

Fish Passage Logic Table and Work Plan

Primary Users: Goal Implementation Teams, Workgroups, and Management Board | **Secondary Audience:** Interested Internal or External Parties

Primary Purpose: To assist partners in thinking through the relationships between their actions and specific factors, existing programs and gaps (either new or identified in their Management Strategies) and to help workgroups and Goal Implementation Teams prepare to present significant findings related to these actions and/or factors, existing programs and gaps to the Management Board. | **Secondary Purpose:** To enable those who are not familiar with a workgroup to understand and trace the logic driving its actions.

Outcome: Continually increase habitat to support sustainable migratory fish populations in the Chesapeake Bay watershed's freshwater rivers and streams. By 2025, restore historical fish migration routes by opening 1,000 additional stream miles to fish passage. Restoration success will be indicated by the consistent presence of alewife, blueback herring, American shad, hickory shad, American eel and brook trout, to be monitored in accordance with available agency resources and collaboratively developed methods.

Long-term Target: open an additional 1000 miles by 2025

Two-year Target: open an additional 132 miles by 2020

Factor	Current Efforts	Gap	Actions (critical in bold)	Metrics	Expected Response and Application	Learn/Adapt
<i>What is impacting our ability to achieve our outcome?</i>	<i>What current efforts are addressing this factor?</i>	<i>What further efforts or information are needed to fully address this factor?</i>	<i>What actions are essential to achieve our outcome?</i>	<i>Optional: Do we have a measure of progress? How do we know if we have achieved the intended result?</i>	<i>Optional: What effects do we expect to see as a result of this action, when, and what is the anticipated application of these changes?</i>	<i>Optional: What did we learn from taking this action? How will this lesson impact our work?</i>
Local Legislative Engagement: Policy maker understanding of the ancillary benefits of dam removal	WP Action (1.3): Establish or continue relationships with state dam safety programs to coordinate dam removal	<i>No specifically identified gap(s) correspond(s) to this Factor</i>	1.3			
Landowner Engagement: Dam owner understanding of the ancillary benefits of dam removal	WP Action (1.2): Continue outreach to dam owners on the benefits of dam removal through brochures and workshops.	<i>No specifically identified gap(s) correspond(s) to this Factor</i>	1.2			

Factor	Current Efforts	Gap	Actions (critical in bold)	Metrics	Expected Response and Application	Learn/Adapt
Landowner Engagement: Dam owner permission to remove dams	WP Action (1.2): Continue outreach to dam owners on the benefits of dam removal through brochures and workshops.	<i>No specifically identified gap(s) correspond(s) to this Factor</i>	1.2			
Use Conflict: Limited financial resources: With the average cost of stream barrier removal in Maryland, Pennsylvania, and Virginia hovering around \$200,000, the Fish Passage Workgroup will need more than \$20 million in project implementation funds in order to have a chance of meeting this Outcome.	WP Action (3.1): Prioritize culvert replacement projects to ensure strategic investment of public funds; Continue using the Chesapeake Bay Fish Passage Tool to target high priority dam removals.	<i>Culvert information on possibility is needed to assist in the prioritization</i>	3.1			
Habitat Condition: Populations of targeted fish species-particularly river herring, shad and American eel-have declined nationwide	There are many reasons for declining populations including habitat conditions, water quality, bycatch, climate change including possible changes in migratory patterns and spawning areas, overfishing, and others. The workgroup does not see these factors directly influencing whether the mileage goal outcome is met but instead as factors influencing the overall recovery of the target species. As such, no work plan action has been identified.	<i>Information related to bycatch and possible changes due to climate changes have not been well documented.</i>				

WORK PLAN ACTIONS

Green - action has been completed or is moving forward as planned **Yellow** - action has encountered minor obstacles **Red** - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
Management Approach 1: During the period 2011-2025, restore historical fish migratory routes by opening 1,000 additional stream miles, with restoration success indicated by the presence of Alewife, Blueback Herring, American Shad, Hickory Shad, American Eel and/or Brook Trout.					
1.1	Continue dam removal activities in the Chesapeake Bay	Complete Removal of the Bloede Dam.	MD DNR, NOAA, USFWS, American Rivers	Ilchester, MD	May-19
1.2	Continue dam removal activities in the Chesapeake Bay	Various dam removal planning, design and implementation projects - many projects are in a feasibility study phase where there are no immediate milestones during 2018-2019. Continue outreach to dam owners on the benefits of dam removal through brochures and workshops. Fewer and Fewer of remaining dam owners are willing to remove their dam.	Fish Passage Workgroup	Varies	Varies
1.3	Coordinate dam removal activities with the state Dam Safety Programs	Establish or continue relationships with state dam safety programs.	Fish Passage Workgroup	Entire Chesapeake Bay Region	Varies
Management Approach 2: Document return of fish to opened stream reaches by establishing the presence or absence of target species at a select number of projects within the Chesapeake Bay watershed.					
2.1	Monitor NOAA funded dam removal projects for the presence/absence of target fish species (Tier I monitoring)	All NOAA funded dam removals will be monitored.	NOAA, funding recipients	At dam removal sites	Ongoing
2.2	Conduct Tier II monitoring on select dam removals (Currently, the Patapsco River monitoring is the only river designated as a Tier II site by NOAA).	Conduct Tier II monitoring on the Patapsco River.	NOAA, American Rivers, MD DNR, UMBC,	Patapsco River near Ellicott City, MD	Ongoing through 2023

			USGS, MGS, USFWS		
2.3	Conduct target species monitoring of select dam removals in VA (+/- and relative abundance)	Boat electrofishing upstream of Harvell Dam removal on the Appomattox River and Embrey Dam removal on the Rappahannock River.	VDGIF	Appomattox River in Petersburg, VA And Rappahannock River near Fredericksburg, VA	Ongoing and continued availability of funding for fish passage technician crew.
2.4	Conduct target species counts at technical fishways in VA	Continue Annual American Shad count at Boshers Vertical Slot Fishway. Establishing electronic herring run count at Walkers Dam Denil fishway.	VDGIF	Boshers Dam in Henrico County on James River near Richmond, VA. Walkers Dam in New Kent Count on Chickahominy River near Lanexa, VA.	Ongoing and continued availability of funding for fish passage technician crew.
2.5	Conduct target species monitoring (+/- and relative abundance) at road culverts in VA	Continue annual backpack electrofishing at Claiborne Run nature-like fishway (herring).	VDGIF	Rappahannock tributary: Claiborne Run in Stafford County, VA	Two more of five consecutive years
2.6	Continue to develop environmental DNA (eDNA) tool to detect shad. Continue sampling for river herring and apply river herring eDNA analysis to determine priority fish passage projects and develop habitat use models	Develop and test tools for shad. Use river herring tools already developed (completed task in previous fish passage work plan).	SERC, UMCES	Frozen samples collected in Patapsco River; if funded, expand to entire Chesapeake Bay	Ongoing

Management Approach 3: Use the Chesapeake Bay Fish Passage Tool that was completed by the workgroup to implement high priority dam removal and fish passage projects.

3.1	Continue using the Chesapeake Bay Fish Passage Tool to implement high priority dam removal and fish passage projects. Complete Tool updates to include culvert assessment information	Conduct culvert and bridge assessments in areas with anadromous species and brook trout to determine extent of fish blockages due to road and rail infrastructure. Add information to the Chesapeake Fish Passage Tool.	USFWS, NOAA, Maryland, Virginia and Pennsylvania, American Rivers, TNC	Entire Chesapeake Bay region	Ongoing
	Review and update Management Strategy to reflect progress and changes.		Fish Passage Workgroup		Prepare for next SRS process