ACTION PLAN

ACTION ITEM	DESCRIPTION	LWA	Lake Associations	Towns	Conservation Commisions	NH DOT	SOAK NH	Local Conservation Partners	Residents/Businesses/ Neighborhood	Consultant	University Partners	SCHEDULE	ESTIMATED COST
Watershed & Shorefront BMPs													
Garner funding for action items	1) Develop a subcommittee that develops a fundraising strategy and determines how funding is spent.	✓	✓	✓	✓				✓			2017-19	N/A
	2) Establish a capital reserve fund for watershed towns to spend on lake protection initiatives. Cost covers labor to setup and maintain fund.			✓	✓							2017-36	$1,000/yr
	3) Solicit residents for individual donations.	✓	✓						✓			2017-36	N/A
	4) Develop a "Friends of the Watershed" program for donations from local businesses.	✓	✓						✓			2017-36	N/A
Address priority BMPs identified in surveys	1) Implement BMPs at the 20 high priority sites identified in the watershed survey. Cost estimate includes implementation and annual maintenance for all BMPs in a ten year period. Expected to reduce pollutant load by 21 kg P/year.	✓	✓	✓	✓	✓	✓		✓			2017-26	$52,536
	2) Resurvey drainage areas to Basins 1 and 2 for NPS sites.	✓	✓		✓					✓		2017-20	$3,000
	3) BASIN 1: Implement shoreline BMPs at the 38 medium impact sites identified in the shoreline survey with disturbance scores of 10 or greater. Assumes cost of $1,500 per site to revegetate and mulch with volunteer labor. Expected to reduce pollutant load by 13 kg P/year.	✓	✓		✓		✓		✓			2017-26	$57,000
	4) BASIN 2: Implement shoreline BMPs at the 3 high impact and 73 medium impact sites identified in the shoreline survey with disturbance scores of 10 or greater. Assumes cost of $3,000 for high impact sites and $1,500 for medium impact sites to revegetate and mulch with volunteer labor. Expected to reduce pollutant load by 33 kg P/year.	✓	✓		✓		✓		✓			2017-26	$118,500
	5) BASIN 3: Implement shoreline BMPs at the 3 high impact and 219 medium impact sites identified in the shoreline survey with disturbance scores of 10 or greater. Assumes cost of $3,000 for high impact sites and $1,500 for medium impact sites to revegetate and mulch with volunteer labor. Expected to reduce pollutant load by 84 kg P/year.	✓	✓		✓		✓		✓			2017-26	$337,500
	6) OTHER WATERBODIES: Implement shoreline BMPs around other waterbodies impacted by development within the watershed, particularly Lees Pond.	✓	✓		✓		✓		✓			2017-26	TBD
	7) Develop a method of tracking and monitoring BMP implementation progress (e.g., NPS Site Tracker).	✓	✓							✓		2017-26	$500/yr
	8) Host LID/BMP training workshops for Town Public Works.	✓		✓	✓							2017-26	$5,000
	9) Host tours of BMP demonstration sites for interested residents to enhance awareness of link between land use and water quality and provide easy erosion-control solutions to homeowners.	✓	✓		✓		✓			✓		2017-26	$500/yr

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Septic Systems													
Enhance awareness of proper septic system maintenance	1) Distribute educational pamphlets on septic system function and maintenance in tax bills.	✓		✓	✓					✓		2017-18	$2,000
	2) Create and distribute a list of septic service providers (create magnets, etc.).	✓			✓							2017-18	$500
	3) Host multiple "septic socials" in key neighborhoods near the lake to address link between septic system maintenance and water quality. Target educational campaign in areas with minimally-maintained or aging septic systems.	✓	✓		✓				✓			2017-36	$150/yr
Inventory status of septic systems in watershed	1) Conduct a comprehensive septic system survey of all properties within 250 ft of a critical waterbody in the watershed.	✓	✓	✓	✓					✓		2017-20	$10,000
	2) Conduct voluntary dye testing of high impact septic systems. Goal: 5 systems.	✓		✓					✓			2020-22	$100/system
	3) Develop and maintain a septic system database for the watershed. Code Enforcement Office for each town to maintain database. Cost estimate based on initial setup by LWA or consultants.	✓		✓	✓					✓		2017-36	$5,000
Enforce town septic system regulations	1) Communicate with town departments to enforce occupancy loads and have septic system inventories in Master Plans.			✓	✓							2017-36	TBD
	2) Inspect all home conversions from seasonal to permanent residences and property transfers for proper septic system size and design.			✓					✓			2017-36	$250/system
Garner funding or discounts that support and encourage septic system maintenance	1) Coordinate group septic system pumping discounts. Assumes volunteer labor to coordinate. Pump-out costs on landowners.	✓	✓						✓			2017-36	N/A
	2) Investigate grants and low-interest loans (e.g., NHDES Clean Water State Revolving Fund) to provide cost-share opportunities for septic system upgrades. Cost estimate based on resources to apply for grant.	✓	✓	✓								2017-18	$1,500
	3) Encourage towns and/or conservation commisions to reserve a portion of conservation dollars for the watershed that can be used for septic system upgrades.	✓	✓	✓	✓							2017-36	N/A
Canine Detection	1) Hire canine detection team to investigate shoreline septic systems.	✓	✓	✓	✓					✓		2017-20	$5,000

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	Roads												
Create and manage drainage easements on roads	1) Work with road agents and landowners to create and manage drainage easements on private properties. This will help control salt/sand and stormwater runoff from roads.		✓	✓	✓	✓			✓			2017-36	TBD
Address culvert replacements identified during watershed survey	1) Work with towns, NH DOT, and residents or neighborhood associations to replace undersized or poorly-designed culverts. Cost assumes materials only, but likely underestimated until more detailed designs are completed.	✓	✓	✓	✓	✓			✓			2017-20	$16,750
Require training of road agents	1) Require regular training for road agents on proper salt, sand, and equipment use (e.g., UNH Technology Transfer Center Green SnowPro trainings for snow plot operators).			✓								2017-36	$5,000
Host road maintenance workshops	1) Hold workshops on proper road management, particularly for gravel roads.	✓	✓	✓	✓							2017-36	$2,000
Encourage private road associations	1) Be sure there are road associations in key neighborhoods or heavily-used roads for better management by local stakeholders. Encourage these road associations to communicate with each other on best road management practices.		✓		✓				✓			2017-36	TBD
	Municipal Planning & Land Conservation												
Adopt plan recommendations	1) Incorporate watershed plan recommendations into town master plans.			✓								2017-26	N/A
Host workshops for watershed resident education of local land ordinances	1) Hold informational workshops for new landowners, towns, and developers on relevant town ordinances, permitting procedures, conservation easements, and watershed goals. Goal: 1-2.	✓	✓	✓	✓			✓	✓	✓		2017-36	$5,000
Host training of code enforcement officers and ZBAs	1) Host training for code enforcement officers and ZBAs in watershed towns, where applicable.			✓								2017-36	$5,000
Identify opportunities for land protection and conservation within the watershed	1) Fund tools, such as natural resource inventories, to help target critical land for protection.			✓	✓			✓		✓		2017-36	$10,000
	2) Collaborate with local conservation partners on land conservation initiatives within the watershed. Assign a liason to communicate with conservation groups.		✓		✓			✓				2017-36	N/A
Enhance enforcement of proper land management practices	1) Create better enforcement of forestry rules and regulations.			✓	✓				✓			2017-36	TBD
	2) Encourage easement holders to be notified and present at closings.			✓	✓				✓			2017-36	N/A
Improve municipal permitting process	1) Create list of BMP and LID descriptions for Town Selectman, ZBA, Planning Boards, and landowners.	✓	✓	✓	✓					✓		2017-19	$1,500

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Improve municipal ordinances (to help mitigate the anticipated 15, 22, and 287 kg P/yr loading increase to Basins 1, 2, and 3, respectively, due to predicated future development)	1) Lot Coverage: adopt uniform requirements between both towns on Stormwater Management Plans for subdivisions, commercial, and multi-family development, and redevelopment disturbing 20,000 sq. feet or more.			✓	✓							2017-36	TBD
	2) Setbacks (Shoreland Zoning): increase the setback distance to 100 feet within the shoreland zone of Moultonborough.			✓	✓							2017-36	TBD
	3) Wetland Buffers: increase the setback distance from all wetlands (not just prime or larger wetlands) to 100 feet in both towns.			✓	✓							2017-36	TBD
	4) Conservation/Cluster Subdivisions: increase the amount of land set aside in conservation subdivisions to min. 50% of the development area (Sandwich only requires 25%).			✓	✓			✓				2017-36	TBD
	5) LID: Amend Stormwater Management ordinances to state that the use of LID techniques is preferred and shall be implemented to the maximum extent possible.			✓	✓							2017-36	TBD
	6) Generate a new storm event schedule that dictates better infrastructure development.			✓	✓					✓		2016-26	TBD
	7) Meet with town staff to review recommendations to improve or develop ordinances addressing setbacks, buffers, lot coverage, LID, and open space.			✓	✓					✓		2017-19	$1,000
	Water Quality Monitoring												
Modify current lake monitoring program	1) Take regular, annual DO and temperature profile readings, secchi disk readings, and epilimnion and hypolimnion total phosphorus and chlorophyll-a samples at a minimum of one station per basin. Aim for biweekly secchi disk readings and monthly DO and temperature profile readings combined with chemical sampling. Assumes season from June-September. Cost assumes volunteer labor.		✓		✓						✓	2017-36	$18,000
	2) Add additional parameters to collect from the epilimnion, including pH, alkalinity, color, total dissolved nitrogen, and total dissolved organic carbon.		✓		✓						✓	2017-36	$27,000
	3) Add additional sampling sites in Basin 3 for the full sampling program addressed in #1 and #2 above. Cost assumes 3 additional sample sites.		✓		✓						✓	2017-36	$45,000
	4) Re-evaluate water quality at regular intervals based on interim goals, update model, and revisit water quality goals.	✓	✓		✓					✓	✓	2021, 2026, 2036	$10,000
Expand current lake monitoring program	1) Expand sampling outside normal season (June-September) to include spring and fall turnover. Cost assumes two extra sample events at 3 sites for base program (hypo/epi TP, epi Chl-a).		✓		✓							2017-36	$9,000
	2) Team up with university or consultant to take sediment cores at the three basins or other critical areas around the Inlet.		✓		✓					✓	✓	2017-36	TBD

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	3) Install 3-season buoy system in the three basins to monitor DO and temperature throughout the water column using continuous data loggers. Cost includes initial setup and 5 years of maintenance by consultant.		✓		✓					✓	✓	TBD	$50,000
Continue and/or expand tributary and pond monitoring program	1) Encourage continued regular sampling of Lees Pond. Take regular, annual DO and temperature profile readings, Secchi disk readings, and epilimnion and hypolimnion total phosphorus and epilimnion chlorophyll-a samples at the deep spot. Consider including pH, alkalinity, color, total dissolved nitrogen, and total dissolved organic carbon. Aim for biweekly Secchi disk readings and monthly DO and temperature profile readings combined with chemical sampling. Assumes a sampling season from June-September. Cost assumes volunteer labor.		✓		✓						✓	2017-36	$15,000
	2) Expand pond sampling to include other major waterbodies in the watershed, including Garland Pond, Shannon Pond, Berry Pond, Red Hill Pond, Little Pond, Dinsmore Pond, and Meadow Pond (in order of priority). This need only be done 1-3 times per year for epilimnion total phosphorus and chlorophyll-a. Cost assumes volunteer labor.		✓		✓						✓	2017-36	$21,000
	3) Sample major tributaries flowing directly to MBI, including Lees Pond outflow, Halfway Brook, Middle Brook, Shannon Brook, Tributary 2 to Basin 3, Basin 1 Tributary, and Basin 2 Tributary. Sample for total phosphorus at a minimum. Sampling should occur at least 3 times per year and cover both baseflow and stormflow conditions.		✓		✓						✓	2017-36	$11,000
	4) Add additional parameters to collect from the major tributaries flowing directly to MBI, including pH, E. coli, total dissolved nitrogen, chloride, and turbidity.		✓		✓						✓	2017-36	$50,000
	5) Add additional tributary sampling sites for the full tributary sampling program described above. Recommended sites are the outflows of Stanton Brook, Creamery Brook, Montgomery Brook, Cook Brook, Skinner Brook, Tributary 2 to Red Hill Brook, and Weed Brook.		✓		✓						✓	2017-36	$68,000
	6) Consider installing continuous data loggers measuring flow, DO, conductivity, and temperature at key tributary locations. These data would be useful in understanding water quality processes in the watershed. Coupled with water chemistry data, loading rates of nutrients may be calculated using the continuous flow data and used to update the land use model. Cost assumes initial setup at 3 sites and 5 years of maintenance by consultant.		✓		✓					✓	✓	TBD	$70,000

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Obtain more funding for water quality monitoring	1) Obtain funding from sources such as municipal contributions, NHDES grants, lake associations, targeted fundraising, and other grants related to climate change or invasive species studies.	✓	✓	✓	✓							2017-36	N/A
Maintain and/or improve current invasives management program	1) Continue to work with NHDES and the Town of Moultonborough Milfoil Committee to monitor and treat milfoil infestation areas.		✓	✓	✓				✓			2017-36	TBD
	2) Increase the number of volunteer inspectors for the Lake Host and Weed Watchers programs		✓	✓	✓				✓			2017-36	N/A
	3) Support State legislation that increases funds for aquatic invasive plant (e.g., milfoil) eradication.	✓	✓	✓	✓				✓			2017-36	N/A
Enhance awareness of water quality issues in the watershed	1) Contact local representatives and attend selectman meetings to voice concerns and stay informed.								✓			2017-36	N/A
	2) Create flyers/brochures for shorefront homes regarding BMPs and septic systems.	✓	✓		✓					✓		2017-20	$2,000
	3) Contribute interesting articles about water quality and watershed protection efforts to various media sources. Assumes volunteer labor.	✓	✓		✓							2017-36	N/A
	4) Work with SOAK Up the Rain NH to implement small scale BMPs and host concurrent residential stormwater workshops. Cost estimate does not include actual BMP implementation. Cost assumes printing, mailing to advertise events.	✓	✓		✓		✓					2017-36	$500/yr