Pilot Studies of Reservoir Sustainability Options – Large Reservoirs

1) Further develops and evaluates reservoir sediment management options
   • FY 2018 evaluates options for controlling sediment at Horseshoe Bend

2) Investigate long term sustainability of the reservoir
   • Continued operation of Yellowtail dam for the purpose of delivering water and power into the future
Pilot Studies of Reservoir Sustainability Options – Large Reservoirs

Fiscal Year 2017 ➔ Review data, plan options, collect data

Fiscal Year 2018 ➔ 2D sediment transport modeling to evaluate sediment management alternatives in Horseshoe Bend area

Fiscal Year 2018 ➔ Develop Report and Guideline of options
Pilot Studies of Reservoir Sustainability Options – Large Reservoirs

Fiscal Year 2017  ➔  Review data, plan options, collect data

Fiscal Year 2018  ➔  2D sediment transport modeling to evaluate sediment management alternatives in Horseshoe Bend area

Fiscal Year 2018  ➔  Develop Report and Guideline of options
Data Collection
Horseshoe Bend

- Data collection during early July 2017 and August 2017
- Sediment Samples – Test for physical properties and erodibility
Upstream of the Causeway (Bighorn River) and Shoshone River

- Surveyed 5-7 miles upstream Bighorn River
- Surveyed 4-6 miles upstream Shoshone River
Black Canyon
Landslide Area
(near Big Bull Elk Canyon)

- Water depths at landslide and several miles upstream were 200 feet consistently during the 2017 survey.
- Within 1,000 feet downstream of landslide, depths dropped to more than 300 feet.
- Landslide may be acting as a dam
Yellowtail Dam
• Depths immediately upstream of Yellowtail dam approximately 430 feet.
Observations from 2017 Bathymetric Survey

• Main channel immediately downstream of causeway may have shifted since previous survey (2007). May indicate recent sediment deposition in this area.

• Clear difference between main channel (low flow channel) and overbank sediment in Horseshoe Bend area. Main channel (primarily sand) coarser than overbanks.

• Landslide area may be preventing transport of sediment further downstream towards dam (as hypothesized by Ferrari 2007).
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Fiscal Year 2017 ➔ Review data, plan options, collect data

Fiscal Year 2018 ➔ 2D sediment transport modeling to evaluate sediment management alternatives in Horseshoe Bend area

Fiscal Year 2018 ➔ Develop Report and Guideline of options
Pilot Studies of Reservoir Sustainability Options – Large Reservoirs

Fiscal Year 2016 ➔ Review data, plan options, collect data

Fiscal Year 2018 ➔ 2D sediment modeling of passage to increase sediment transport capacity; work with stakeholder to plan potential long-term options

Fiscal Year 2018 ➔ Develop Report and Guideline of options
Next Steps & Questions?

• Reclamation – TSC will process and analyze the data collected and provide a survey report.

• Presentation on results at the Spring 2018 Meeting

• 2-D sediment transport modeling to evaluate sediment management alternatives in Horseshoe Bend area

• Presentation of Final 2-D numerical modeling results at November 2018 Meeting.