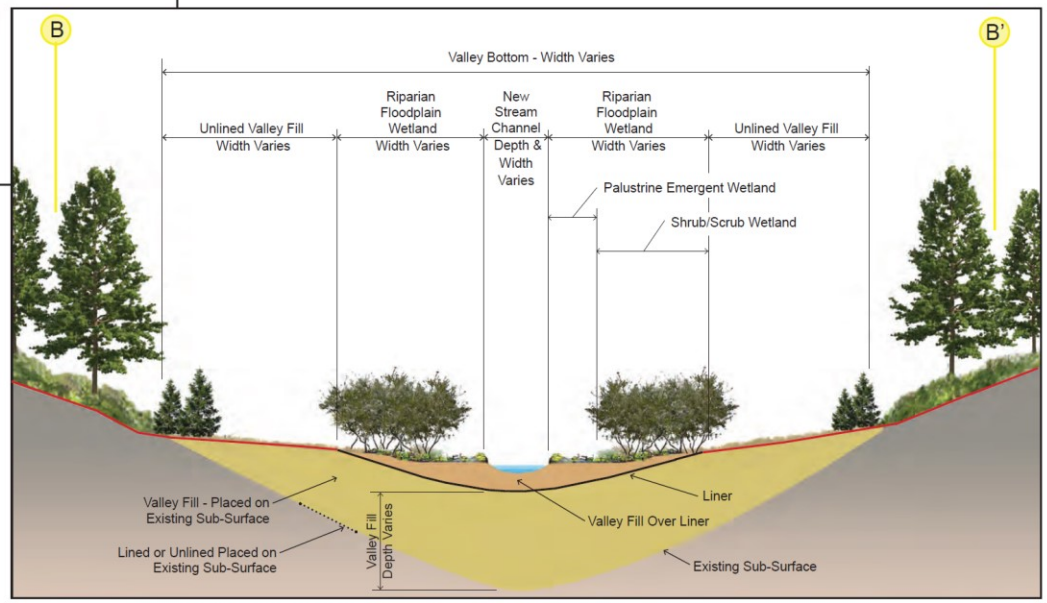
Revegetation attempts have been made; however, legacy materials continue to degrade water quality and leach metals into the surface water and groundwater.

REMOVE & REPROCESS LEGACY TAILINGS

CURRENT

RESTORATION





RIPARIAN FLOOD PLAIN WETLAND B-B'

NOT TO SCALE

Reprocess 3 million tons of historical tailings & **repurpose** the 7.5 million tons of spent heap leach ore, removing an existing potential source of water degradation.

Restoration follows construction and operation of TSF and Hangar Flats DRSF within portions of the SODA footprint.

LEGACY

YELLOW PINE PIT

During the World War II era, the East Fork of the South Fork of the Salmon River (EFSFSR) was diverted to facilitate mining of the Yellow Pine pit, cutting off fish passage.

TODAY

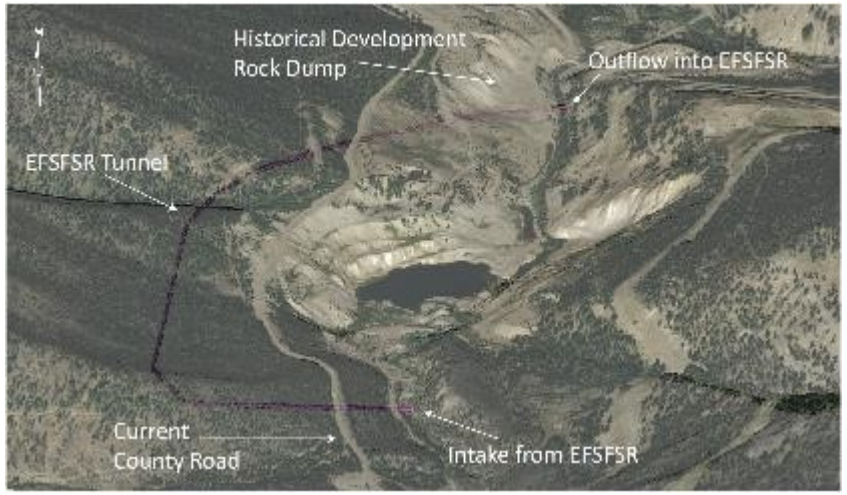
The East Fork of the South Fork of the Salmon River flows directly into the Yellow Pine pit, blocking fish passage.

YELLOW PINE PIT RESTORATION

CURRENT

The East Fork of the South Fork of the Salmon River flows into the abandoned Yellow Pine pit, blocking fish migration to natural spawning areas.

INTERMEDIATE



A 0.9-mile tunnel fishway will allow fish to swim back to historical spawning areas early and throughout mine operations, for the first time in over 80 years.

The lighted fishway will feature resting pools and keep water velocities below the swim speeds of target fish.

RESTORATION

Backfilling the Yellow Pine pit will allow reestablishment of a natural path and gradient for the East Fork of the South Fork of the Salmon River. This work will begin in year 7 of operations.

PROJECT DESIGN

THE STIBNITE GOLD PROJECT WAS DESIGNED FOR:

Post-closure

Sustainable, dynamic ecosystems

Cleanup of legacy impacts

Limited footprint

Positive social benefits

Enhanced salmon and fishery habitat

Meeting or exceeding regulatory standards

Limited financial and social risks

See Plan of Restoration and Operations, Appendix G

FISH PASSAGE

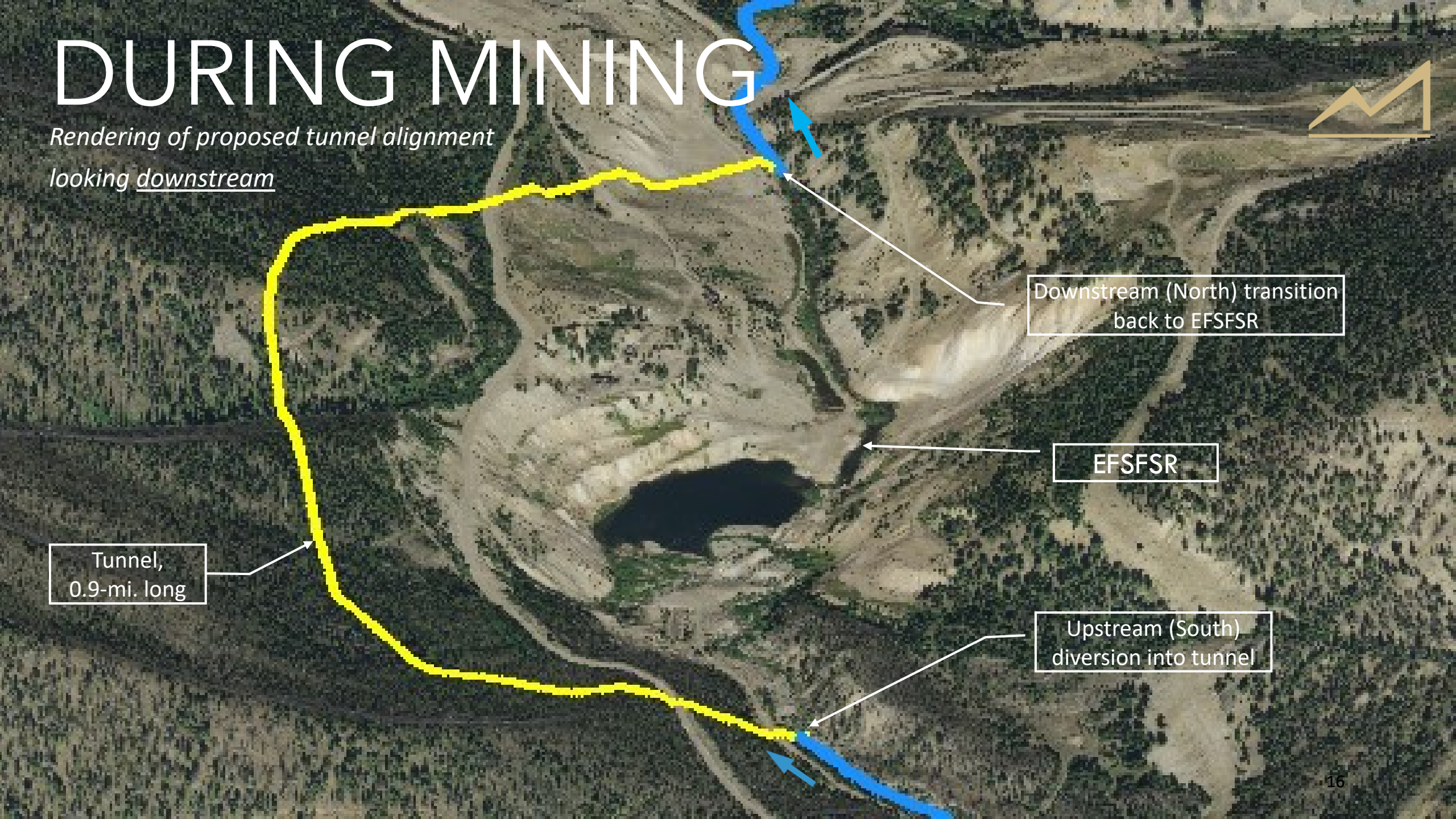
CURRENT CONDITIONS

Rendering of existing Yellow Pine pit looking upstream

DURING MINING

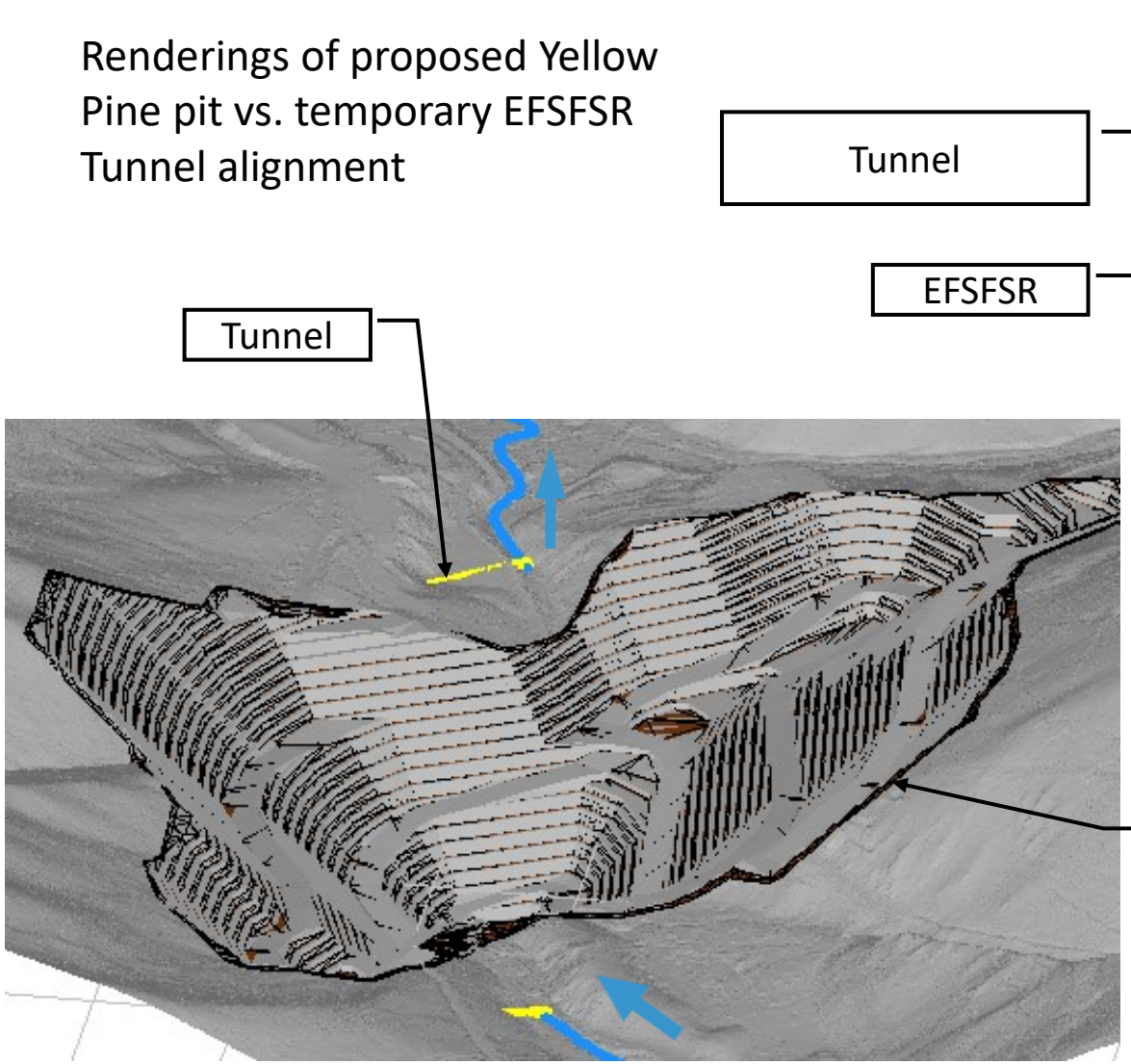
Rendering of proposed tunnel alignment

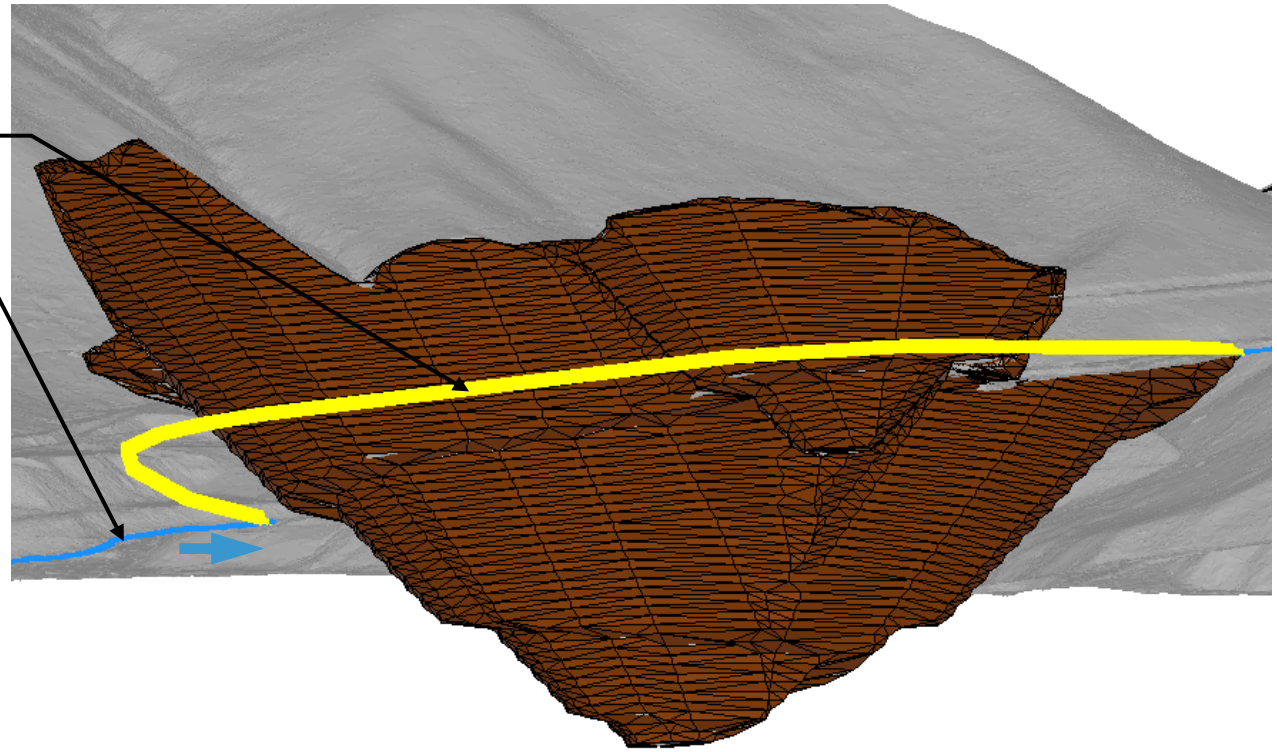
looking downstream



RELATIONSHIP OF TUNNEL TO ULTIMATE PIT

Renderings of proposed Yellow Pine pit vs. temporary EFSFSR Tunnel alignment





Proposed Yellow Pine pit extents

KEY DESIGN CONSIDERATIONS

Geotechnical / Tunneling Conditions

Run-of-river facility

- Must accommodate a wide flow range

Upstream passage of adults

Downstream passage of juveniles

} Jump-start population recovery, ~12-15 years before permanent passage solution (stream/floodplain restoration)

3 ESA-listed species

- Chinook salmon, bull trout, steelhead

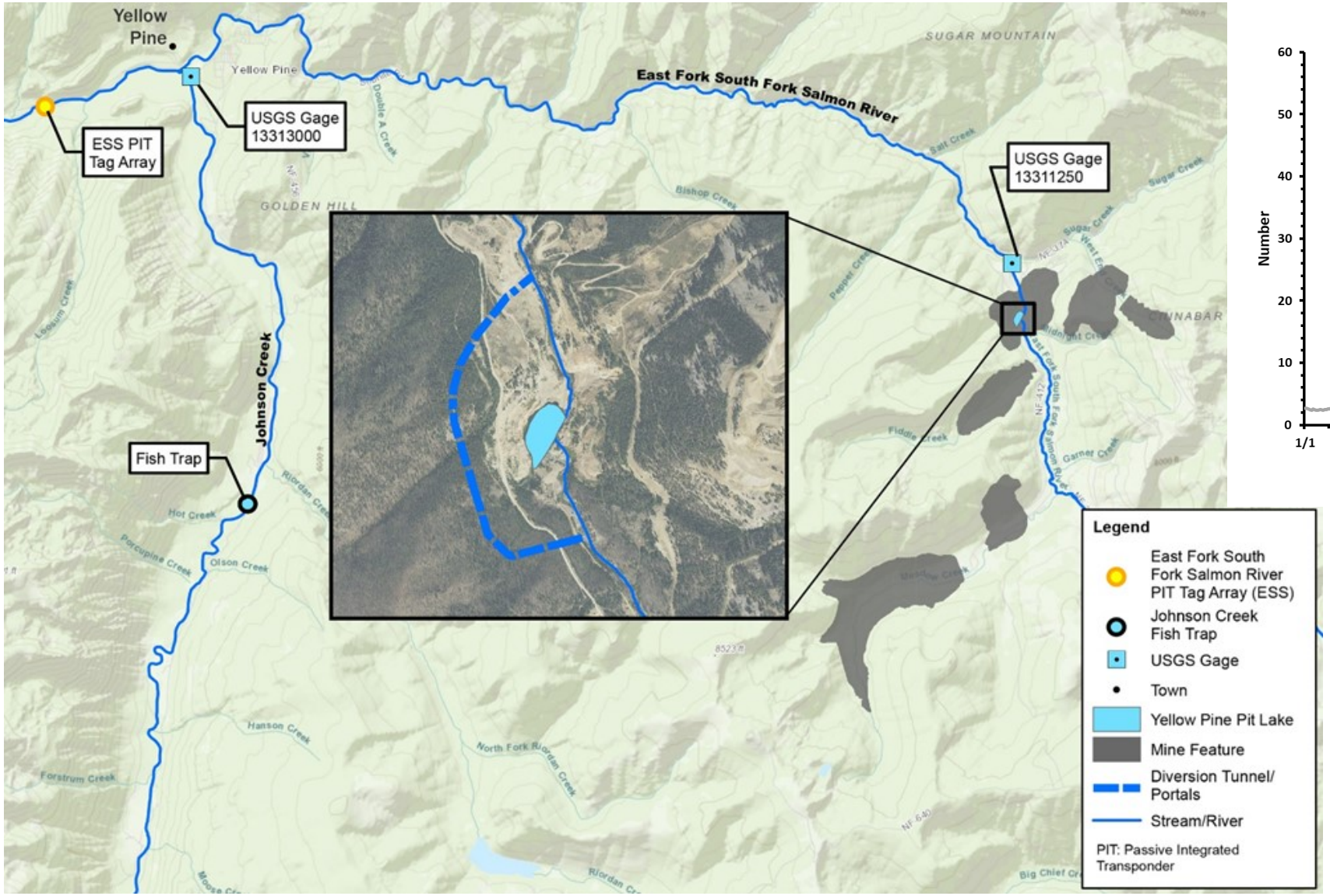
Maintenance and reduced risk of blockage

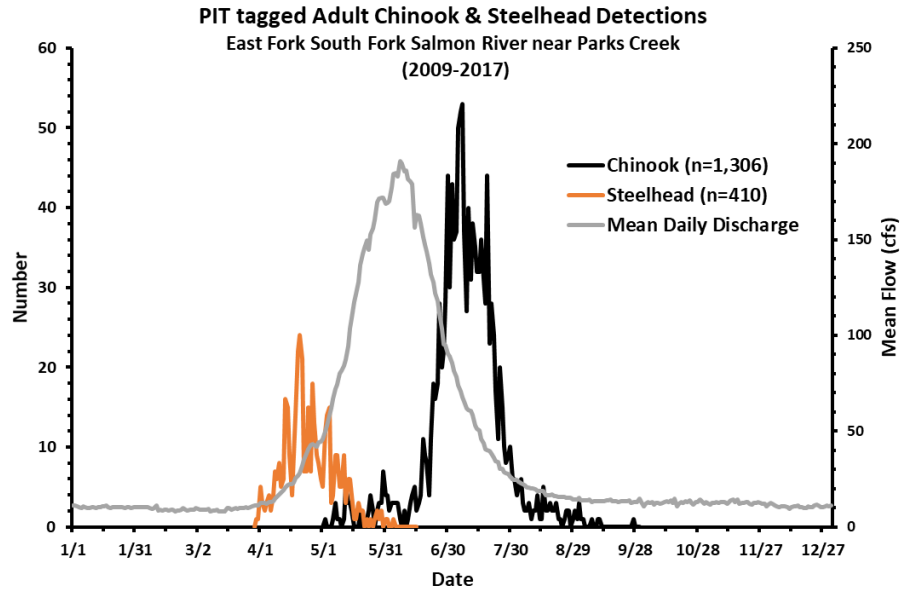
- Sediment and woody debris control
- Dry access way part of year

Minimize incidental take

- Considerations for construction, operations, and closure

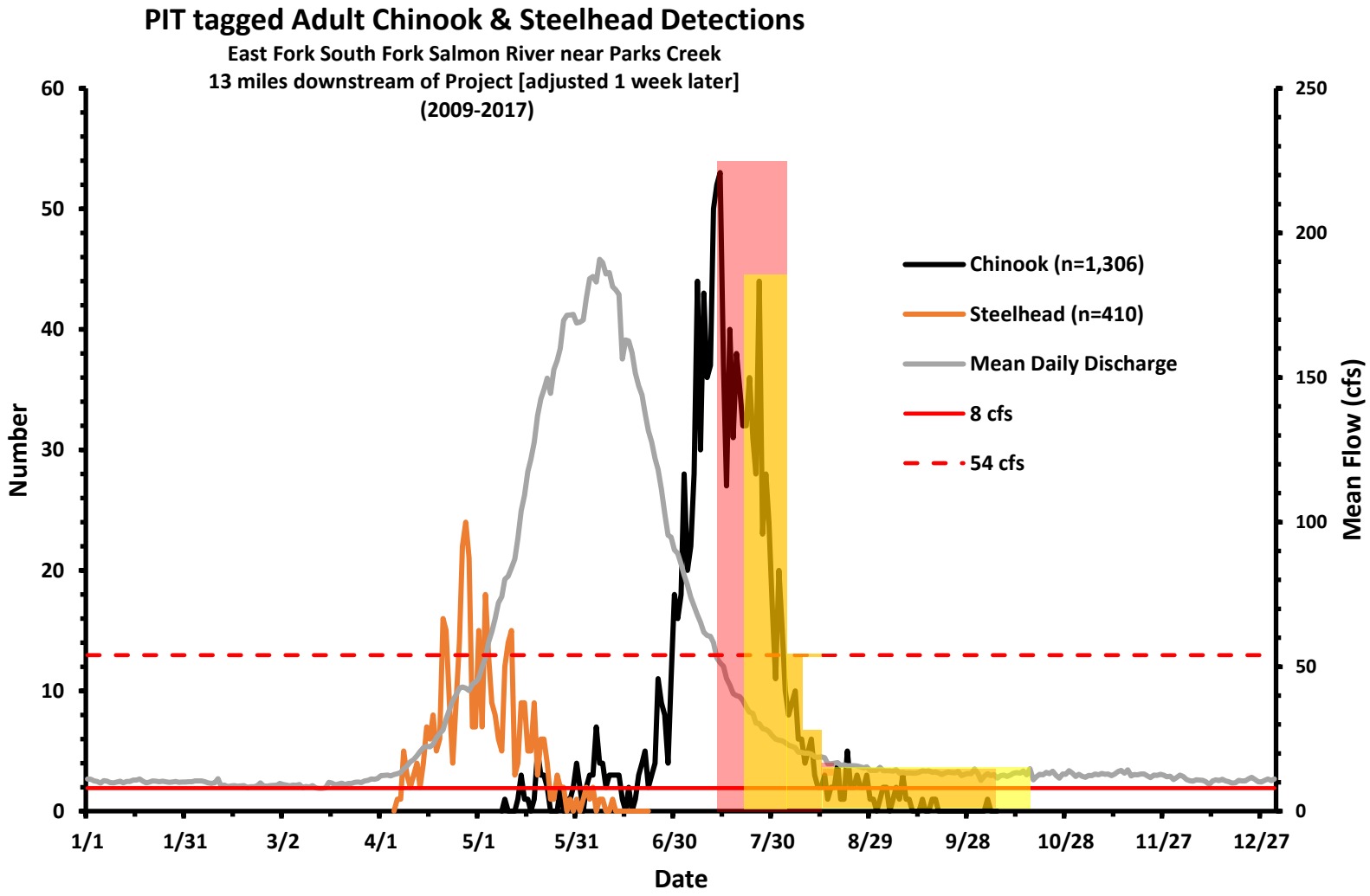
HYDROLOGY CONSIDERATIONS





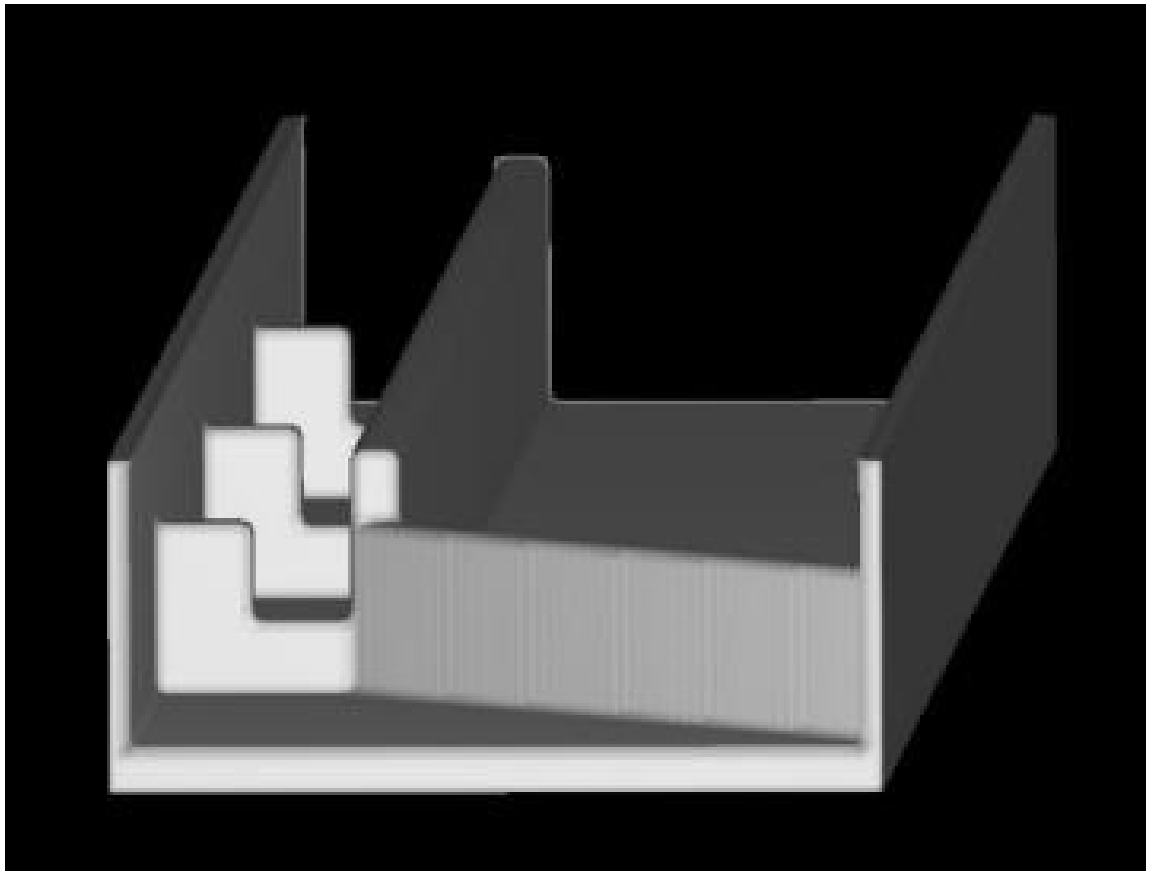
HYDROLOGY CONSIDERATIONS

- Run timing by species
- Originally optimized for late Chinook (pink)/bull trout (orange/yellow)
- CFD demonstrates capability over wider range
- 5th and 95th percentile flows



PRECEDENTS AND ALTERNATIVES

Literature review identified precedent for successful passage in tunnels of various configurations worldwide.



Screened fishway design alternatives (11 variations) on various metrics:

- Technical feasibility
- Passage performance
- Constructability
- Schedule
- Capital and operating cost
- Accessibility for maintenance

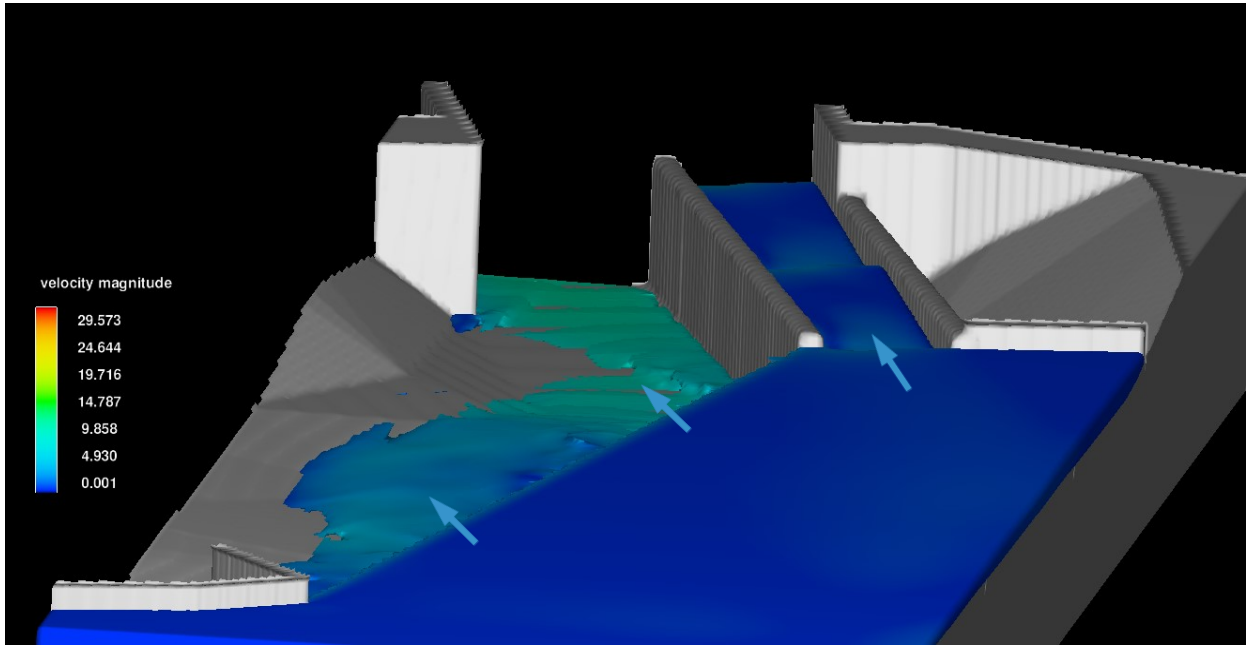
Preliminary screening scores indicated concrete weirs, vertical slots, and trap/haul scored best

- Concrete weirs ultimately selected and carried forward.

TESTING FISHWAY HYDRAULICS

CFD (Computational Fluid Dynamics) models to simulate:

- Key locations
  - ✓ Fishway exit and control weir
  - ✓ Fishway and tunnel accessway at 4.5%
  - ✓ Tunnel slope transition to 1.5%
- Key flows
  - ✓ Low/high passage flows for 3 species (overall range 8 to 239 cfs)
  - ✓ 500-year flood event (721 cfs)



FLOW-3D

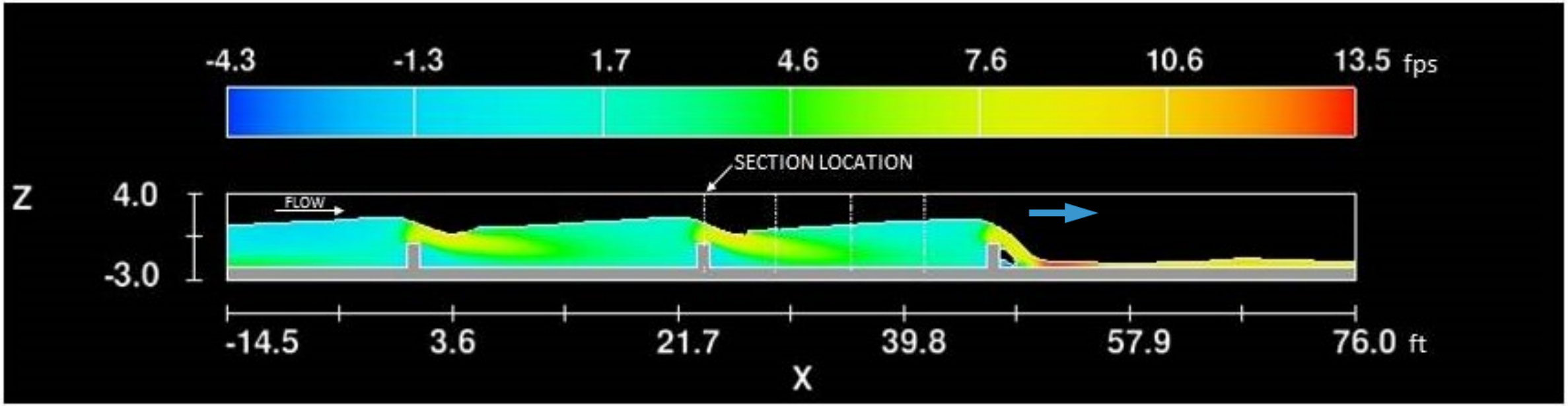
McMILLEN JACOBS ASSOCIATES

FISHWAY HYDRAULICS

4.5% Tunnel

Velocity Results at Middle Weir at Q_{total} (fishway + access way) = **54 cfs,** $Q_{fishway}$ = 29 cfs

5% exceedance flow for Chinook salmon / bull trout (passage design high flow)

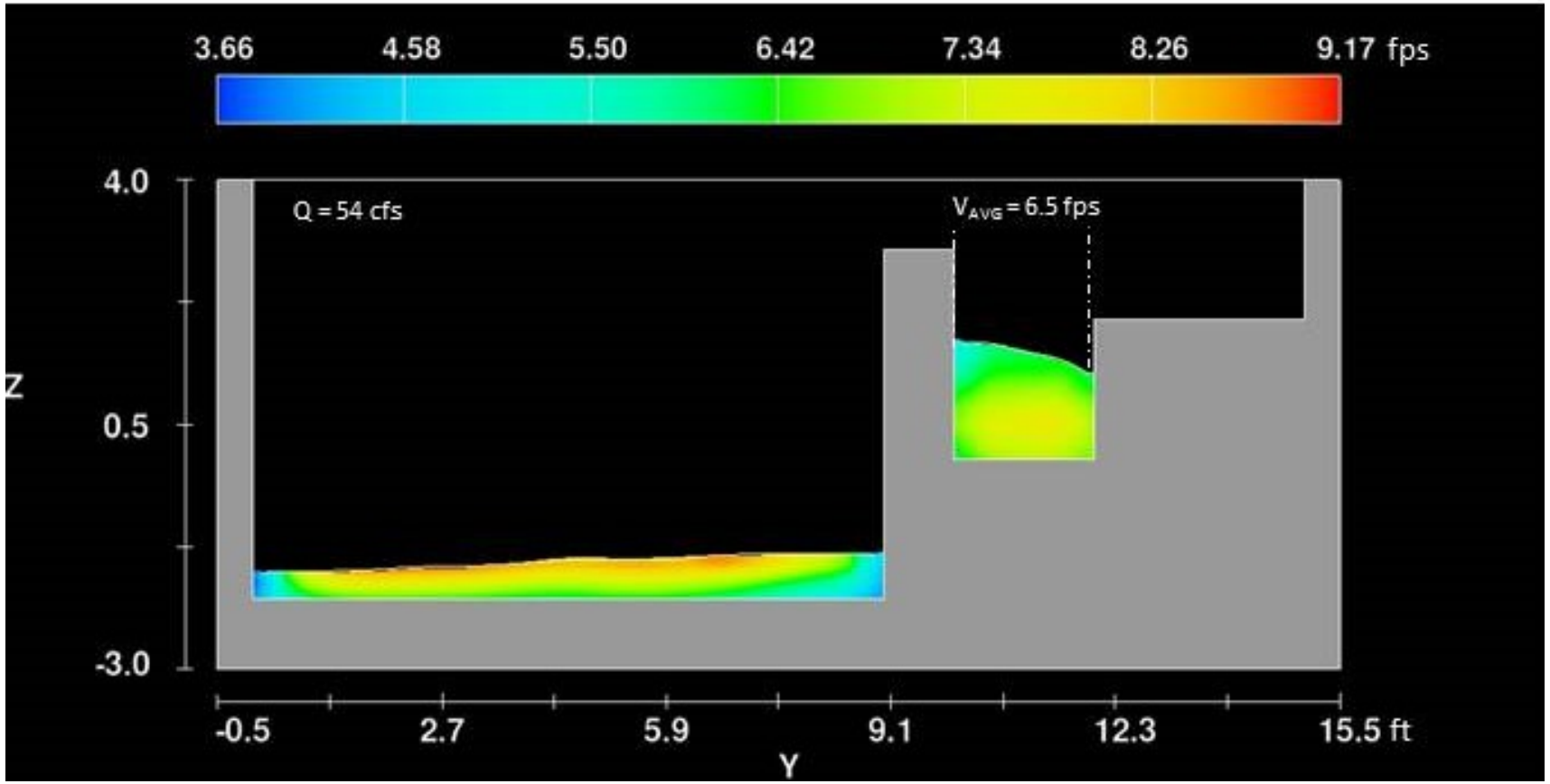


Species	Sustained Swimming Speed	Burst Speed
Chinook salmon	11	22
Bull trout	2.5	6.6
Steelhead	14.5	26.5

FISHWAY HYDRAULICS

4.5% Tunnel

Velocity Results at Middle Weir at Q_{total} = **54 cfs**



Average velocity at weir is less than bull trout burst speed and well under Chinook/steelhead sustained speeds at 54 cfs.

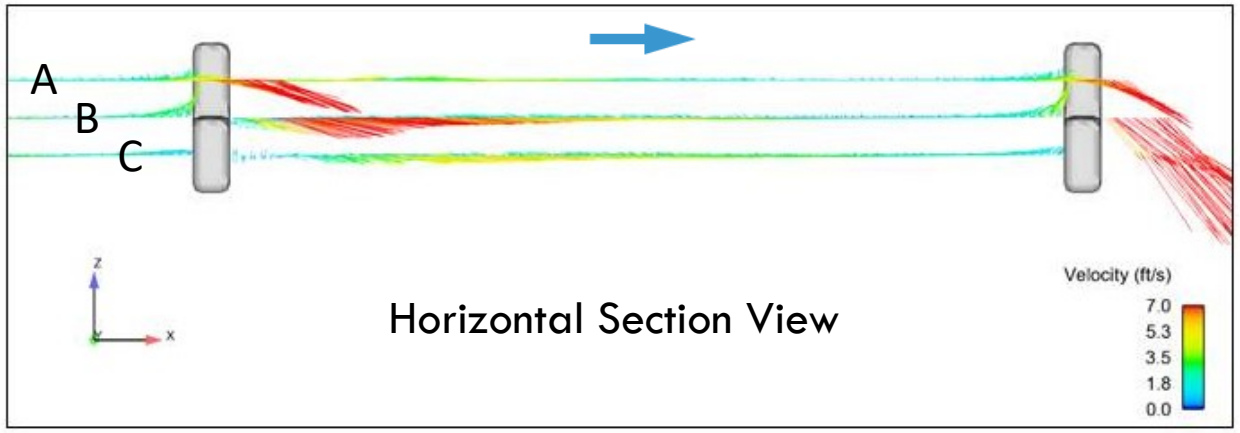
Species	Sustained Swimming Speed	Burst Speed
Chinook salmon	11	22
Bull trout	2.5	6.6
Steelhead	14.5	26.5

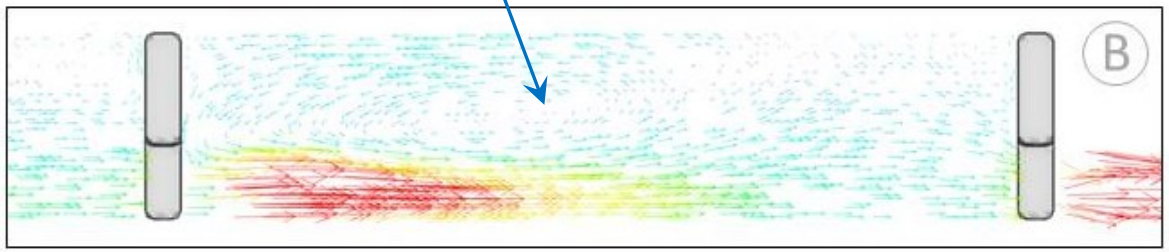
FISHWAY HYDRAULICS

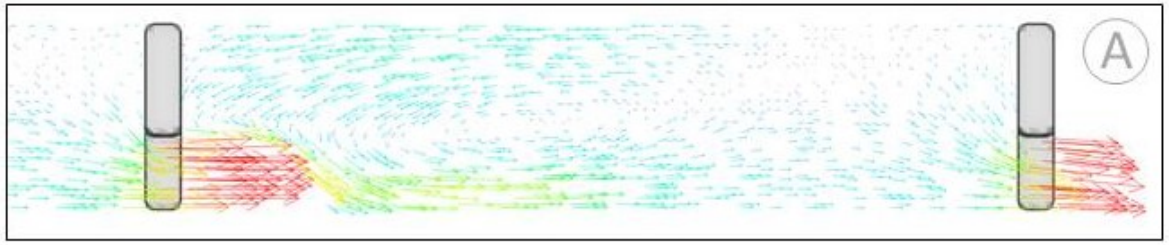
4.5% Tunnel

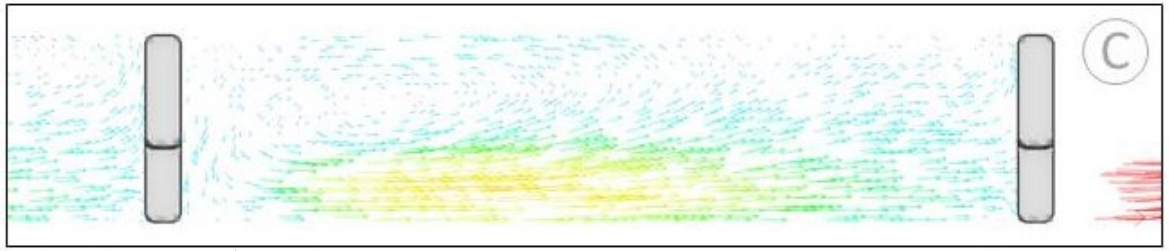
Velocity Vector Results between the Middle and Last Weir at **54 cfs**

Note slack water and recirculation, throughout water column = fish resting area.









Plan Views at Each Section

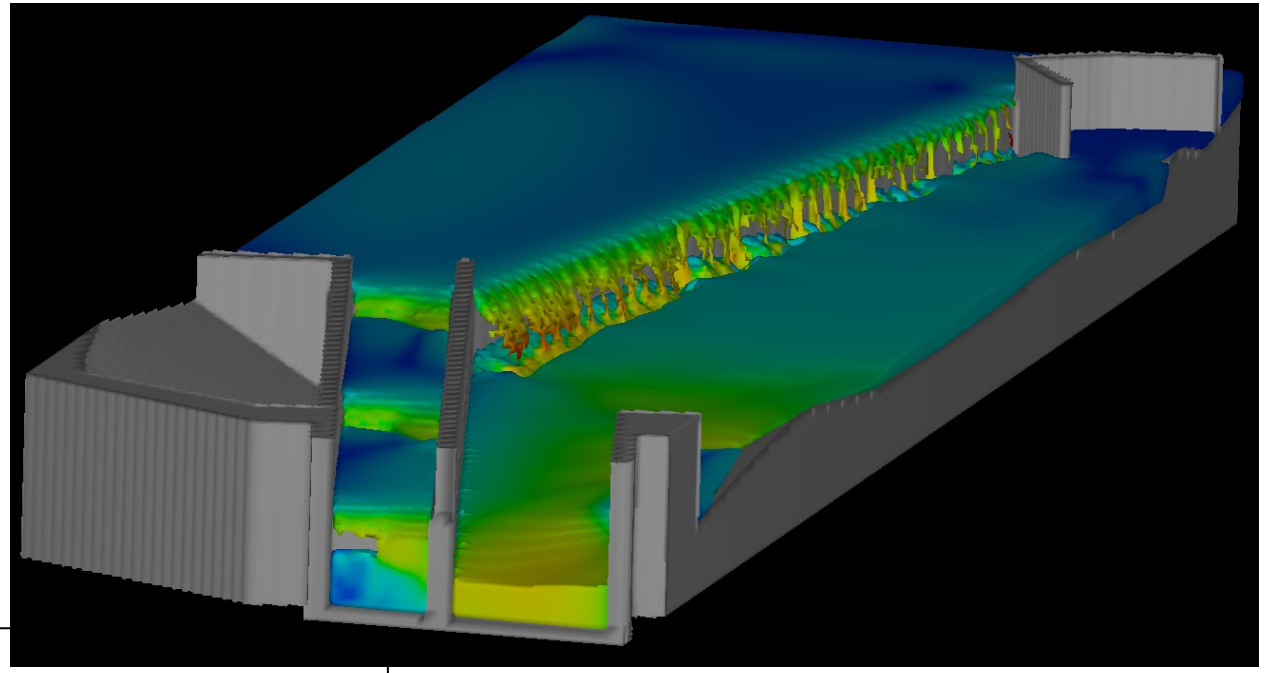
FISHWAY HYDRAULICS

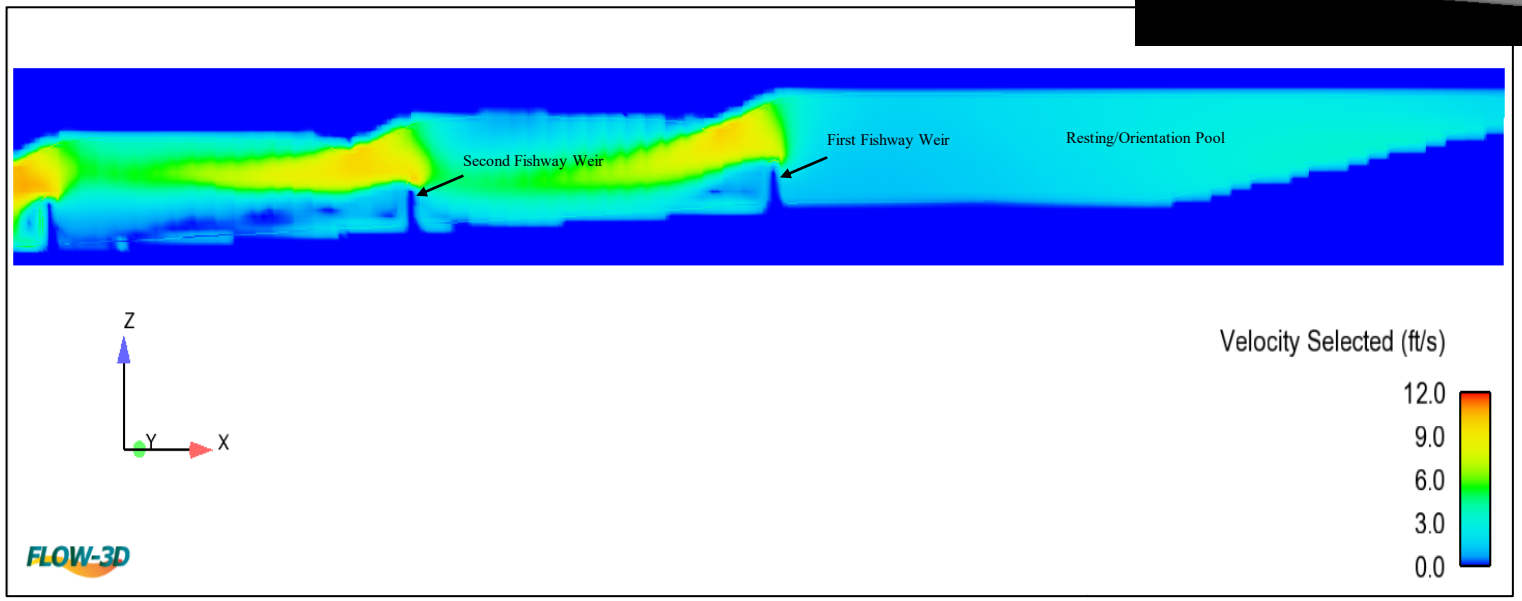
Results at Headworks

5% exceedance for adult steelhead

Q_{total} = **239 cfs**

$Q_{fishway}$ = **52 cfs**



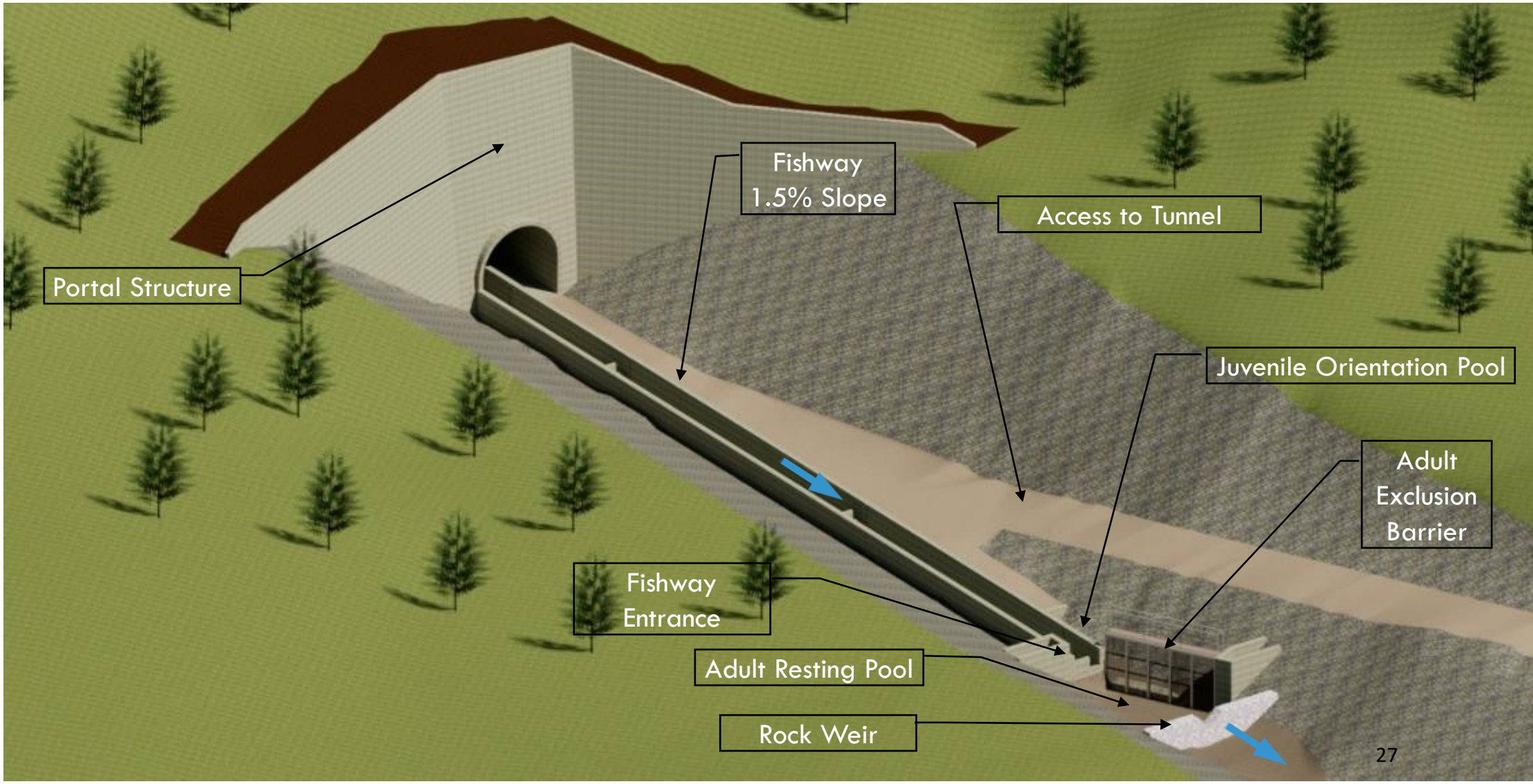


Velocity at fishway weirs equals bull trout burst speed (6.6 fps), and still well under steelhead sustained speeds (14.5 fps) at Q_{total} = 239 cfs.

FISHWAY DETAILS

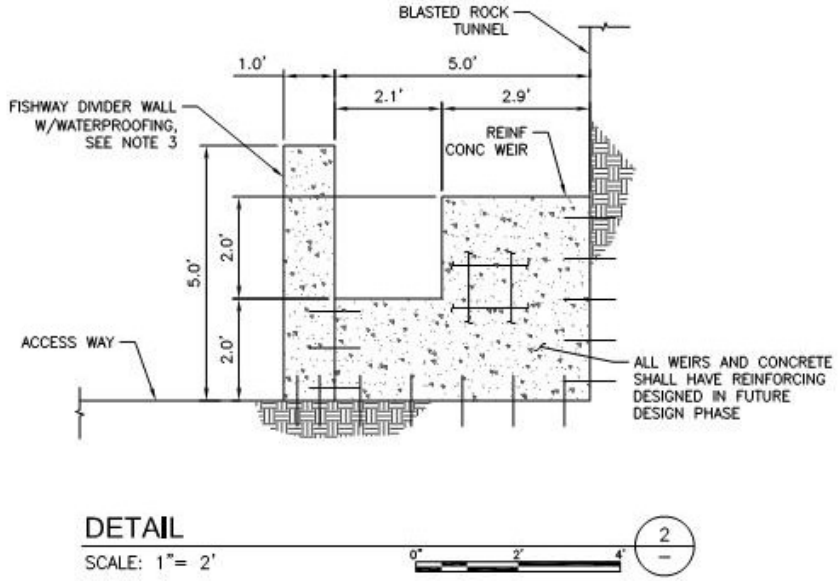
DOWNSTREAM TO UPSTREAM – North Portal

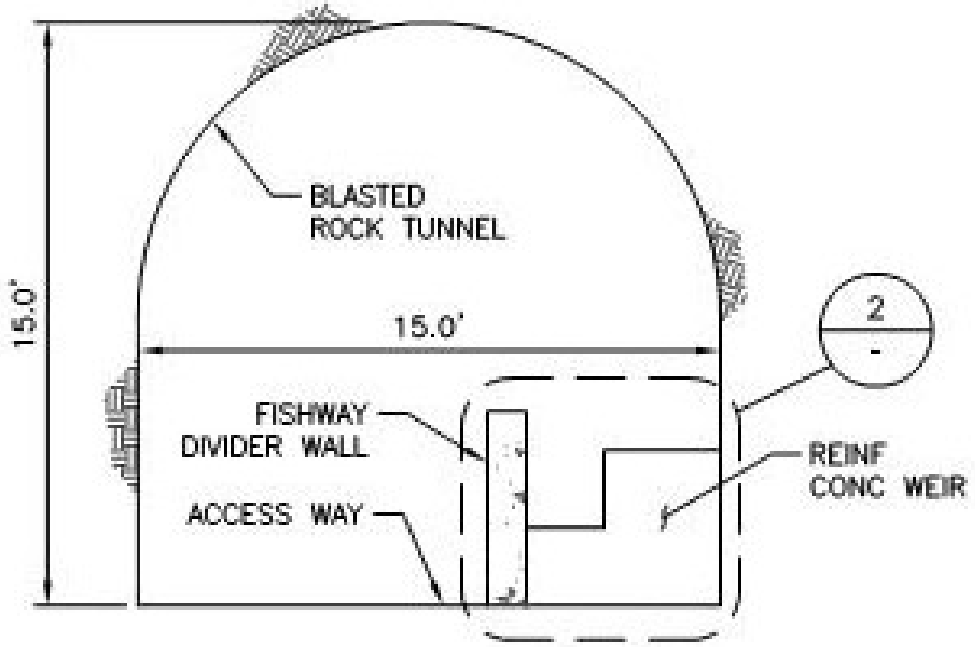
Downstream Portal Preliminary Rendering



FISHWAY DETAILS

DOWNSTREAM TO UPSTREAM – Tunnel Fishway





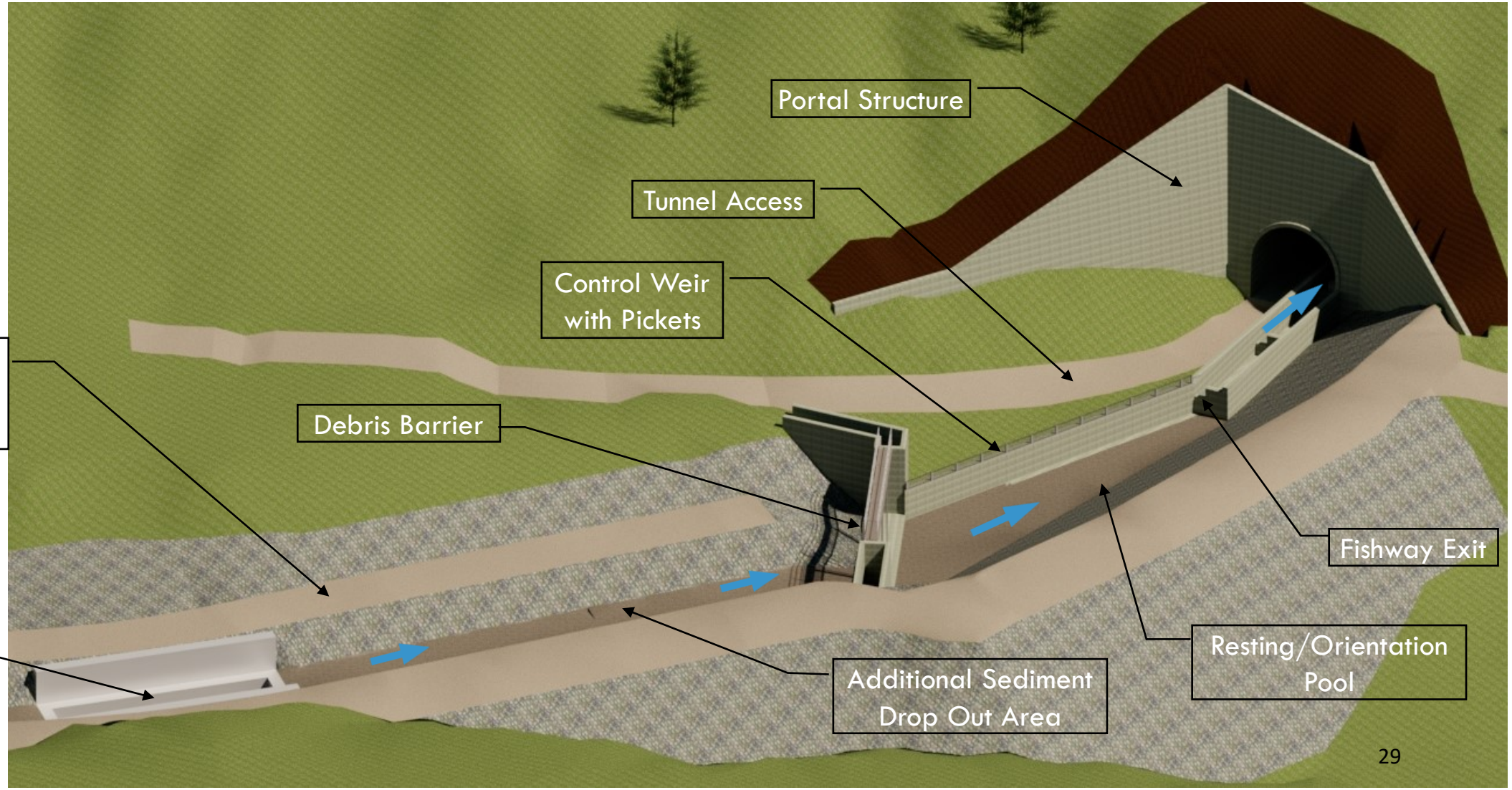
Fishway Details

- 2' high fish weir within 4' weir
- 5' divider wall
- Weir anchored to bedrock/tunnel lining
- Divider wall similarly anchored
- Weir spacing 22' @ 4.5% and 66' @ 1.5%

FISHWAY DETAILS

DOWNSTREAM TO UPSTREAM – South Portal

Preliminary South Portal Rendering



EFSFSR TUNNEL SUMMARY

Stream Access, Restoration and Enhancement:

ACCESS:

- Immediate and long-term solutions for access to minimum 3.4 miles of additional habitat, jump-starting population recovery
- East Fork of the South Fork of the Salmon River provided a permanent solution with stream and floodplain restoration

HABITAT:

- 12+ miles of restored and enhanced habitat
- Uplift in spawning and rearing habitat quality
- Blowout Creek no longer contributing excess sediment

WATER QUALITY:

- Spent leach ore and tailings no longer contributing metals loading

EFSFSR Tunnel Passage Key Points:

- Volitional fish passage in temporary facility for approximately 15 years
- Permanent passage thereafter in restored EFSFSR
- Restored and enhanced habitat upstream
- Proven technologies for passage, monitoring, and restoration
- Passage for Chinook salmon, bull trout, and steelhead

RESTORATION

FISHERIES GOALS

Goals

Restoration of volitional passage

- Early passage, during mine operations, through closure, and beyond.

Restoration of spawning and rearing habitat

- EFSFSR and Meadow Creek

Minimize incidental take of ESA-listed fish

Results

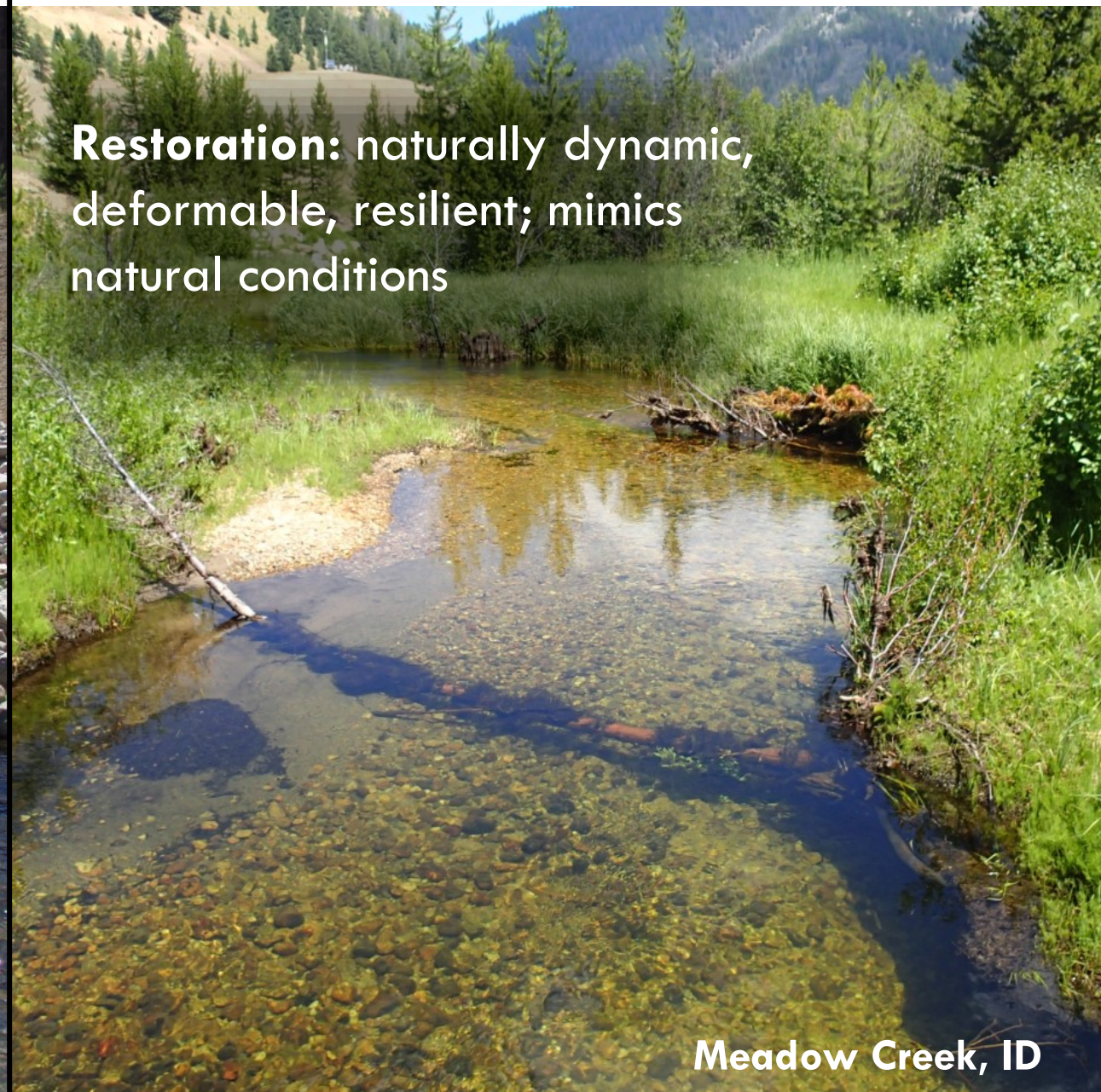
Restoration of passage

- Early on in the project and a long awaited permanent solution

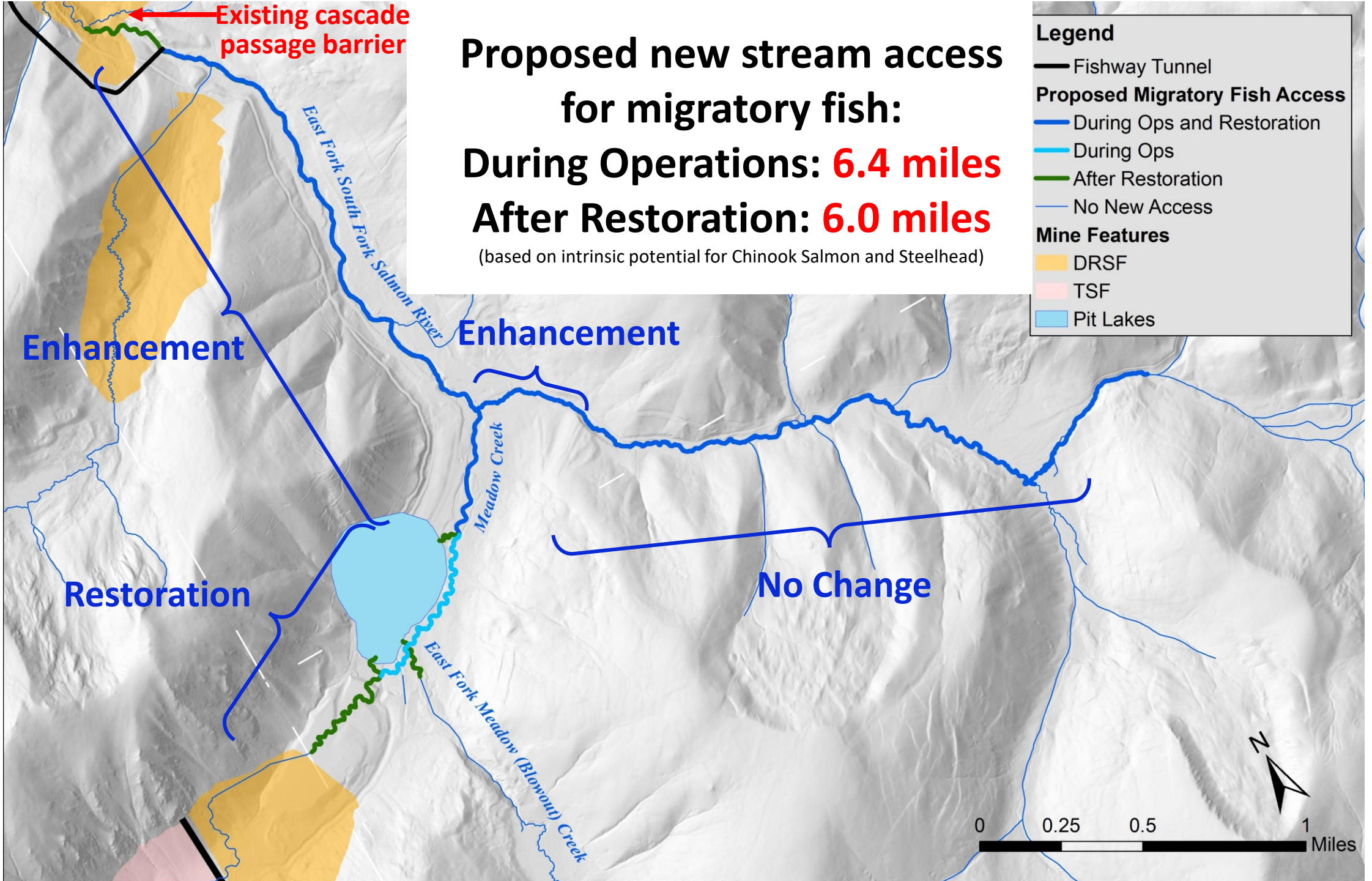
Access to miles of improved habitat

RECLAMATION

RESTORATION



STREAM ACCESS



ACCESS UPPER EFSFSR

RESTORATION DESIGN PROCESS

Reference Sites

Stream Design Approach:

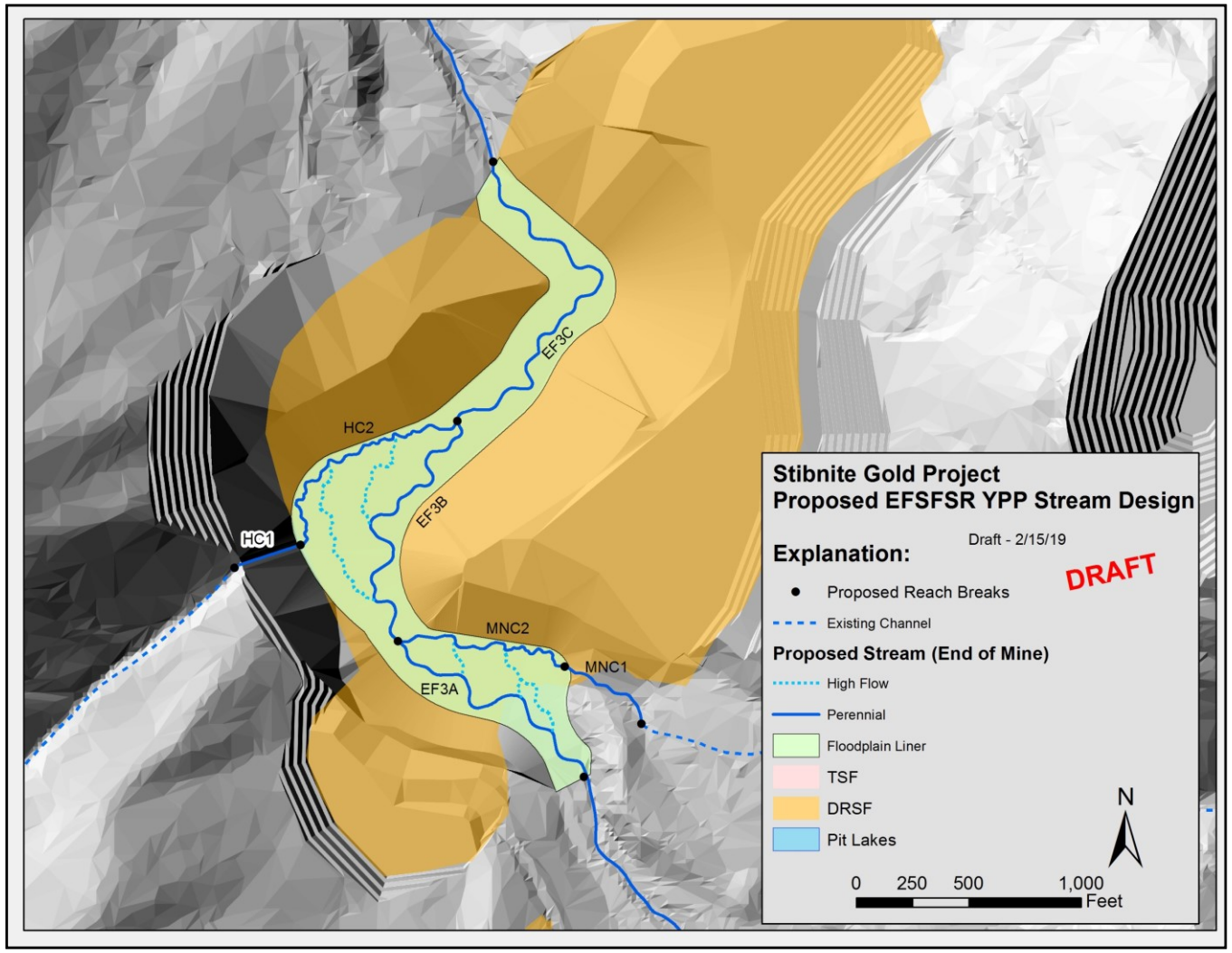
- Project Area reach delineation
- Develop physical design criteria
  - Reference site data
  - Empirical formulae
  - Published design guidelines
- Assign biological objectives based on fish habitat preferences
- Refine design criteria to maximize habitat based on biological objectives

Catherine Creek River Mill 44 Restoration Project – During Construction

RESTORATION OF EFSFSR OVER YPP

Restoration Objectives

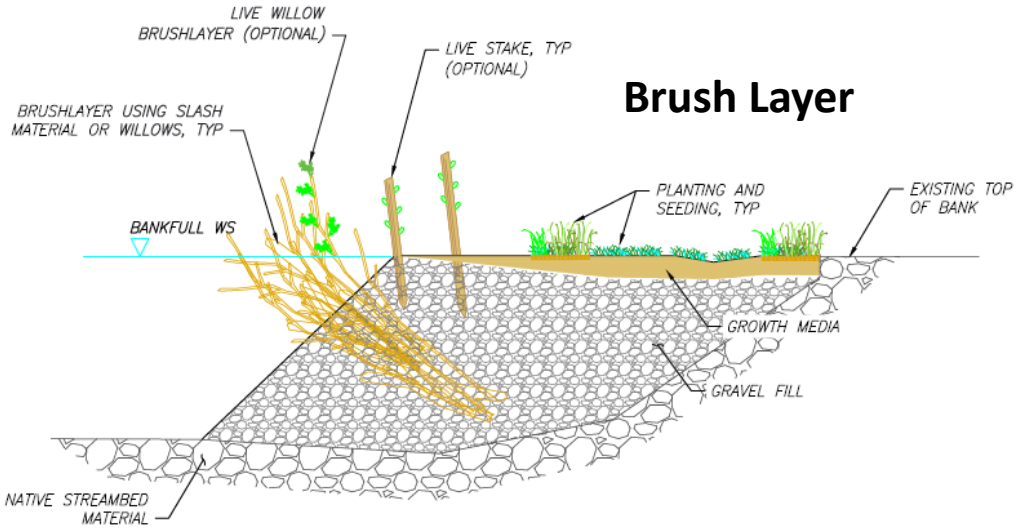
- Restore migratory fish passage through YPP to upstream reaches
- Target isolated spawning and rearing habitat creation
- Allow geomorphically appropriate natural channel process (migration, avulsion, scour, deposition)
- Increase hydraulic and geomorphic diversity
- Create “wall-based channel” where high-flow EFSFSR channels intercept perennial tributaries



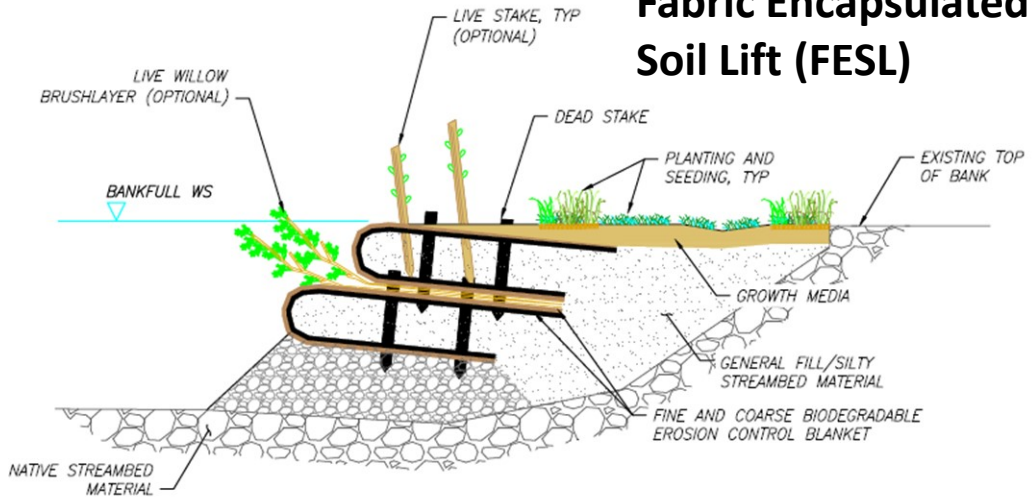
ULTIMATE RESTORATION

RESTORATION EXAMPLES

Building New Banks



Brush Layer



Fabric Encapsulated Soil Lift (FESL)

RESTORATION EXAMPLES

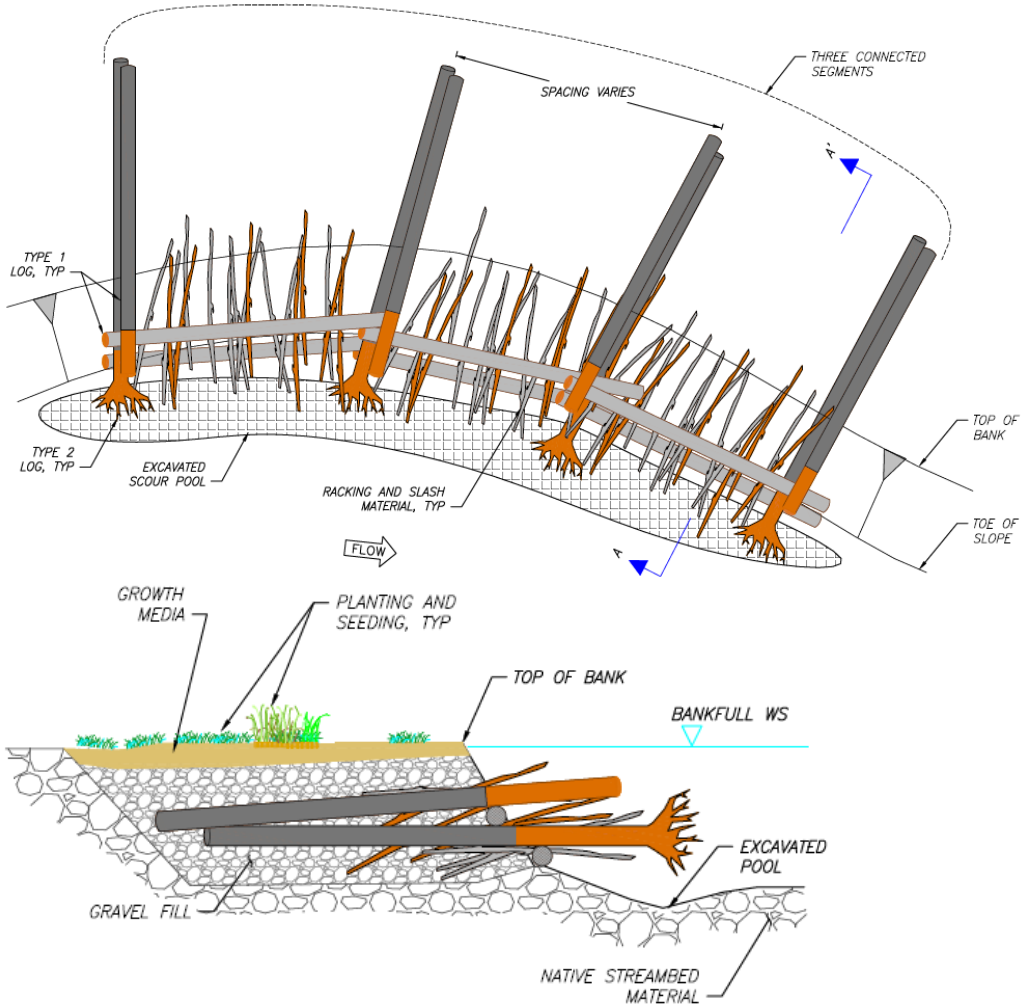
Building New Banks

Fabric Encapsulated Soil Lift

RESTORATION EXAMPLES

Building New Banks

Roughened Bank Structure



RESTORATION EXAMPLES

Building New Banks

Roughened Bank Structure

Construction

1- Year After
Lemhi River, ID

STREAM FUNCTIONAL ASSESSMENT

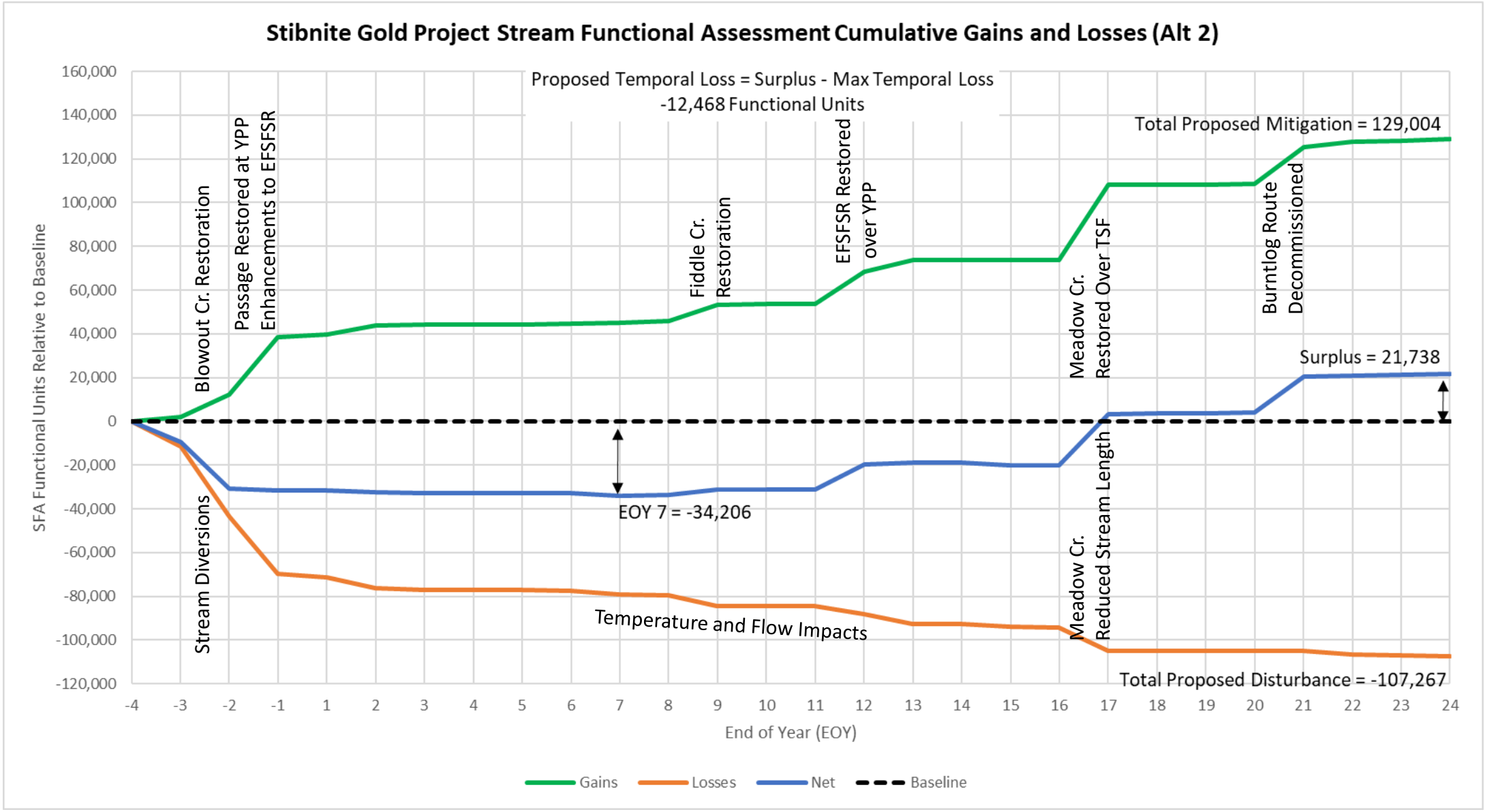
Framework - Elements

The SFA uses a modified version of the Watershed Condition Indicators Matrix (WCI Matrix) (USFS 2003, 2010) along with several fish use indicators to evaluate stream condition by measuring up to 20 elements that reflect specific functional indicators.

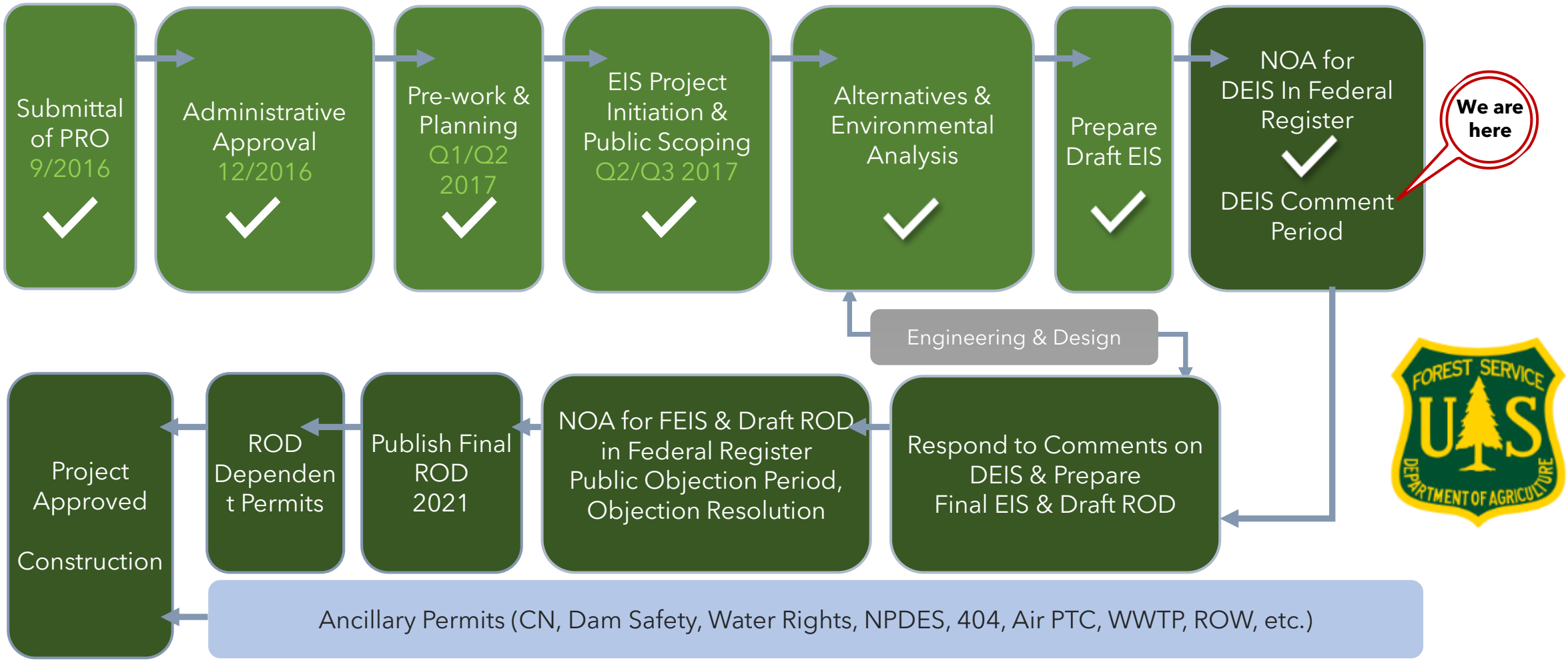
Indicator	Water Quality			Access	Habitat Elements						Channel Conditions and Dynamics			Flow and Hydrology		Watershed Conditions			Fish Use		
						LWD															
Element	Temperature	Fine Sediment	Chemical Contaminants	Physical Barriers Located Downstream	Substrate Embeddedness	Large Woody Debris Frequency	Recruitment Potential	Pool Frequency	Pool Quality	Off-Channel Habitat with Cover	Width/Depth Ratio	Streambank Condition	Floodplain Connectivity	Change in Peak/Base Flows	Change in Drainage Network	Road Density and Location	Riparian Conservation Areas	Disturbance History	Occupancy Potential	Critical Habitat	Presence / Absence

STREAM FUNCTIONAL ASSESSMENT

Results



PERMITTING


Submittal of PRO 9/2016
Administrative Approval 12/2016
Pre-work & Planning Q1/Q2 2017
EIS Project Initiation & Public Scoping Q2/Q3 2017
Alternatives & Environmental Analysis
Prepare Draft EIS
NOA for DEIS In Federal Register
DEIS Comment Period
We are here
Engineering & Design
Respond to Comments on DEIS & Prepare Final EIS & Draft ROD
NOA for FEIS & Draft ROD in Federal Register Public Objection Period, Objection Resolution
Publish Final ROD 2021
ROD Dependent Permits
Project Approved
Construction
Ancillary Permits (CN, Dam Safety, Water Rights, NPDES, 404, Air PTC, WWTP, ROW, etc.)
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US
DEPARTMENT OF AGRICULTURE

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Stibnite Gold Project Overview Webinar

TUESDAYS | NOON

Hear an overview of the Stibnite Gold Project and all it entails.

Virtual Office Hours

WEDNESDAYS | NOON

Office hours will focus on answering questions you have on the Stibnite Gold Project.

Stibnite Gold Project Technical Webinar

THURSDAYS | NOON

Hear about a technical aspect of the Stibnite Gold Project.

FORWARD LOOKING STATEMENTS

Statements contained in this presentation that are not historical facts are "forward-looking information" or "forward-looking statements" (collectively, "Forward-Looking Information") within the meaning of applicable Canadian securities legislation and the United States Private Securities Litigation Reform Act of 1995. Forward-Looking Information includes, but is not limited to, disclosure regarding possible events, conditions or financial performance that is based on assumptions about future economic conditions and courses of action; and the plans for completion of the Offerings, expected use of proceeds and business objectives. In certain cases, Forward-Looking Information can be identified by the use of words and phrases such as "anticipates", "expects", "understanding", "has agreed to" or variations of such words and phrases or statements that certain actions, events or results "would", "occur" or "be achieved". Although Midas Gold has attempted to identify important factors that could affect Midas Gold and may cause actual actions, events or results to differ materially from those described in Forward-Looking Information, there may be other factors that cause actions, events or results not to be as anticipated, estimated or intended. There can be no assurance that Forward-Looking Information will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Accordingly, readers should not place undue reliance on Forward-Looking Information. Except as required by law, Midas Gold does not assume any obligation to release publicly any revisions to Forward-Looking Information contained in this news release to reflect events or circumstances after the date hereof or to reflect the occurrence of unanticipated events.

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Cautionary Note

The presentation has been prepared by Midas Gold management and does not represent a recommendation to buy or sell these securities. Investors should always consult their investment advisors prior to making any investment decisions.

All references to “dollars” or “$” shall mean United States dollars unless otherwise specified. Exchange rates and share prices used, where appropriate, are based on the spot prices as of Feb. 19th, 2016.

COMPLIANCE WITH NI 43-101

The technical information in this presentation (the "Technical Information") has been approved by Stephen P. Quin, P. Geo., President & CEO of Midas Gold Corp. (together with its subsidiaries, "Midas Gold") and a Qualified Person. Midas Gold's exploration activities at Stibnite Gold were carried out under the supervision of Christopher Dail, C.P.G., Qualified Person and Exploration Manager and Richard Moses, C.P.G., Qualified Person and Site Operations Manager. **For readers to fully understand the information in this presentation, they should read the Pre-Feasibility Study Report (available on SEDAR or at www.midasgoldcorp.com) in its entirety (the "Technical Report"), including all qualifications, assumptions and exclusions that relate to the information set out in this presentation that qualifies the Technical Information. The Technical Report is intended to be read as a whole, and sections or summaries should not be read or relied upon out of context. The technical information in the Technical Report is subject to the assumptions and qualifications contained therein.**

Mineral resources that are not mineral reserves do not have demonstrated economic viability. Mineral resource estimates do not account for mineability, selectivity, mining loss and dilution. These mineral resource estimates include inferred mineral resources that are considered too speculative geologically to have economic considerations applied to them that would enable them to be categorized as mineral reserves. There is also no certainty that these Inferred mineral resources will be converted to the Measured and Indicated categories through further drilling, or into mineral reserves, once economic considerations are applied.

Section 2.3 of NI 43-101 states that: Despite paragraph (1) (a), an issuer may disclose in writing the potential quantity and grade, expressed as ranges, of a target for further exploration if the disclosure

(a) states with equal prominence that the potential quantity and grade is conceptual in nature, that there has been insufficient exploration to define a mineral resource and that it is uncertain if further exploration will result in the target being delineated as a mineral resource; and

(b) states the basis on which the disclosed potential quantity and grade has been determined.

The mineral resources and mineral reserves at the Stibnite Gold Project are contained within areas that have seen historic disturbance resulting from prior mining activities. In order for Midas Gold to advance its interests at Stibnite, the Project will be subject to a number of federal, State and local laws and regulations and will require permits to conduct its activities. However, Midas Gold is not aware of any environmental, permitting, legal or other reasons that would prevent it from advancing the project.

The PFS was compiled by M3 Engineering & Technology Corp. ("M3") which was engaged by Midas Gold Corp.'s wholly owned subsidiary, Midas Gold, Inc. ("MGI"), to evaluate potential options for the possible redevelopment of the Stibnite Gold Project based on information available up to the date of the PFS. Givens Pursley LLP (land tenure), Kirkham Geosystems Ltd. (mineral resources), Blue Coast Metallurgy Ltd. (metallurgy), Pieterse Consulting, Inc. (autoclave), Independent Mining Consultants Inc. (mine plan and mineral reserves), Allen R. Anderson Metallurgical Engineer Inc. (recovery methods), HDR Engineering Inc. (access road), SPF Water Engineering, LLC (water rights) and Tierra Group International Ltd. (tailings, water management infrastructure and closure) also contributed to the PFS. Additional details of responsibilities are provided in the technical report filed on SEDAR in December 2014. The PFS supersedes and replaces the technical report entitled 'Preliminary Economic Assessment Technical Report for the Golden Meadows Project, Idaho' prepared by SRK Consulting (Canada) Inc. and dated September 21, 2012 (PEA) and that PEA should no longer be relied upon.

NON-IFRS REPORTING MEASURES

"Cash Costs", "All-in Sustaining Costs" and "Total costs" are not Performance Measures reported in accordance with International Financial Reporting Standards ("IFRS"). These performance measures are included because these statistics are key performance measures that management uses to monitor performance. Management uses these statistics to assess how the Project ranks against its peer projects and to assess the overall effectiveness and efficiency of the contemplated mining operations. These performance measures do not have a meaning within IFRS and, therefore, amounts presented may not be comparable to similar data presented by other mining companies. These performance measures should not be considered in isolation as a substitute for measures of performance in accordance with IFRS.