

# Placer Mining, Wade Creek, & Improved Ways for Stream Reclamation

Using the latest science to facilitate responsible development in Alaska

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# Bureau of Land Management

- Created by President Harry S. Truman in 1946 by merging the Department of the Interior's General Land Office (1812-1946) and the U.S. Grazing Service (1934-1946), initially giving the BLM responsibility for over 400 million acres of public lands.
- Today the BLM manages over 245 million acres, roughly 72 million acres in Alaska.

# Bureau of Management

- The BLM's mission is to manage and conserve the public lands for the use and enjoyment of present and future generations under our mandate of *multiple-use and sustained yield*.
- Some of the public land uses include: energy and mineral development of both conventional and renewable resources; timber production; domestic livestock grazing; outdoor recreation; rights-of-way; fish and wildlife conservation; and conservation of natural, historical, cultural, and other resources on public lands.



# Current Placer Mining



# Historic Placer Mining



# Reclamation Requirements

## Regulations and BLM Policy

- 43 CFR 3809 Regulations – requires the rehabilitation of fisheries habitat during reclamation
- BLM Policy – “...stable channel form with adequate vegetation to reduce erosion, dissipate stream energy, and promote the recovery of instream habitats.”

# Common Reclamation Results

2012



2015



# Common Reclamation Results

2014 (upstream)

2014



# Common Reclamation Results

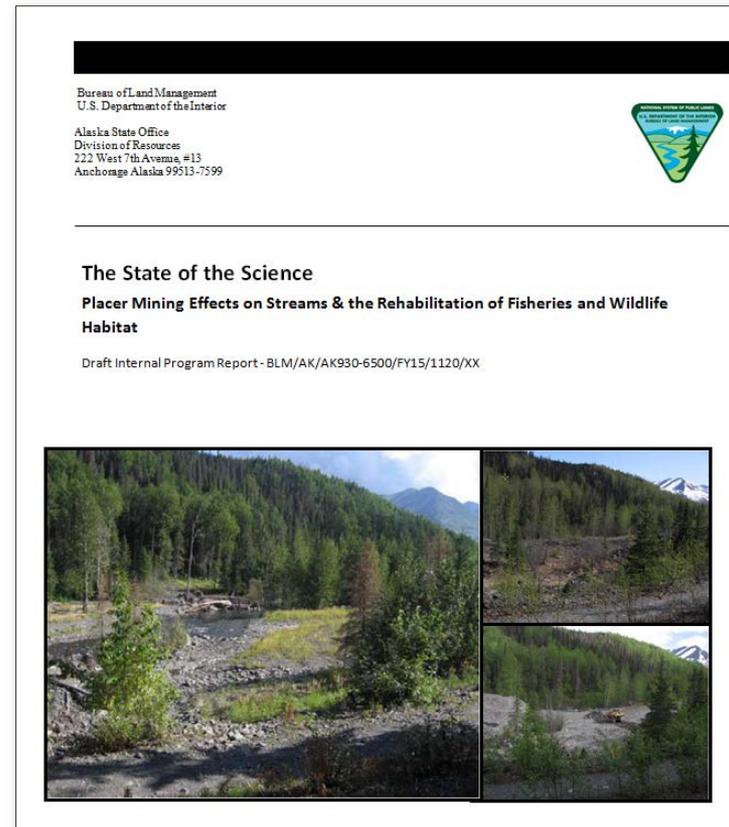
2015



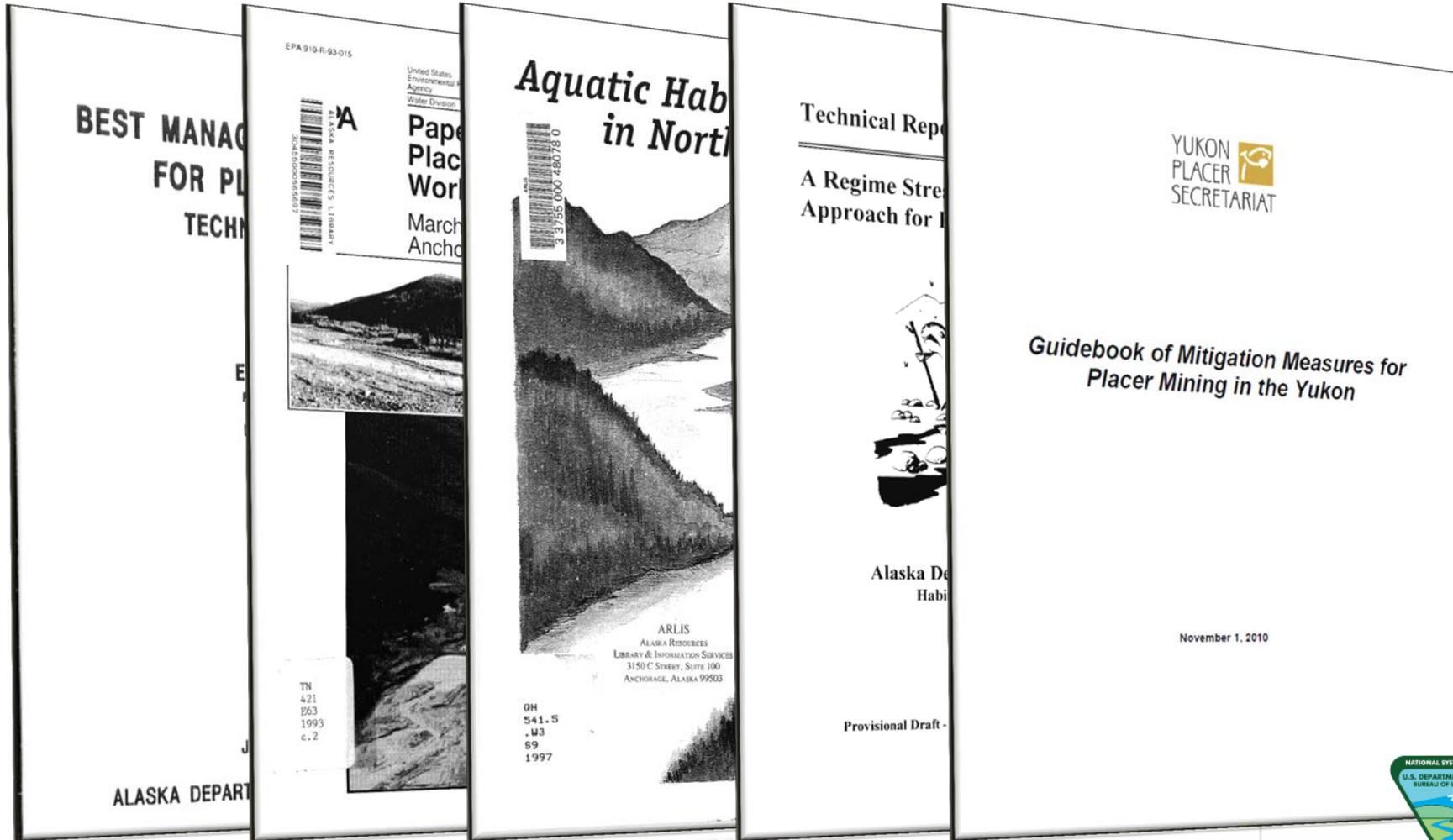
# The State of the Science

Multiple publications have concluded that placer stream reclamation approaches in Alaska:

1. fail to achieve desired results; and,
2. the techniques are ineffective at stabilizing stream channels.



# The State of the Science

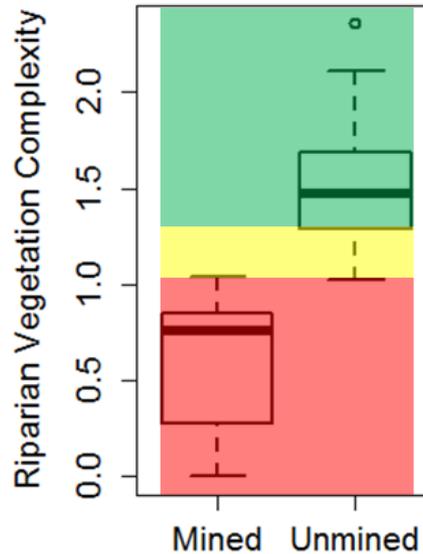
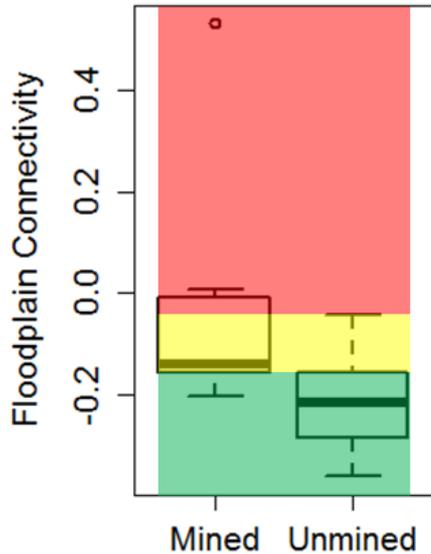
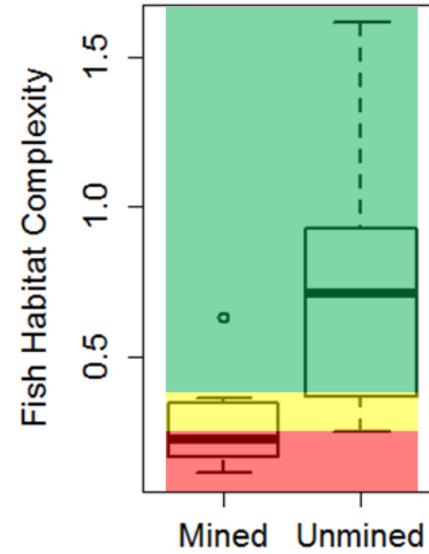
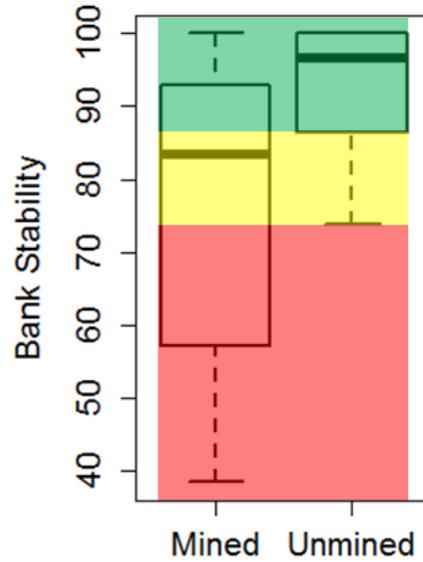
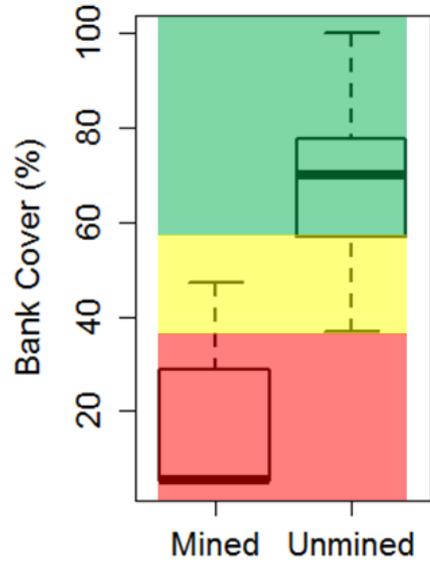


# Uncommon Reclamation Results

8 years post  
reclamation



# BLM National Aquatic Monitoring Framework Results



Draft Results from the EI Field Office  
Mined/Reclaimed = 14  
Unmined = 30





# Wade Creek Demonstration Project

## Background

- Wade Creek is in the Fortymile Wild and Scenic River Corridor.
- The project reach is downstream of active mining, is constrained by the Taylor Highway, and was last mined in the late 1980s to early 1990s before being abandoned.



# Wade Creek Demonstration Project

## Objectives

- Demonstrate application of Natural Channel Design Methodology at a former placer mine site.
- Monitor the effectiveness of the techniques at establishing functional lift using the Stream Functions Pyramid framework and rehabilitating fisheries habitat.
- Share the results with the mining community and public.

# Wade Creek Demonstration Project

## *Process Steps*

1. *Baseline Data Collection*
2. *Functional Assessment*
3. *Goals/Objectives*
4. *Design*
5. *Construction*
6. *Monitoring*





# Function-Based Goal

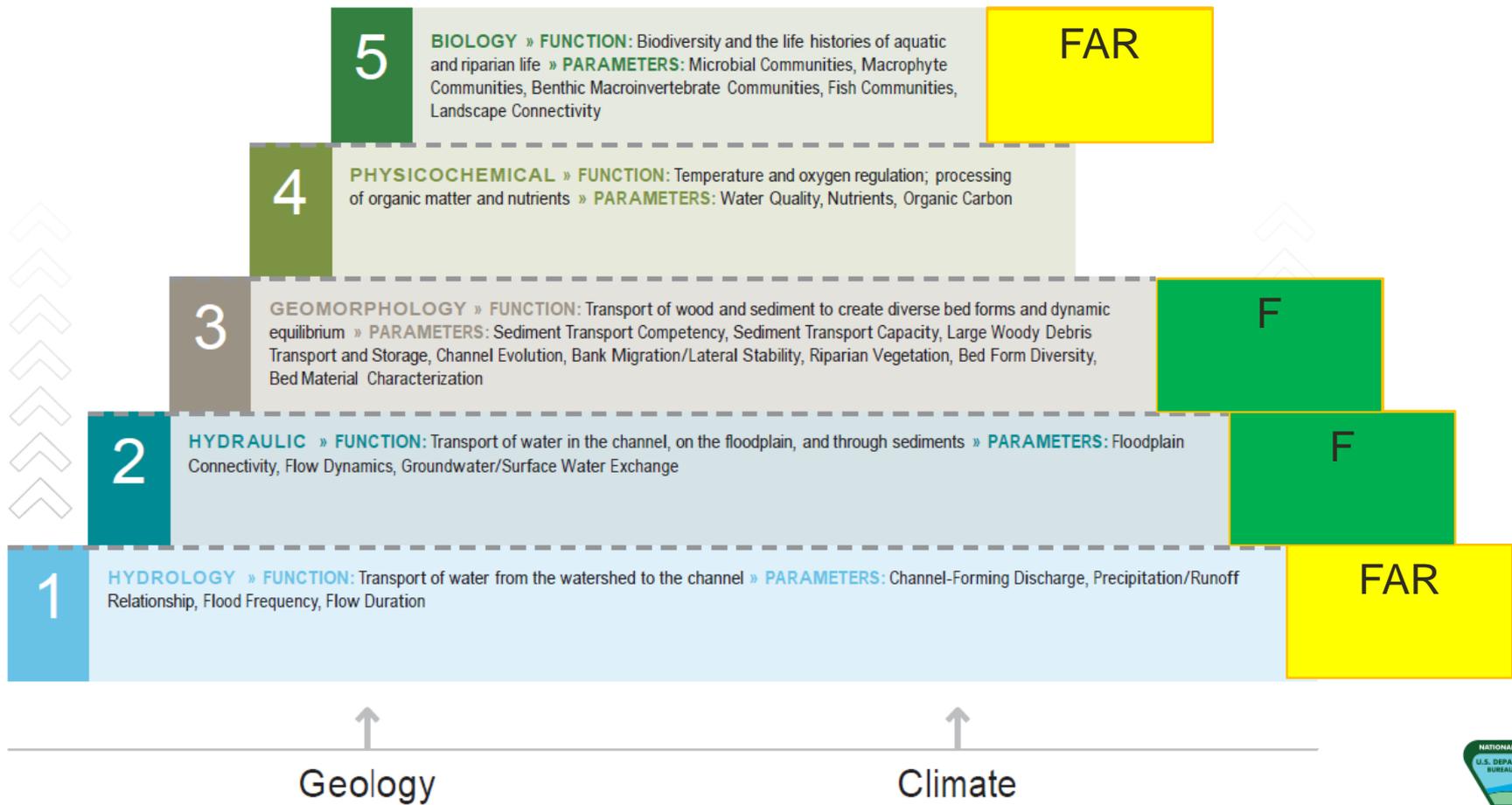
Design a stable channel that provides habitat for Arctic grayling (Level 3).



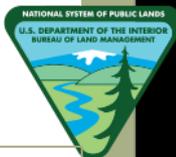
# Function-Based Objectives

- Improve floodplain connectivity by creating a bankfull channel and floodplain.
- Improve bed form diversity by establishing riffles and pools.
- Provide lateral stability by transplanting streambanks.
- Establish riparian vegetation with transplants and seeding treatments.

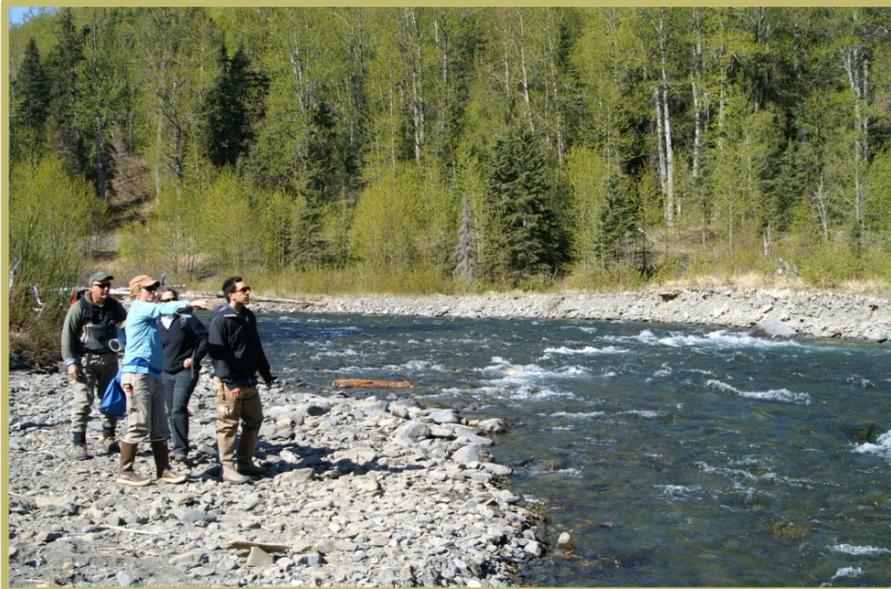
# Proposed Function-Based Condition



F = Functioning, FAR = Functioning-At Risk, NF = Non-functioning

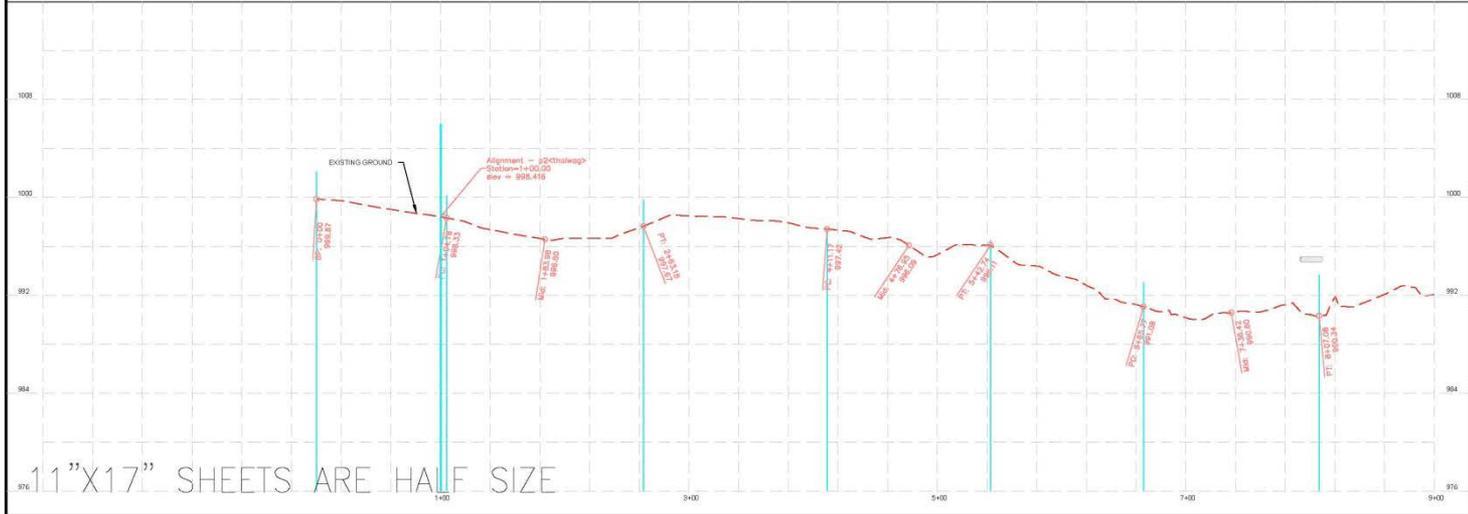
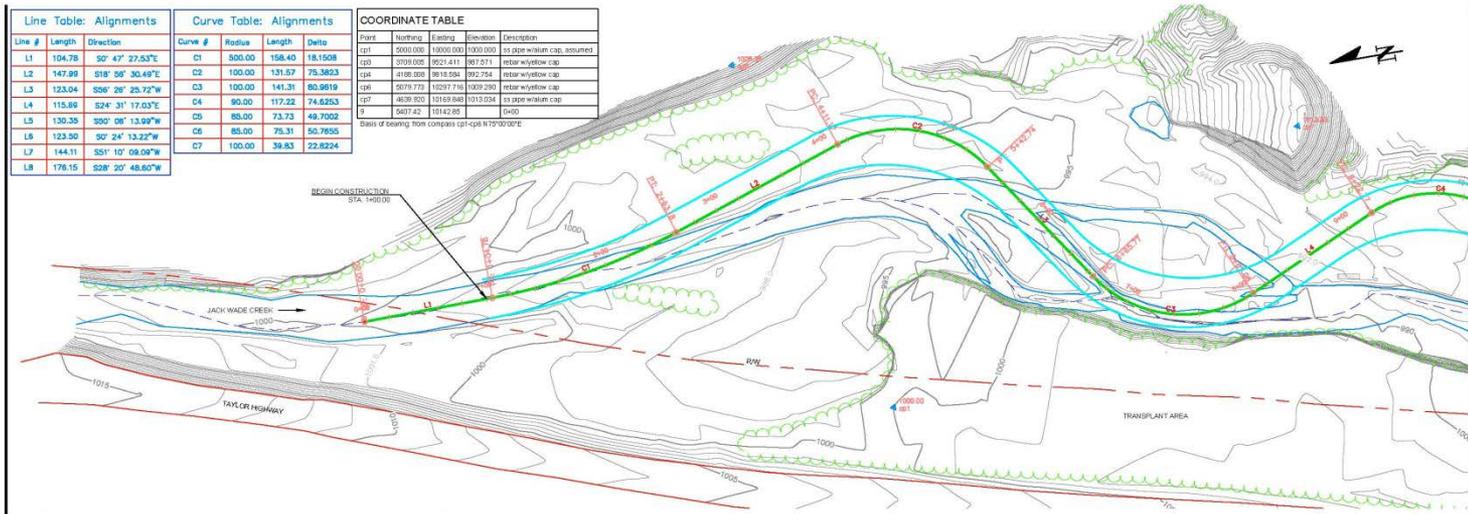


# Design Development



# Conceptual Design

Line Table: Alignments			Curve Table: Alignments				COORDINATE TABLE			
Line #	Length	Direction	Curve #	Radius	Length	Delta	Point	Northing	Easting	Description
L1	104.78	S0° 47' 27.53"E	C1	500.00	108.40	18.1508	cp1	2901.000	10300.000	10300.000
L2	147.99	S18° 08' 30.49"W	C2	100.00	131.57	75.3823	cp2	3399.000	9925.411	997.571
L3	123.04	S06° 28' 25.72"W	C3	100.00	141.31	80.9819	cp3	-6188.000	9818.594	992.754
L4	115.89	S24° 31' 17.03"W	C4	90.00	117.22	74.6253	cp4	5079.771	10297.716	1009.290
L5	130.35	S00° 08' 13.99"W	C5	85.00	73.73	49.7022	cp5	4838.953	10128.840	1013.034
L6	123.90	S0° 24' 13.22"W	C6	85.00	78.31	50.7655	I	5607.42	10142.88	(END)
L7	144.11	S51° 10' 09.09"W	C7	100.00	59.83	22.8224	basis of bearing from compass cp1-cp4 N 79°00'00"E			
L8	176.15	S28° 20' 48.60"W								



11" X 17" SHEETS ARE HALF SIZE

JACK WADE CREEK  
STREAM RESTORATION

UNITED STATES DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
FAIRBANKS DISTRICT OFFICE  
1150 UNIVERSITY AVENUE

NOT FOR CONSTRUCTION

DRAWN  
DESIGNED  
REVIEWED  
APPROVED  
DATE 1/2

TITLE  
PLAN & PRC

SHEET  
1



# Constructed Riffles



# Lateral Stability



# Lateral Stability



# Lateral Stability



# Construction Crew



# After 6 Weeks

## Before

## After



# After 6 Weeks

**Before**

**After**



# After 6 Weeks

## Before

## After



# Wade Creek Demonstration Project

## 3 Workshops/Field Tours held in September

1. Permitting Agencies/Mitigation Banks/Conservation Groups
2. Miners
3. BLM Staff



# Next Steps

## Monitoring

- Determine actual Functional Lift using the Stream Function Pyramid Framework.
- Show change over time using BLM National Aquatic Monitoring Framework methods.
- Evaluate seeding treatments using fertilizer and various native seed mixes.
- Report lessons learned

## Tools for Miners

- Refine Natural Channel Design process for Alaska placer mine reclamation sites
- Develop Best Management Practices toolbox
- Explore opportunities to improve outcomes



# Questions?

