

Jun 28th, 4:05 PM - 4:25 PM

## Session A6- Use of nature-like fishways for passage at high head dams

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# FISH PASSAGE 2011

## Adapting Nature-like Fishways to High Head Dams

TUESDAY, 28 JUNE 2011

WEBER RESERVOIR FISH PASSAGE

PRESENTER: MIKE MCGOWAN, PE, HDR ENGINEERING, INC.

TRAVESTON CROSSING

PRESENTER: BRENT MEFFORD, PE, Western Native Fisheries  
Engineering

**HDR** |



# Weber Reservoir

- OWNER: THE WALKER RIVER PAIUTE TRIBE
- DAM OWNER/OPERATOR: BUREAU OF INDIAN AFFAIRS





# Background

- IRRIGATION RESERVOIR
- CONSTRUCTED IN THE 1930'S, BLOCKED PASSAGE OF NATIVE LAHONTAN CUTTHROAT POPULATIONS
- 40 FOOT HYDRAULIC HEIGHT
- DAM SAFETY ISSUES (FAULT) CAUSED REDUCTION IN ALLOWED STORAGE VOLUME
- EIS FOR REPAIR IDENTIFIED THE NEED TO RESTORE FISH PASSAGE
- DAM REPAIRS/FISHWAY INSTALLATION COMPLETED 2010





# Weber Dam





# Lahontan Cutthroat

## SWIMMING CHARACTERISTICS

- BURST SPEED: 8 – 12 f/s
- SUSTAINED SPEED: 2 – 5 f/s



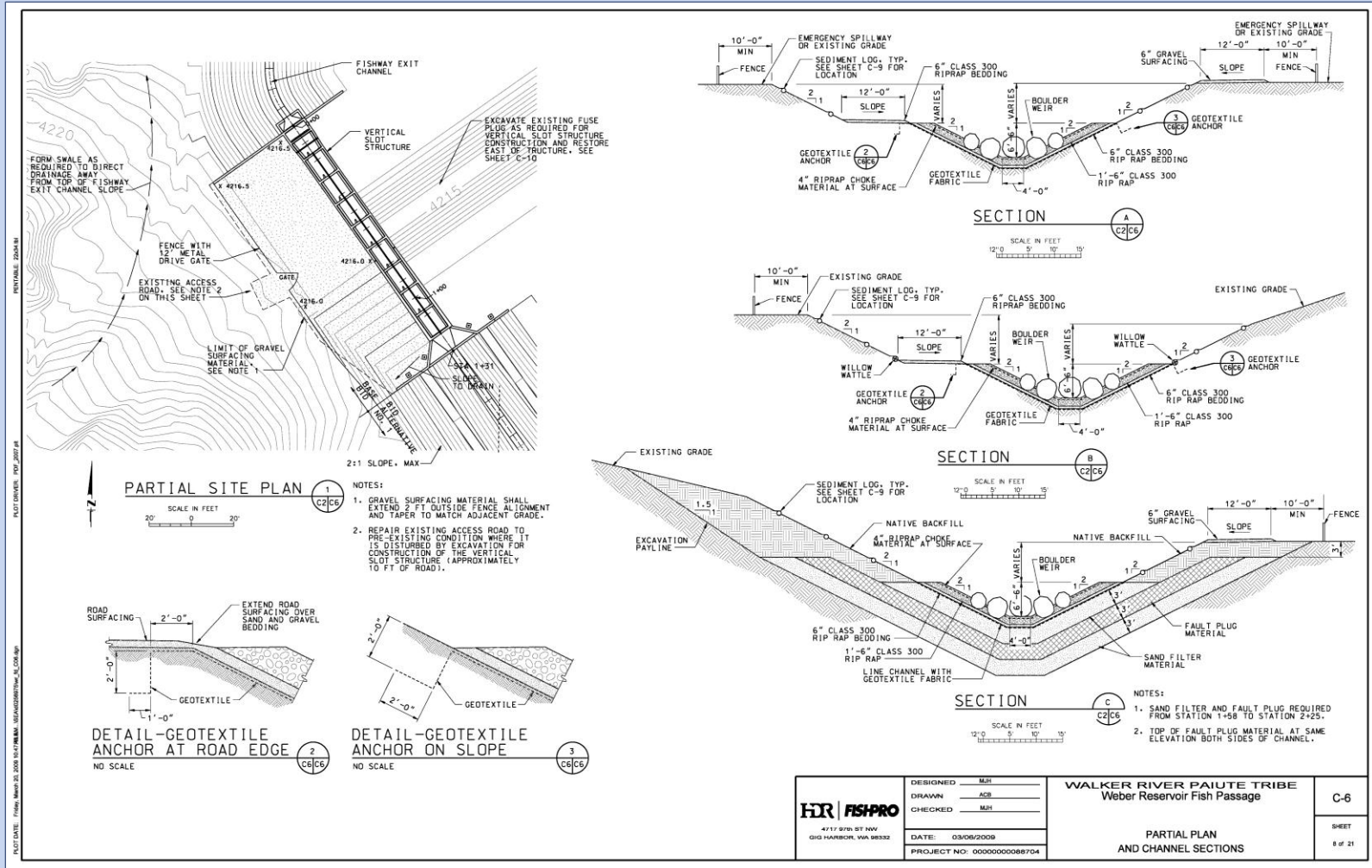


# Operations

- NORMAL OPERATING WSE VARIES FROM 4200 (SPILLWAY CREST)  
TO 4208 FT
- DESIGN CRITERIA TO BE SATISFIED OVER THE FULL 8 FOOT  
VARIATION
- NORMAL MAX WSE 4214
  - FLOW RATE 200cfs
  - CONTAINED WITHIN ROCK LINED CHANNEL



# Design



DESIGNED	MJH
DRAWN	ACB
CHECKED	MJH
DATE	03/06/2009
PROJECT NO.	0000000008704

<b>WALKER RIVER PAUTE TRIBE</b> Weber Reservoir Fish Passage	
PARTIAL PLAN AND CHANNEL SECTIONS	

C-6
SHEET
8 of 21





# After Construction





# Tuning







# In Operation





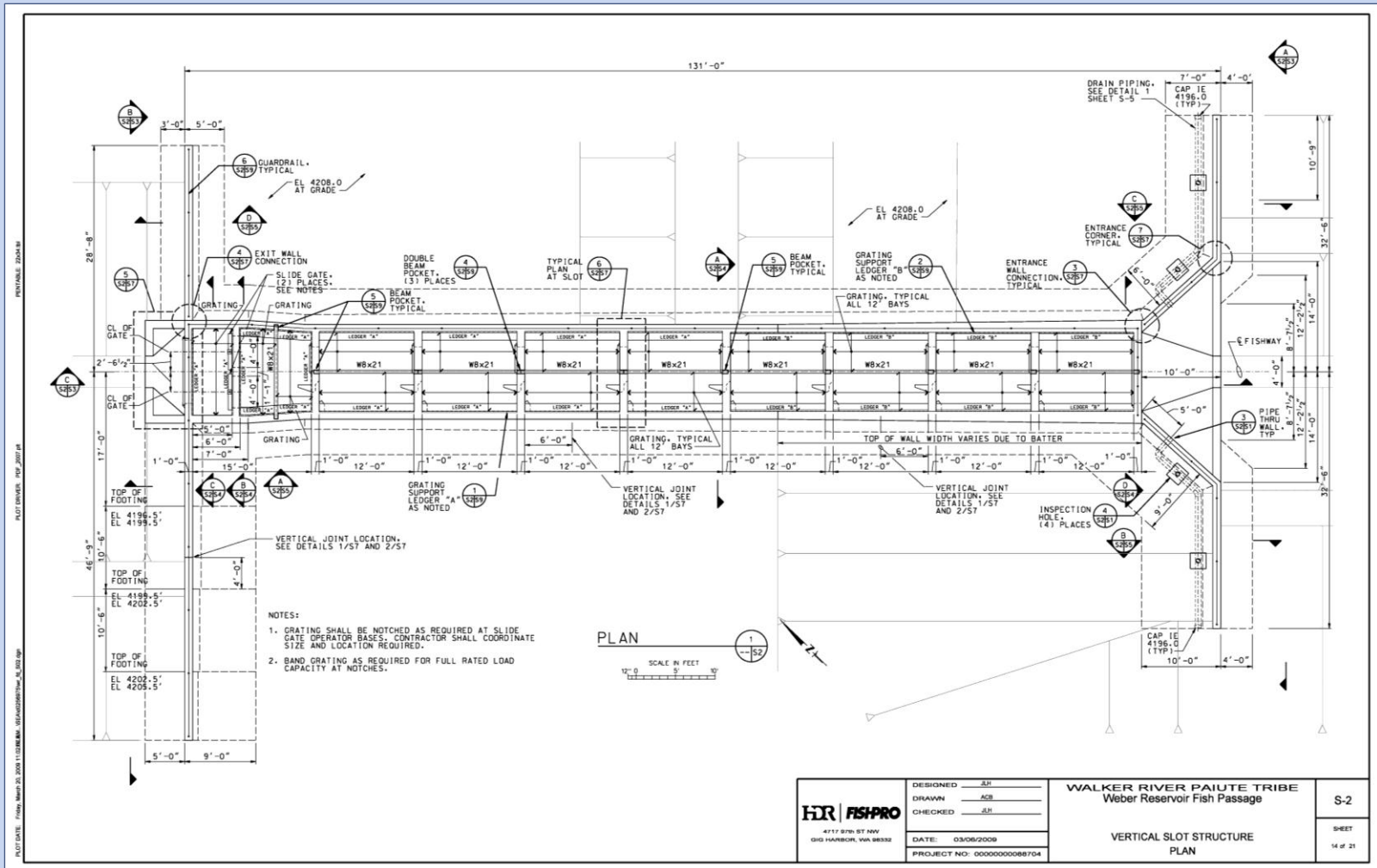
# Vertical Slot

- 1' – 6" OPENING
- LOW Q-20 CFS
- HIGH Q (AT WSE 4208) – 95 CFS
- 1' DIFFERENTIAL





# Configuration of Vertical Slot





# Under Construction





# Fitting Conclusion



**Traveston Crossing Dam  
Nature-Like Fishway Option  
Mary River  
Queensland, Australia**





# Project Developer: Queensland Water Infrastructure

## Project Objective:

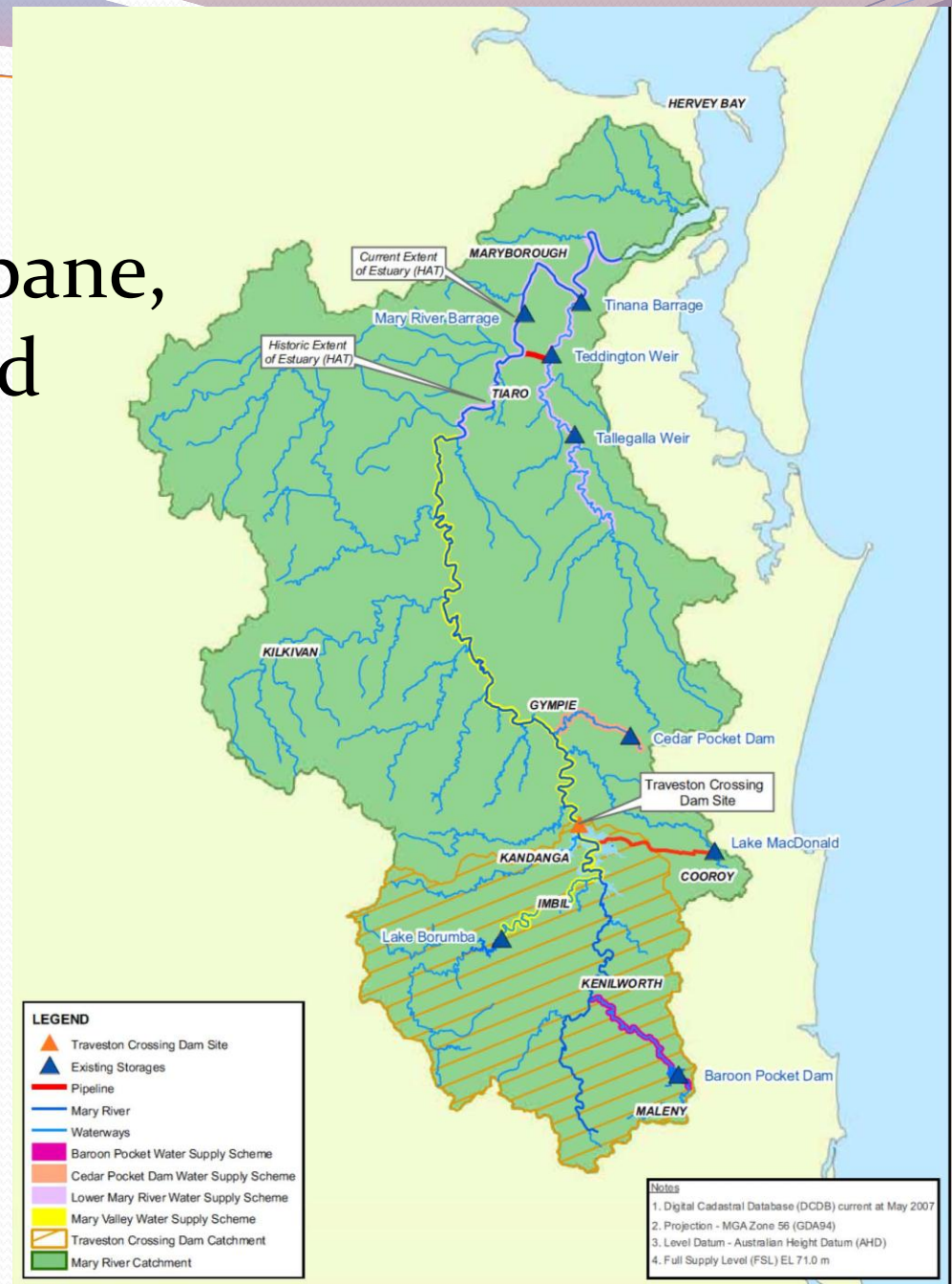
Develop a Nature-like Fishway Option for Traveston  
Crossing Dam

## Project Team:

A fish passage team composed of biologists, engineers and aquatic ecologists was formed to formulate a design.

# Mary River Watershed

## Located North of Brisbane, South East Queensland



# Mary River



# The Mary River is home to:

- 35 native fish species  
2 iconic fish species,  
Australian Lungfish and Mary River Cod
- 11 exotic or introduced fish species
- 6 turtle species including the listed  
Mary River turtle
- Freshwater prawns
- Platypus



# Australian Lungfish



# Mary River Cod



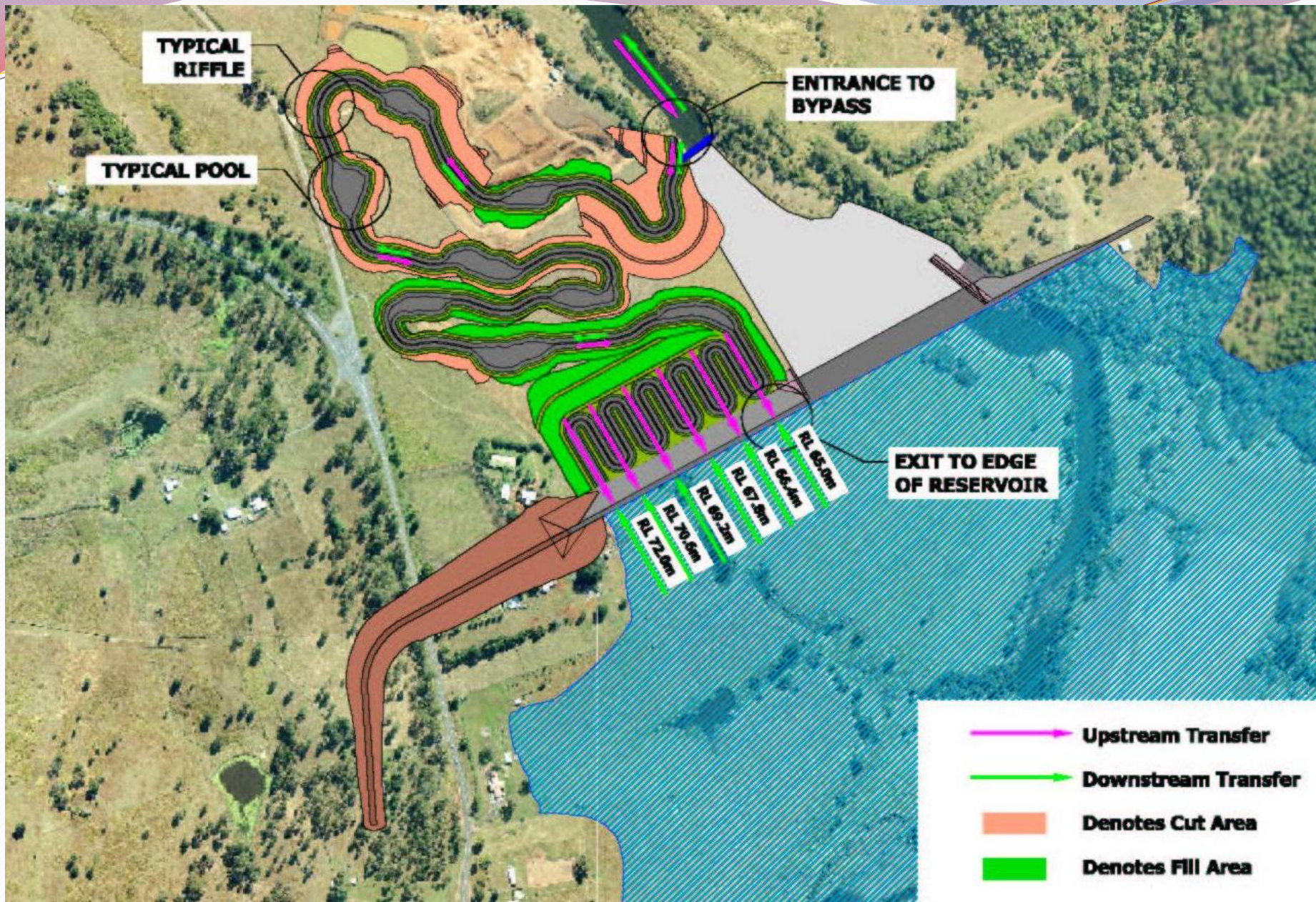
# Traveston Crossing Dam

- Proposed to supply municipal and industrial water and flood protection as part of a network of water supply reservoirs serving the Brisbane and Gold Coast region.
- Hydraulic height:  
21.5 m stage 1 and 30 m stage 2

# Proposed Nature-like Fishway Design

- Bypass channel composed of riffles, runs and large pools.
- Stage 1 length of ~ 4 km
- Average slope of 0.5 percent
- Maximum riffle slope of 2 percent
- Run slopes of < 0.1 percent
- Channel flow velocity of 0.05 m/s to 0.1 m/s
- Flows of 80 to 500 ML/D
- Pools of 2 to 3 m in depth



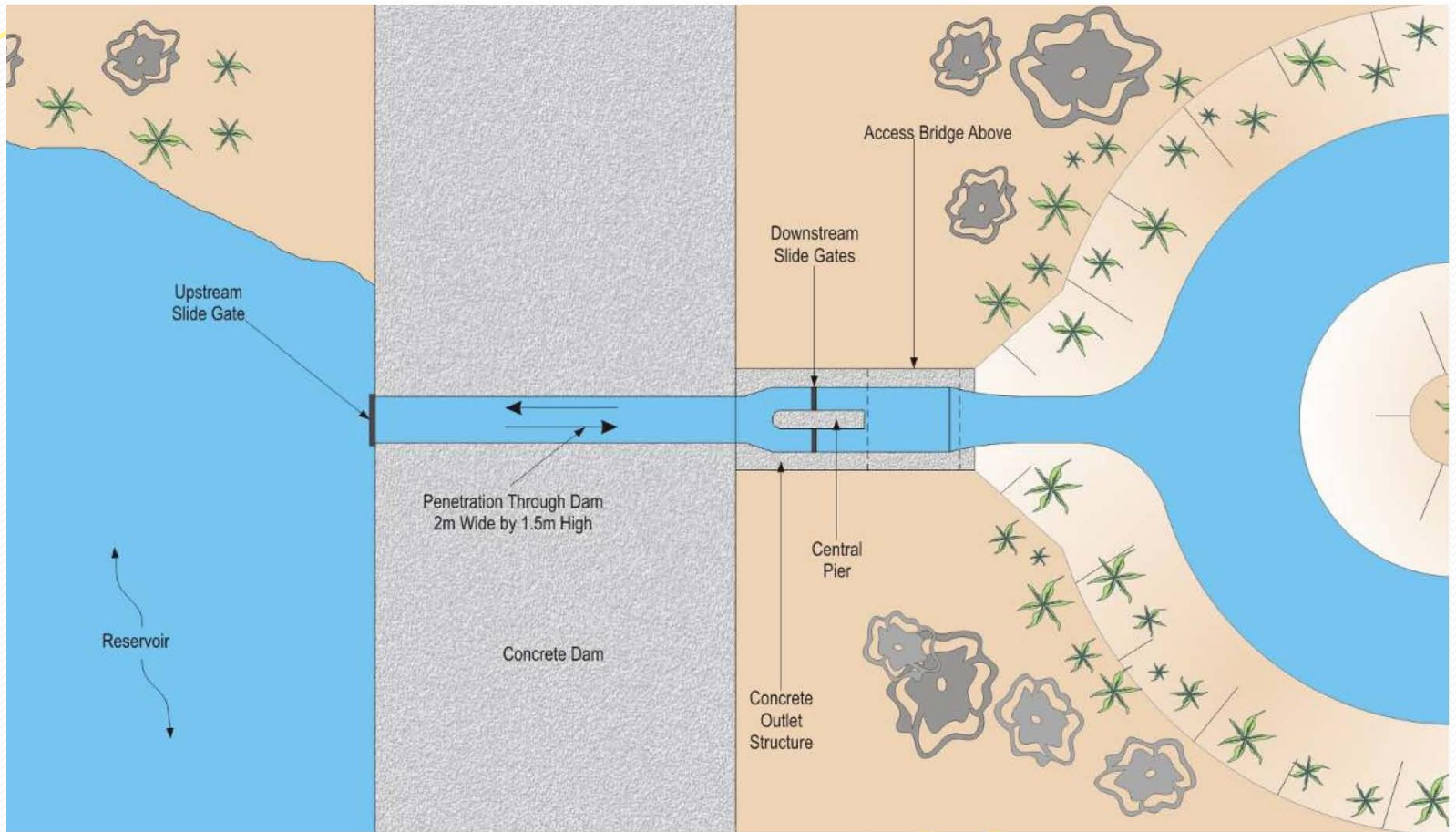








# Outlet Structure - 1 [Example]







# Questions

