Jun 9th, 11:20 AM - 11:40 AM

Newton Creek Gets a Step Up

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Newton Creek Gets a Step Up

Culvert Extension Provides Fish Passage and Maintains Flood Capacity

Kari Nichols, PE

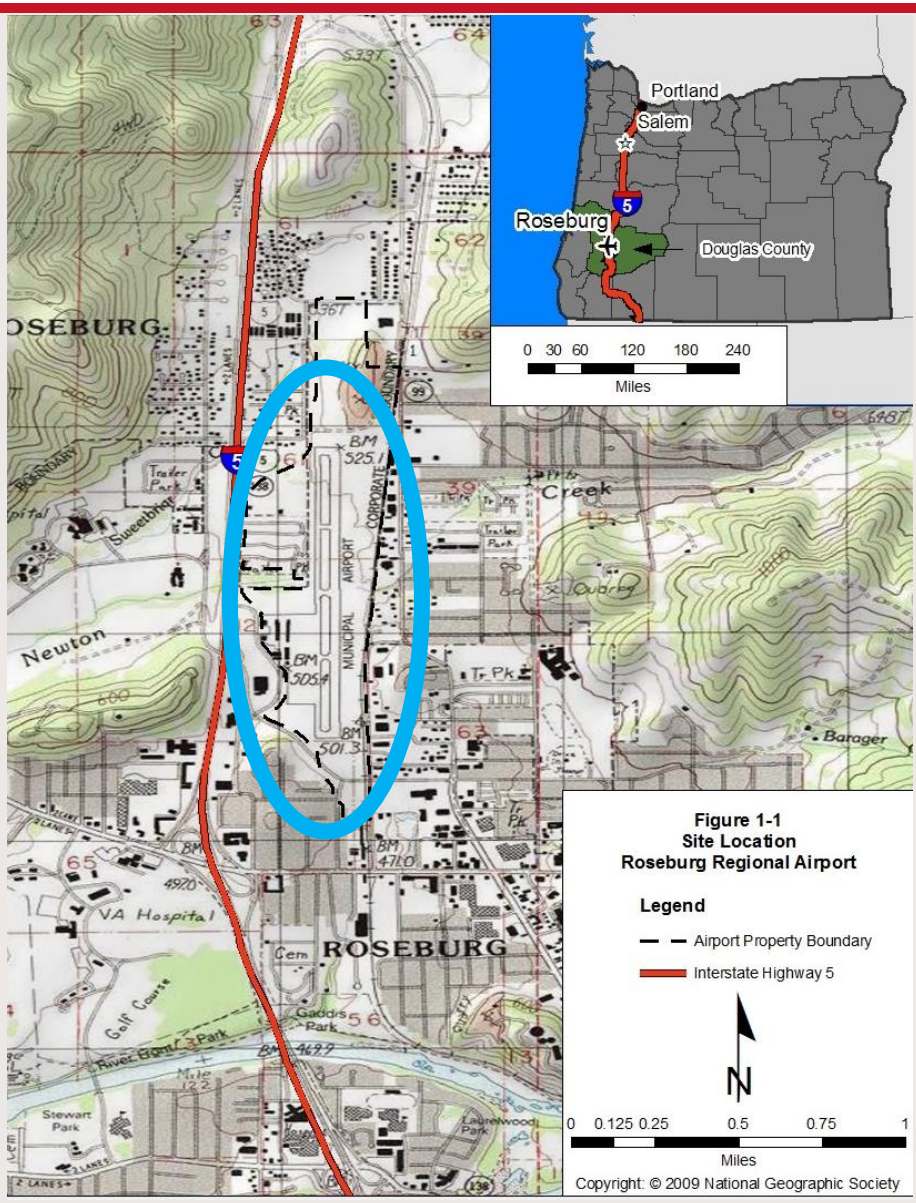
Mead & Hunt

Newton Creek Culvert Extension and Fish Passage

- Project Need
- Regulatory Overview
- Proposed Improvements
- Design Analysis
- Construction
- Results

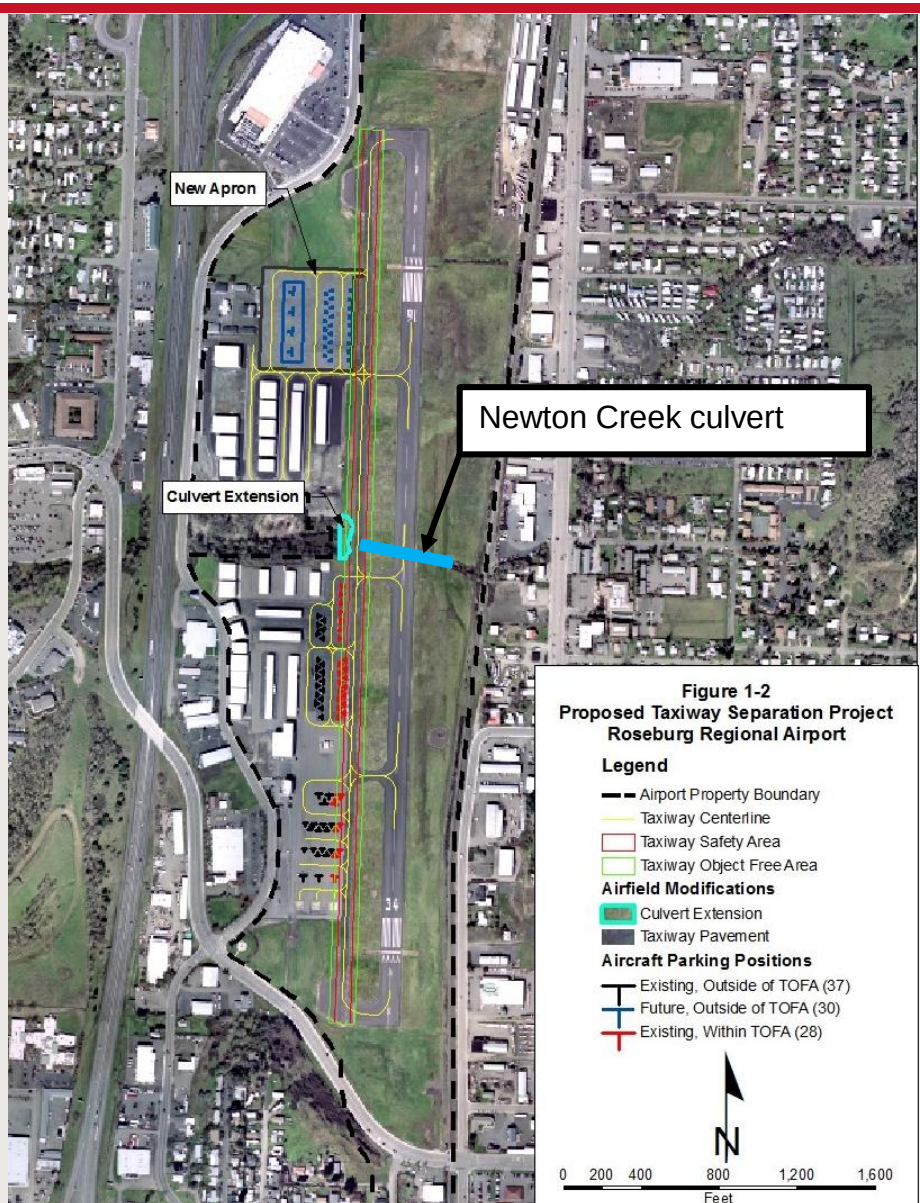
Project Need

- Roseburg Regional Airport
- Airfield safety



Project Need

- Newton Creek
- Culvert extension
- FAA
- NEPA



Regulatory Overview – Aquatic Habitat

- Avoid or mitigate adverse impacts
- Federally listed species
  - Oregon Coast Coho salmon (*Oncorhynchus kisutch*)
- ODFW fish passage rule (OAR 635-412-0000)
- ODFW and NMFS
- Passage for historic and native migratory fish

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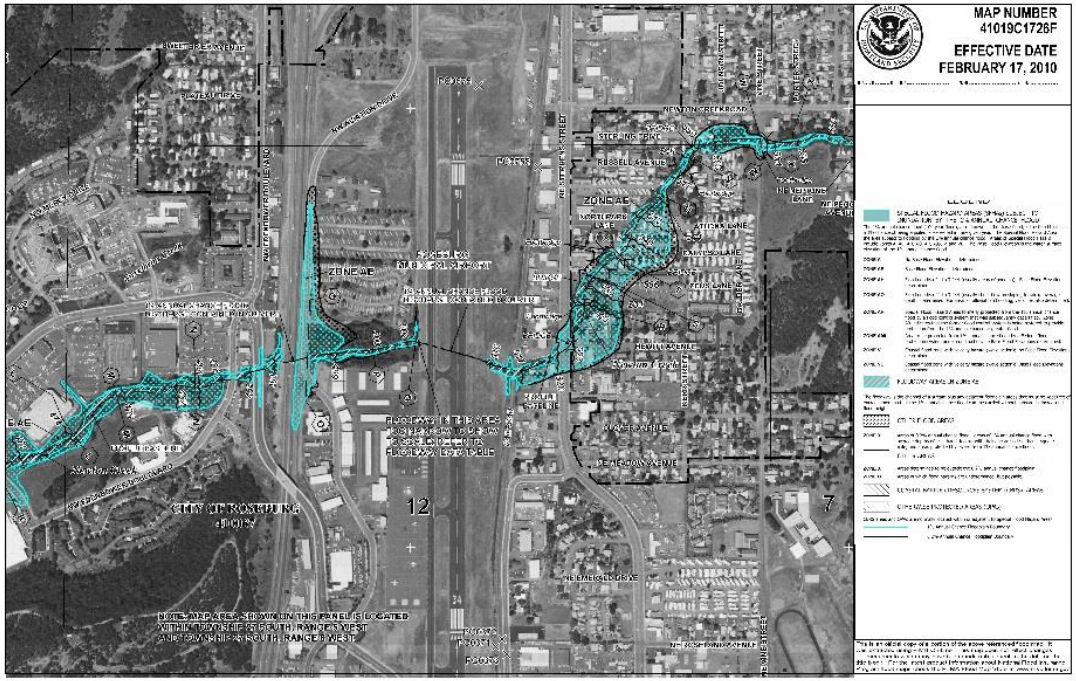
Regulatory Overview – Floodplain

- Avoid or minimize adverse impact
- FEMA mapped Zone AE floodplain
  - Base flood elevations determined
- 100-year flood flows contained in culvert



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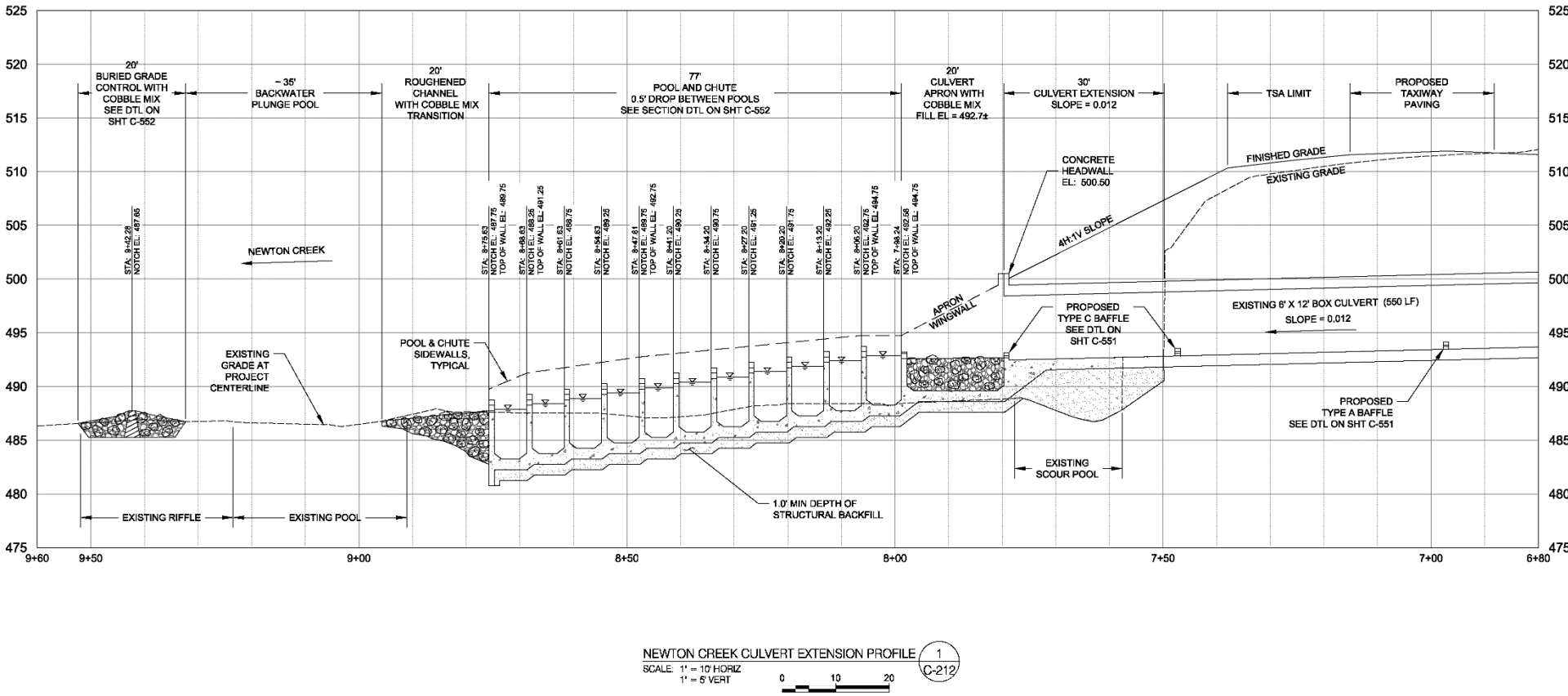
Proposed Improvements

- Remove existing culvert outlet
- Extend culvert 30 feet
- Construct a pool and chute fishway
- Construct roughened channel downstream
- Place cobble/boulder bed mix and sediment retention sills within culvert



NEWTON CREEK CULVERT EXTENSION PROFILE (1 / C-212)
SCALE: 1" = 10' HORIZ
1" = 5' VERT
0 10 20

Proposed Improvements

Profile of culvert extension, pool and chute fishway, roughened downstream channel, and in-culvert baffles

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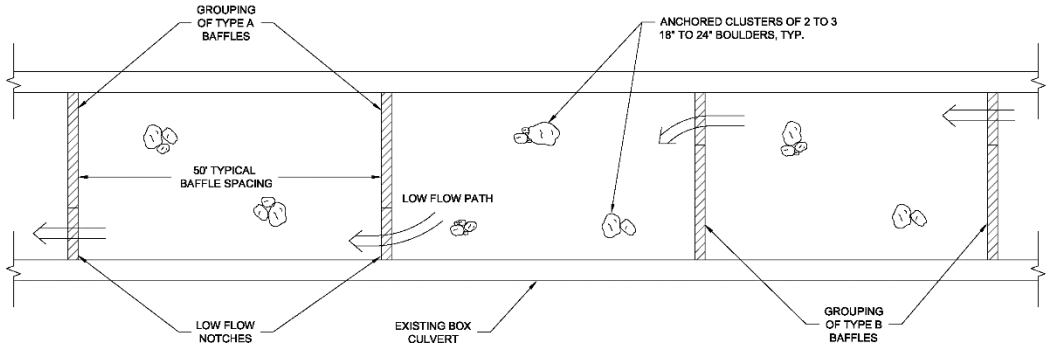
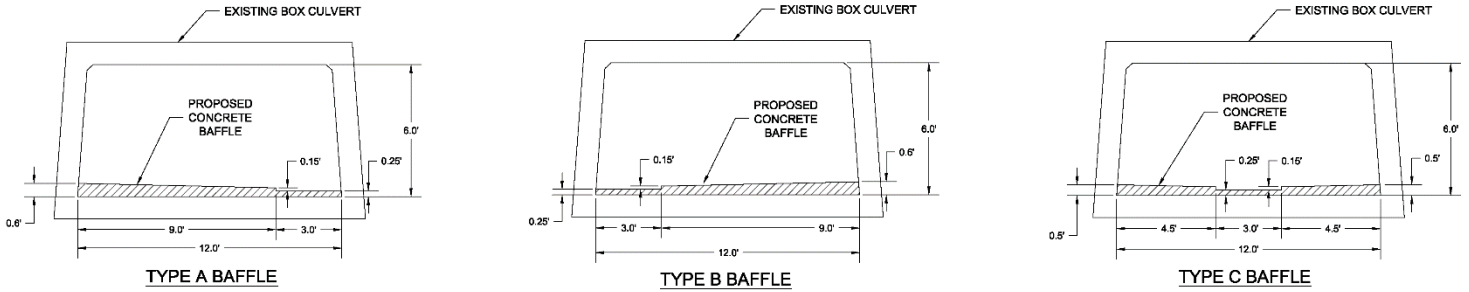


TYPICAL EXISTING CULVERT RETROFIT - BAFFLE CONFIGURATION AND BOULDER PLACEMENT (1 / C-551)
SCALE: NOT TO SCALE



CULVERT BAFFLE CONFIGURATIONS (LOOKING UP STATION) (2 / C-551)
SCALE: NOT TO SCALE

Proposed Improvements

In-culvert baffles and boulder clusters

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Design Analysis

- Criteria
  - Hydraulic capacity
  - Velocities
  - Flood storage
- Hydraulic modeling
  - HEC-RAS
- Design iterations
  - In-culvert structures
  - Exit structures
- Result
  - No rise in base flood elevation

Construction

- In-water work period
- Bypass flow
- Isolating work below OHW from active stream

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Construction

- Fishway construction

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Construction

- Fishway completed
- Culvert apron with cobble mix
- Downstream roughened channel cobble mix
- Riparian restoration

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Construction

- Creek flows returned

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Results

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