Mainstem Pacific Lamprey RMU Regional Implementation Plan Meeting

USFWS – Joe Skalicky and Chris Peery

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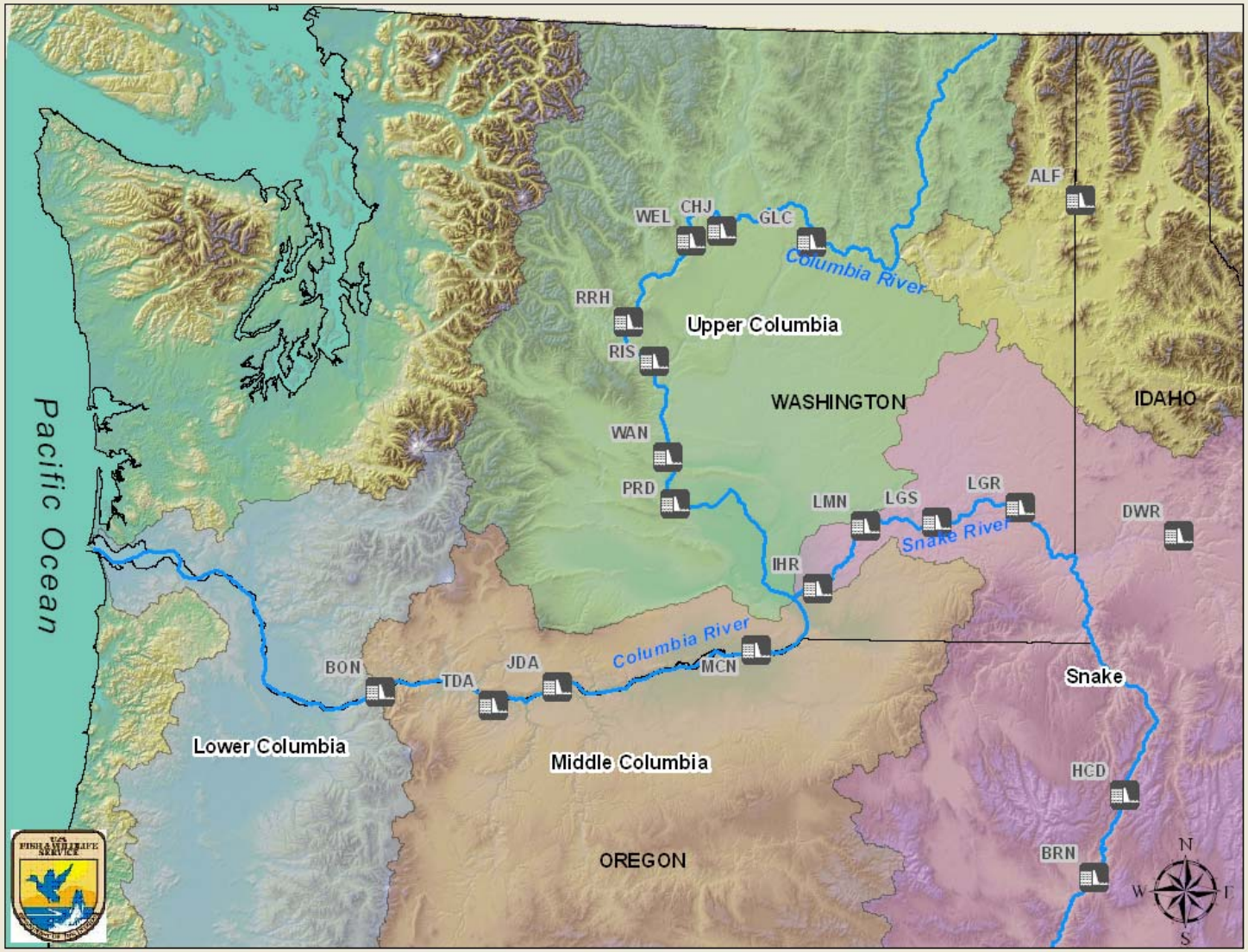
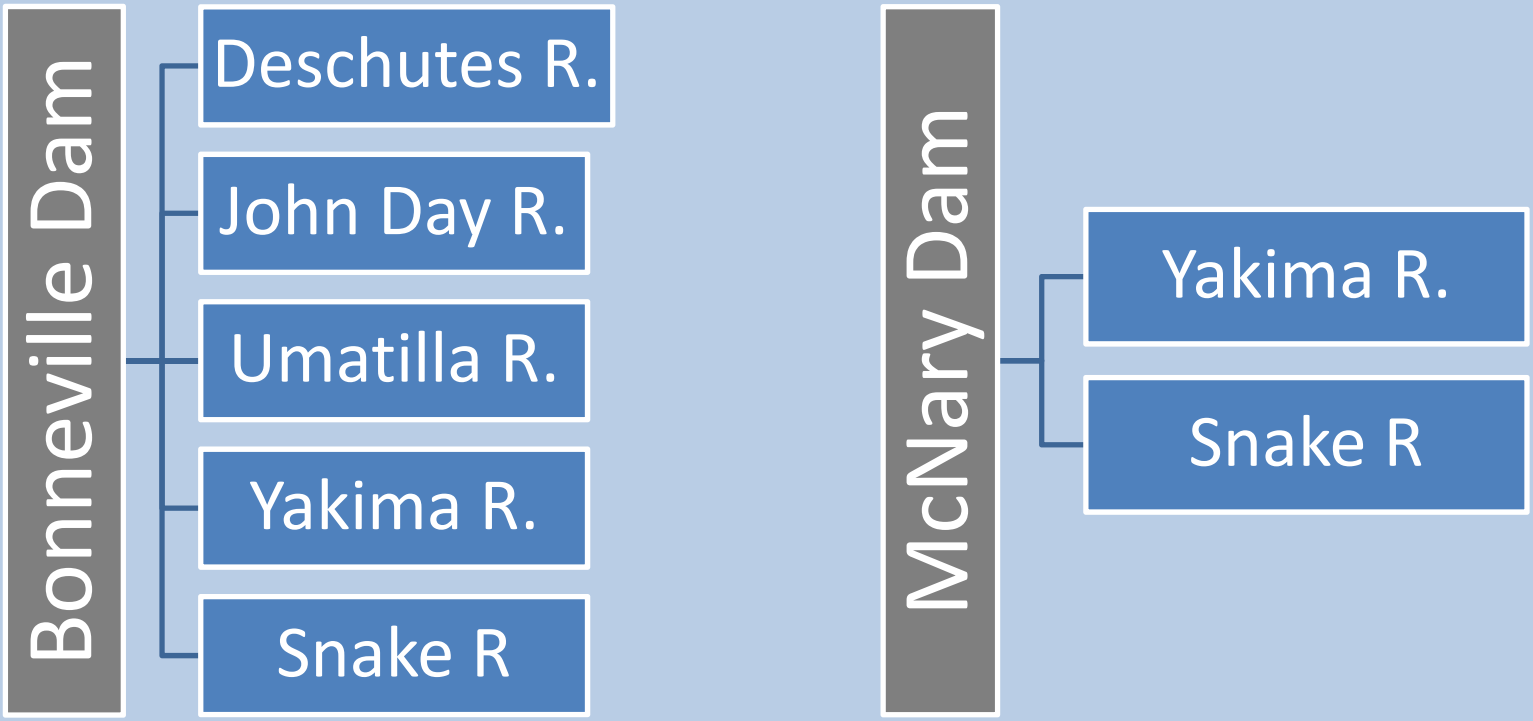
Mainstem RMU Concept

- **Build a Threat and Action table for each project**
- **Synthesize mainstem Impacts and Actions on the relevant RMU tributaries**
- **Use completed synthesis to identify the high priority actions and RM&E which will also inform priorities for other RMU's**

Synthesis of Mainstem RMU's on Tributary Impacts



Mainstem RMU Tributary Impacts



- **Use Synthesis to I.D. high priority actions and RM&E for the mainstem**
- **Also informs priorities for other RMUs**

Bonneville Dam – Major Threats and issues

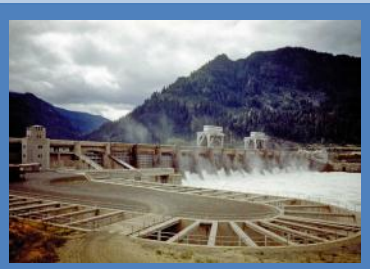
1) Adults

- Behavior – Upstream Passage
  - How can lamprey be better attracted to ladders?
    - Physical structure (lower velocity, surfaces *{irregular }* for attachment)
    - Operational changes (reduce flow at night)
    - Pheromones
  - How can lamprey negotiate ladder passage more efficiently?
    - Structural changes (round corners, size of grating)
  - Is passage adequate through all dams?
    - Should additional upstream facilities be equipped with LPS?

2) Juvenile

- Behavior – Downstream Passage
  - Where are juveniles located in the water column?
  - Turbine Impacts?
  - What are the impacts to juveniles from pressure changes in turbine units?
  - What is the utility of the Juvenile Bypass System (JBS) to the passage of juvenile lamprey?
    - Does the system guide juvenile lamprey?
    - How could the system be improved?
  - What is the survival of juvenile lamprey by passage route?

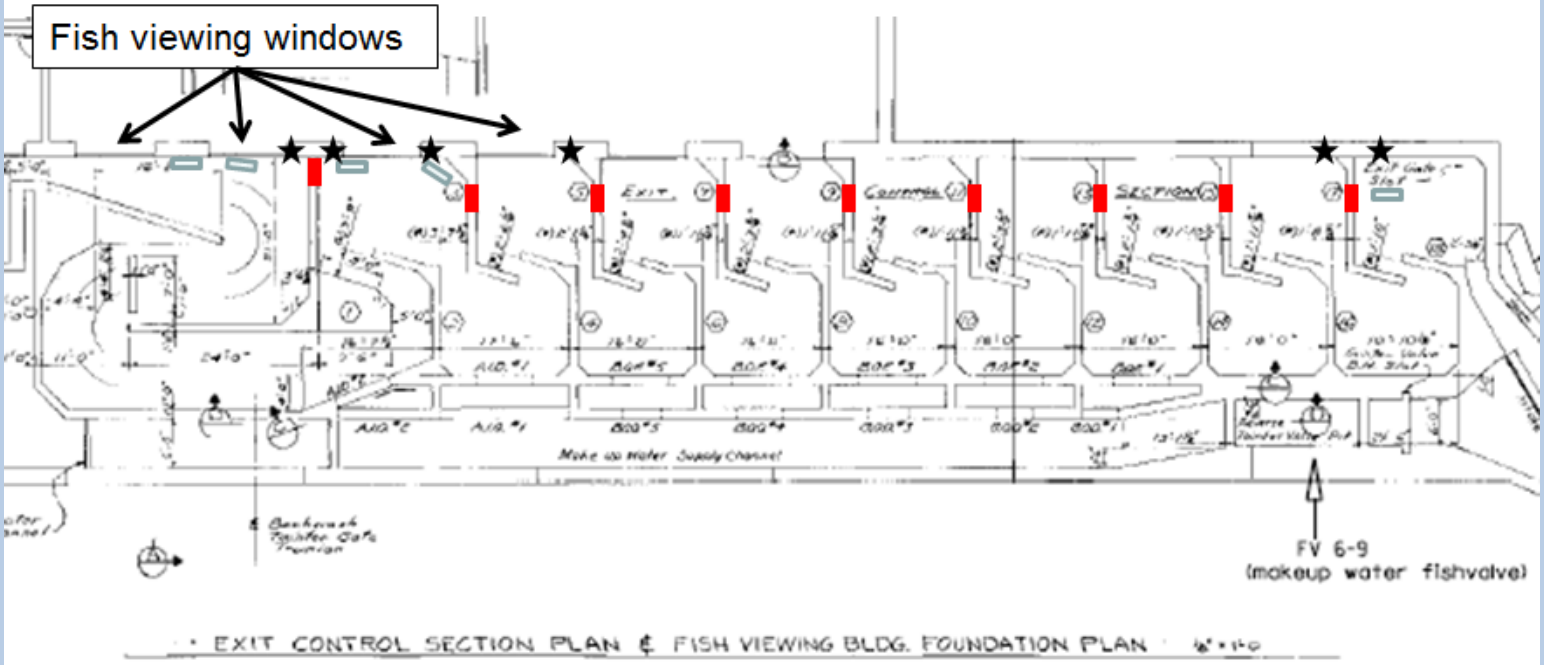
Bonneville Dam Threat and Action Table



				Threat / Limiting Factor / Concern	Scope	Severity	Ongoing Actions	Completed or Ongoing RM&E	Implementing Entity	Funding Source	Literature	Benefits	Feasibility	Needed Actions	Needed RM&E	Implementing Entity	Collaborative Approaches	Potential Funding Source	Implementing Entity	Estimated Cost	Comments
1) Adult Lamprey Dam/Reservoir Passage	1.1			**Influence of tailrace environ. on migration & passage**																	
		1.1.1		**Dam configuration and operations**																	
			1.1.1.1	**TDG, Temp**																	
			1.1.1.2	**Predators (lethal and passage avoidance)**																	
			1.1.1.3	**Project attraction**																	
		1.1.2		**Contaminants**																	
	1.2			**All entrances**																	
		1.2.1		**Ladder Entrance (attraction and effectiveness)**																	
			1.2.1.1	**Location**																	
			1.2.1.2	**Velocity**																	
			1.2.1.3	**Configuration**																	
		1.2.2		**Lamprey Entrance Structures**																	
			1.2.2.1	**Location**																	
			1.2.2.2	**Velocity**																	
			1.2.2.3	**Configuration**																	
	1.3			**Adult fishway**																	
	1.4			**Lamprey Passage Structure w/in adult fishways**																	
	1.5			**Forebay**																	
	1.6			Trapping - Handling - Tagging - Transportation																	
	1.7			Reservoirs																	
	1.8			Translocation																	
	1.9			Climate Change																	
2	Macropthalmia and Transformer Reservoir/Dam Passage																				
3	Larvae - Ammocoetes Reservoir/Dam Passage																				

Bonneville – Serpentine Weir

Configuration A:
BON Serpentine Weir Lamprey Orifices and Refuge Boxes
(Refuge Boxes as Prototypes)

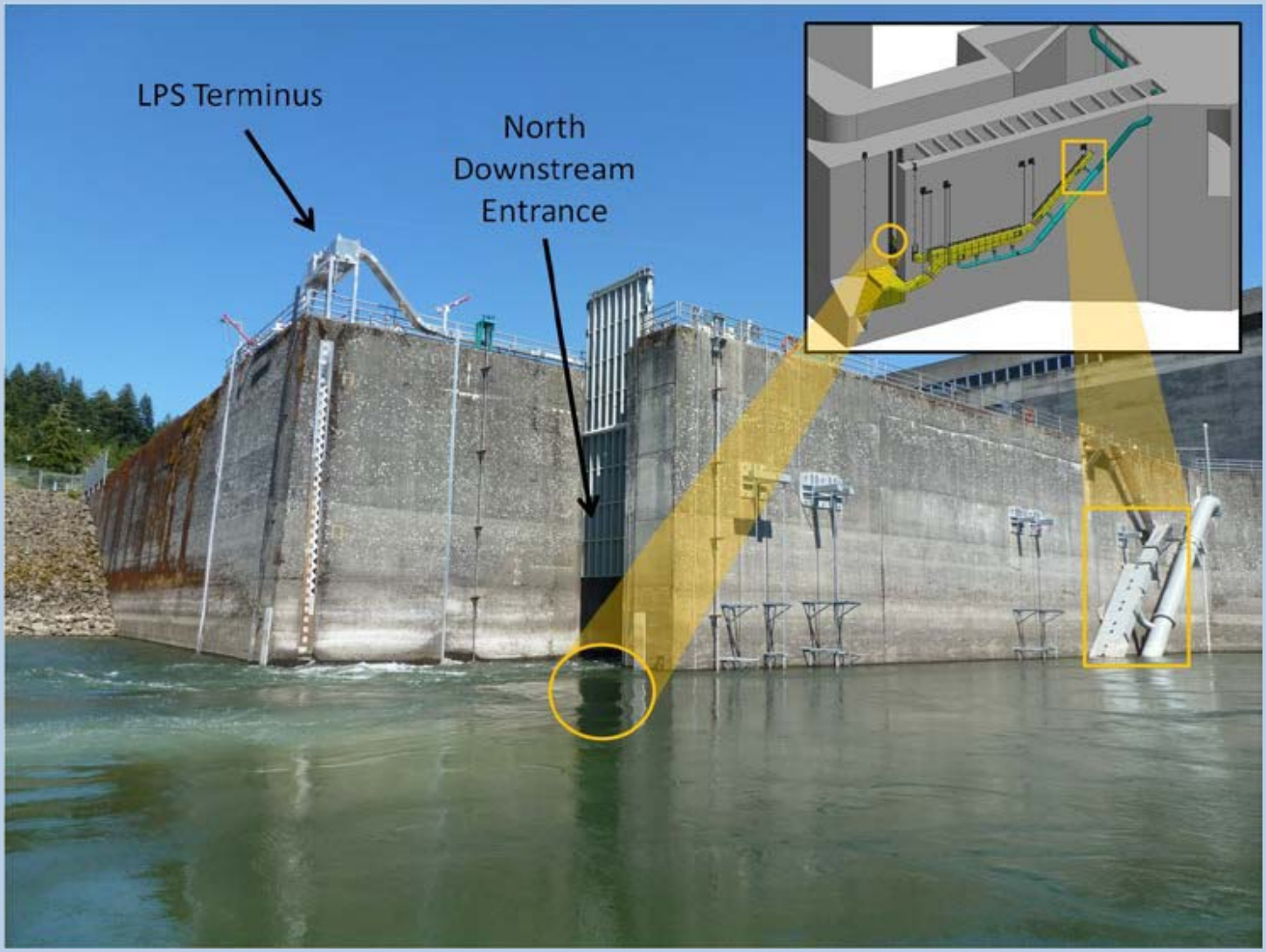


Refuge box

Lamprey orifice

Possible I-beam location (video)

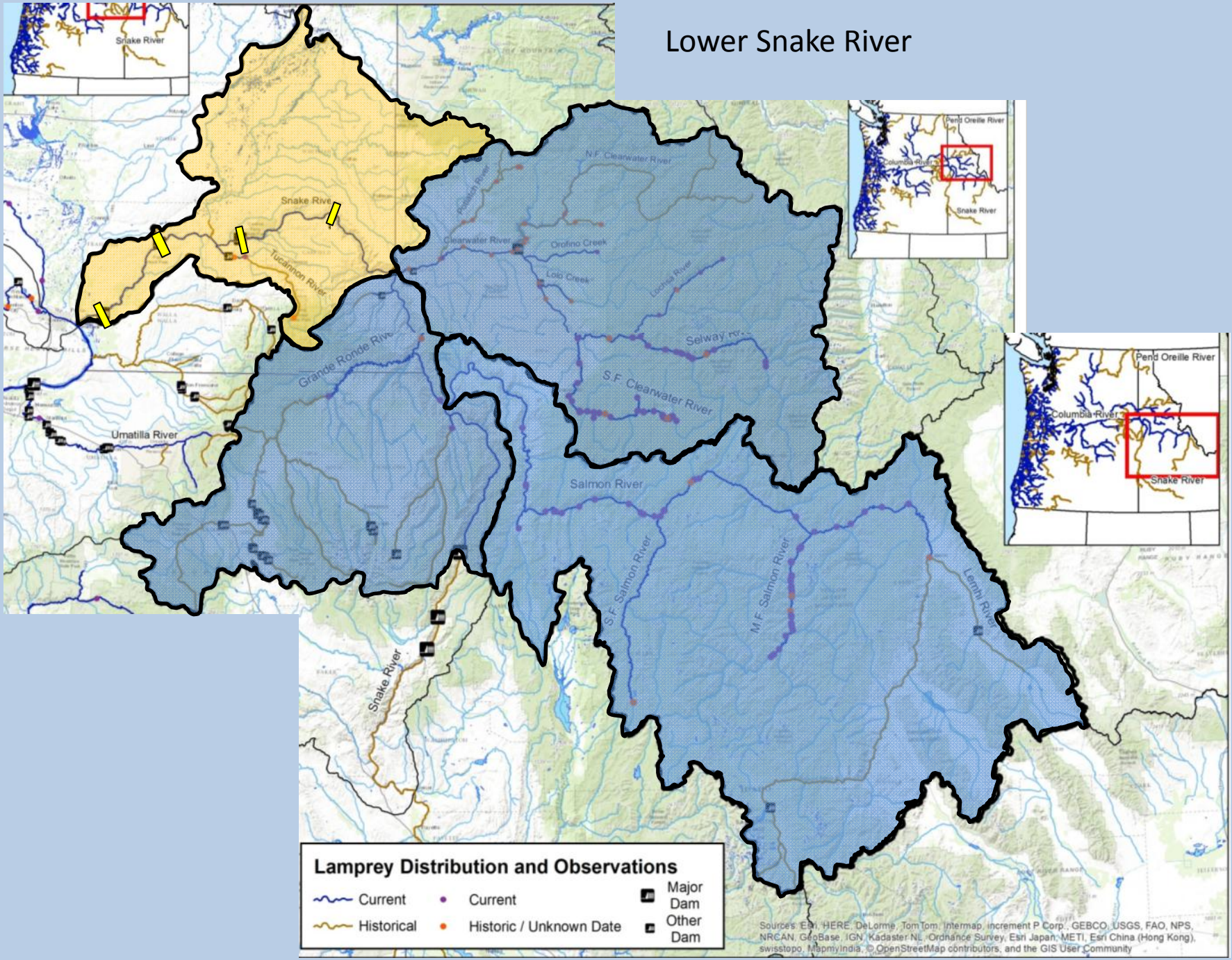
Bonneville – Lamprey Flume System



Mainstem RMU Schedule

- Bonneville to McNary
  - Feb 1, 2016
- Ice Harbor to Lower Granit
  - Feb 1, 2016
- Upper Columbia
  - Feb 1, 2016
  - Matrix for all projects ready for review

Lower Snake River



Mainstem RIP: Lower Snake River Dams Action Tables

Ice Harbor Dam

Threat			Scope	Severity	Actions	Status	Responsible parties	Funding source	Literature
Adults									
	Dam and reservoir passage								
		Dam passage							
		Reservoir passage							
Juveniles									
	Dam and reservoir passage								
		Dam passage							
		Reservoir passage							
Larvae									
	Reservoir residence								
	Dams								

Ice Harbor Dam

Threat			Scope	Severity	Actions	Status	Responsible parties	Funding source	Literature
Adults									
	Dam and reservoir passage								
		Dam passage							
		Reservoir passage							
Juveniles									
	Dam and reservoir passage								
		Dam passage							
		Reservoir passage							
Larvae									
	Reservoir residence								
	Dams								

Lower Monumental Dam

Threat			Scope	Severity	Actions	Status	Responsible parties	Funding source	Literature
Adults									
	Dam and reservoir passage								
		Dam passage							
		Reservoir passage							
Juveniles									
	Dam and reservoir passage								
		Dam passage							
		Reservoir passage							
Larvae									
	Reservoir residence								
	Dams								

Little Goose Dam

Threat			Scope	Severity	Actions	Status	Responsible parties	Funding source	Literature
Adults									
	Dam and reservoir passage								
		Dam passage							
		Reservoir passage							
Juveniles									
	Dam and reservoir passage								
		Dam passage							
		Reservoir passage							
Larvae									
	Reservoir residence								
	Dams								

Lower Granite Dam

Threat			Scope	Severity	Actions	Status	Responsible parties	Funding source	Literature
Adults									
	Dam and reservoir passage								
		Dam passage							
		Reservoir passage							
Juveniles									
	Dam and reservoir passage								
		Dam passage							

Mainstem RMU Tributary Impacts

- Bonneville Dam
- The Dalles Dam
- John Day Dam
- McNary Dam
- Upper Columbia
- Ice Harbor Dam
- Lower Mon. Dam
- Little Goose Dam
- Lower Granit

- **Use the completed synthesis to identify the highest priority mainstem actions and RM&E and inform the relevant tributary RMUs**

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