

# Fish Passage Design

in the Matanuska-Susitna Borough



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Water Resources Engineer, DOWL  
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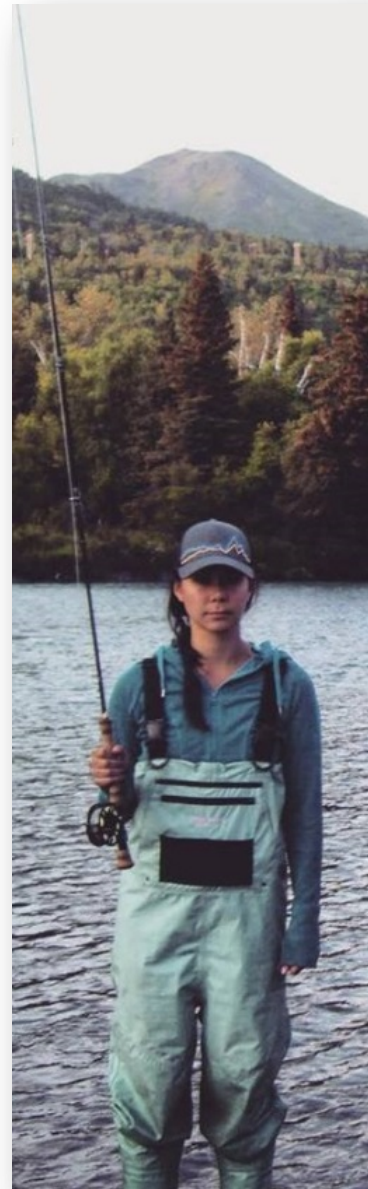
# Intro

Heidi Robuck, EIT

- Water Resources Engineer
- University of Colorado at Boulder 
- Born and raised in AK
- I love fishing!

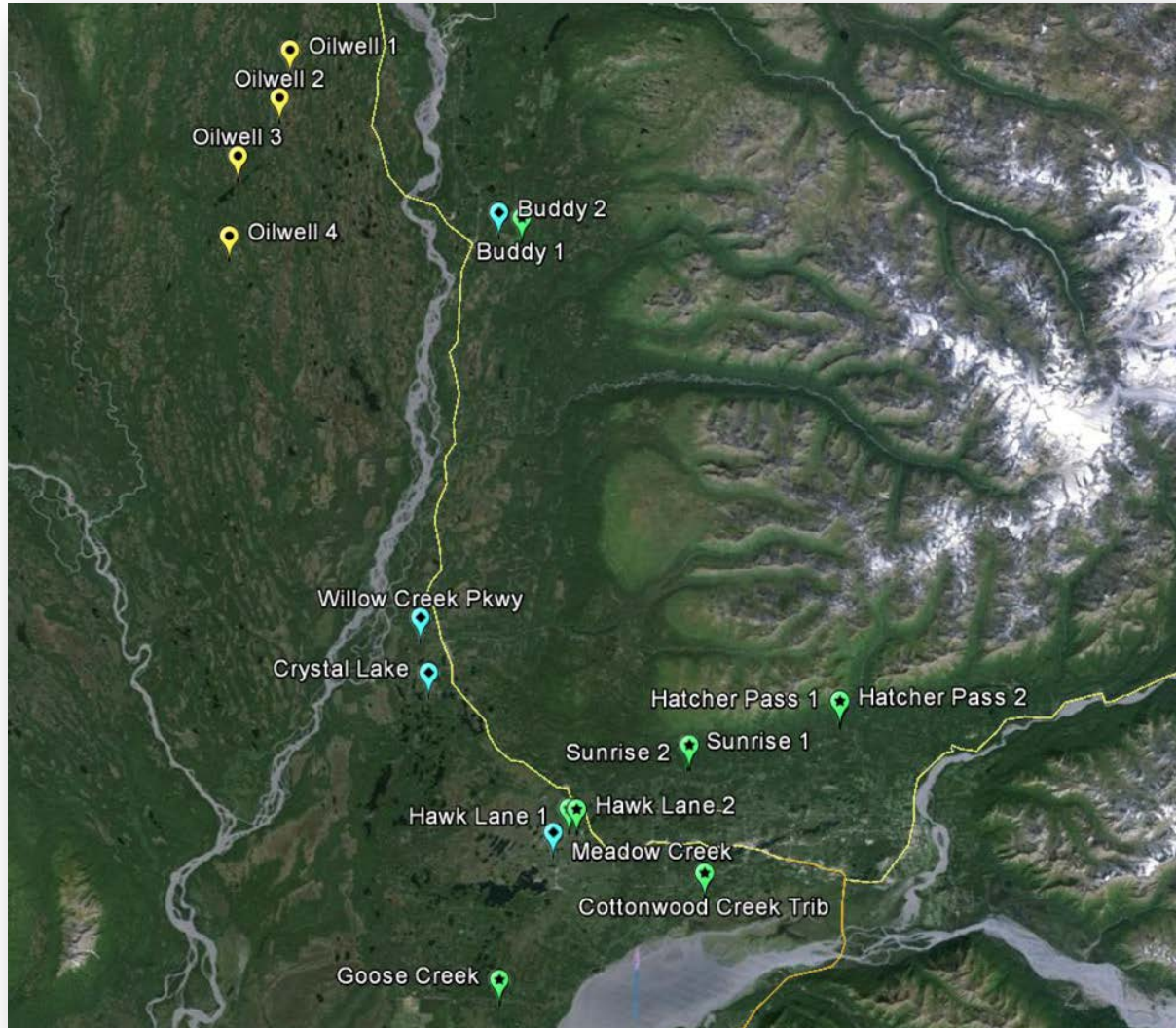
DOWL

- Designed ~100 fish passage culverts in AK





# Fish Passage in the MSB



# Objectives

- Improving access to fish habitat
- Increase flood capacity
- Decrease maintenance
- Improve safety





# Design Process & Key Elements

- Site visit
- Site survey
- Geotech investigation
- H&H Analysis & Report



- Plans, specifications, estimate
- Permitting/ROW
- Construction inspection

# Design Considerations

- Appropriate design method
- Geotechnical risks
- Structural risks
- Cost effectiveness
- Access/staging areas
- Diversion & dewatering





# Design Considerations

- Traffic control
- Structure type
- Permit stipulations
- Bed material sizing
- Anticipated scour depth
- Constructability



# Meadow Creek, Big Lake



- Designed: 2014-2015
- Constructed: Summer 2015
- Client: Mat-Su Borough M&O Dept.
- Funding Agencies: ADF&G, USFWS
- Construction Cost: \$430,000



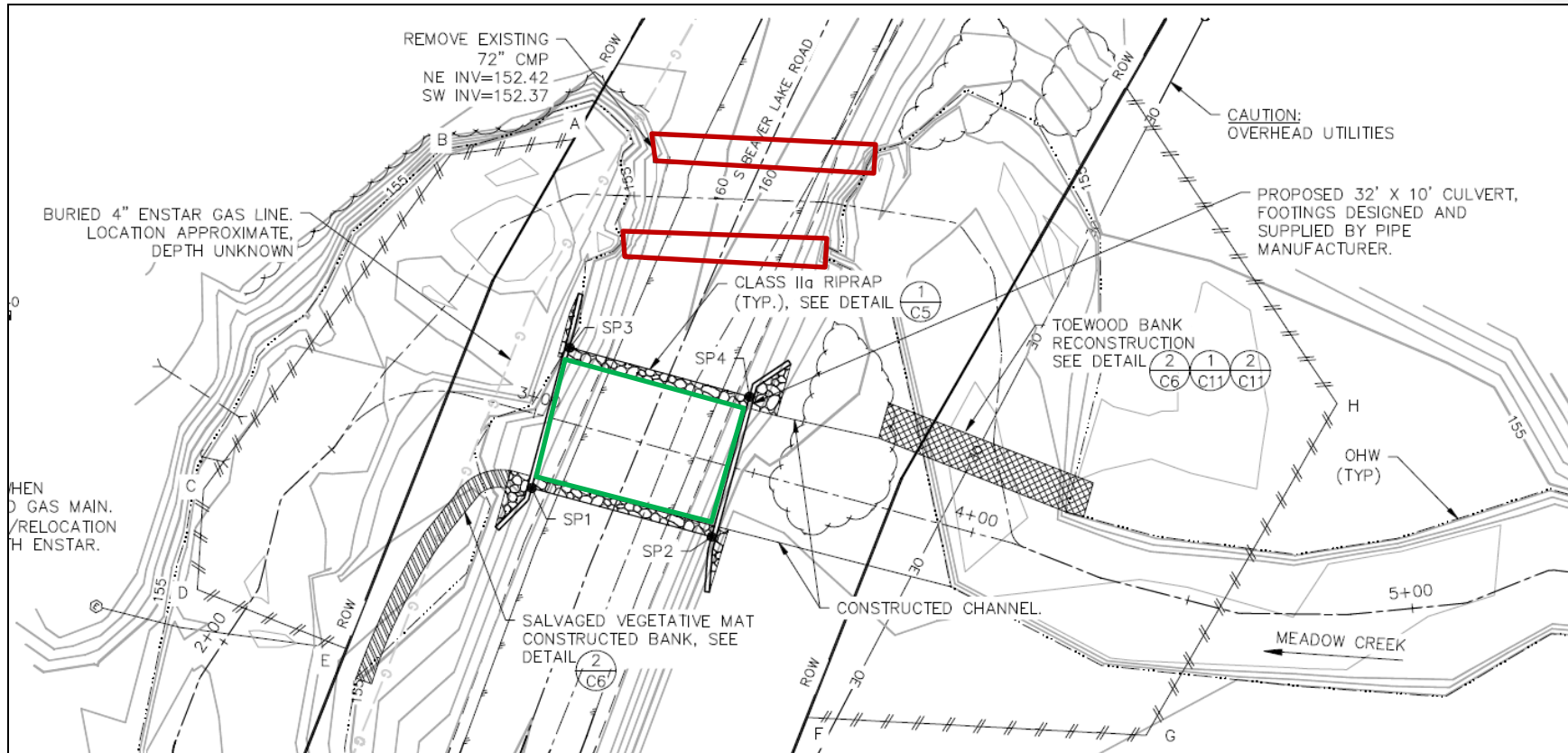
# Meadow Creek, Big Lake

Before: Two 72" CSP

- Undersized
- Velocity barrier at inlet
- Poor sediment/debris passage
- Minimal cover
- Utilities
- Coho and Sockeye



# Overview of Design





# Meadow Creek



- Concrete footer block = 15K lbs
- Structure = 22K lbs



# Meadow Creek





# Meadow Creek





# Meadow Creek



After: 32'-0" x 10'-0" Bottomless steel low-profile box culvert with headwalls and wingwalls





fish friendly road culvert Meadow Creek Alaska-HD.mp4

## Meadow Creek Culvert

Video Credit: Katrina Mueller (USFWS)

# Questions



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