Country Pond Watershed Planning Update

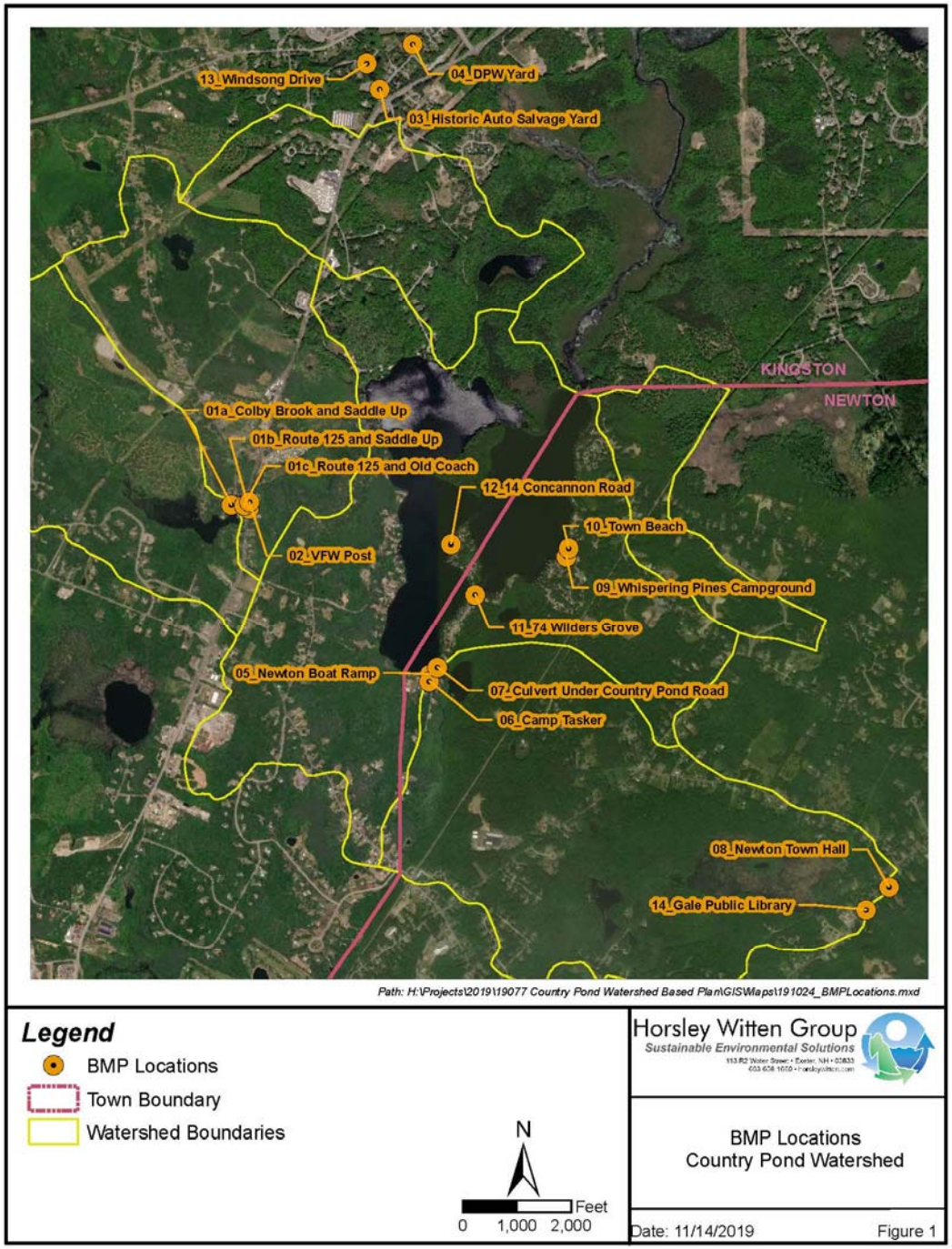
June 20, 2020

Country Pond *Photo: AECOM/ENSR*

theRPC.org

COUNTRY POND LAKE ASSOCIATION

NHDES



Watershed Assessment

Purpose: Identify locations and opportunities for phosphorus reduction

- **What**: Boots on the ground and boat surveys
- **Who**: CPLA, PEs, RPC, lake scientist, DES: WAS and SOAK teams
- **Where**: watershed locations – esp. roads, residential, shoreline
- **Why**: Identify potential structural and non-structural actions to reduce phosphorus

Watershed Assessment

Output: Provide recommendations for management actions to reduce phosphorus - including costs, authority, load reductions, and priority

Table 34. BMP Prioritization Summary

BMP Priority Ranking Factors*

L = Low | M = Medium | H = High

** For cost factors, lower cost = higher priority*

A. Structural Stormwater BMPs

Site #	Location	BMP Description	Relevant Authorities	Capital Costs[1] (Engineering Design and Construction)	20-Year Life Cycle Cost[2]	Annual Nutrient Load Reduction (lbs. of P and N)[3]	$ per Pound of P and N Load Reduction per Year[4]	Public Visibility/ Outreach[5]	Feasibility to Construct[6]	SITE PRIORITY
1	Winnicutt Road near Arnold Palmer Dr., north side (Stratham)	Catch basin maintenance; Install outlet protection, vegetated swale, and bioretention.	NHDOT; property owner	$21,300 - $30,800	$49,050	P: 0.5 lb/yr N: 3.2 lb/yr	$5,500 (P) $800 (N)	L	M	Medium
2	Winnicutt Road near Arnold Palmer Dr, south side (Stratham)	Daylight culvert pipe and stabilize outlet; Install bioretention cell with a stabilized outlet.	NHDOT; property owner	$11,900 - $17,100	$27,500	P: 0.3 lb/yr N: 2.1 lb/yr	$4,600 (P) $700 (N)	L	M	Medium
3	682 Post Road at Norton Brook crossing (Greenland)	Divert low flows from road into bioretention swale via level spreader/vegetated filter strip. Install catch basins on both sides of road; discharge to bioretention in grassed island.	Greenland Highway Department; property owner	$50,500 – 73,000	$116,750	P: 0.5 lb/yr N: 3.4 lb/yr	$13,000 (P) $1,800 (N)	L	M	Low
4	Greenland Central School (Greenland)	Raingarden demonstration project with educational kiosk	Greenland School Department; Greenland DPW	$3,900 - $5,700	$8,800	P: 0.2 lb/yr N: 1.4 lb/yr	$2,200 (P) $400 (N)	H	H	High
5	Stratham Memorial School, 39 Gifford Farm Rd. (Stratham)	Retrofit existing depression/swale with a meandering flow path, vegetation and engineered soil media to treat stormwater runoff and provide infiltration; Install educational kiosk.	Stratham School Department; Stratham Highway Department	$26,100 - $37,700	$59,900	P: 0.3 lb/yr N: 2.1 lb/yr	$12,200 (P) $1,400 (N)	H	H	Low
6	NHDOT Facility, 174 South Road (North Hampton)	Install an infiltration bed or infiltrating swale in grassed island on NHDOT property; Install diversions to increase BMP's stormwater capture.	NHDOT	$51,200 – 74,000	$118,600	P: 1.4 lb/yr N: 10 lb/yr	$4,400 (P) $600 (N)	L	H	Medium
7	Intersection of Post Road and Fern Road (North Hampton)	Retrofit grassed island with a bioretention cell to capture and treat road runoff prior to discharging into an existing culvert inlet.	North Hampton DPW	$18,900 - $27,400	$44,150	P: 0.6 lb/yr N: 4.3 lb/yr	$4,100 (P) $600 (N)	L	M	Medium
8	72 Meadow Fox Road (North Hampton)	Install infiltration basin to reduce erosion and provide water quality treatment.	North Hampton DPW; property owner	$121,400 - $175,200	$269,300	P: 6.1 lb/yr N: 42 lb/yr	$2,300 (P) $400 (N)	L	H	High
9-10	10 and 12 Sylvan Road (North Hampton)	Install two rain gardens on properties located at 10 and 12 Sylvan Road to provide treatment to property and road runoff prior to discharging into the storm drain network	Property owners	$1,600 - $2,300	$3,950	P: 0.1 lb/yr N: 0.7 lb/yr	$2,000 (P) $300 (N)	M	H	High
11	8 Winterberry Lane (Stratham)	Retrofit dry detention basin with micropool to enhance pollutant removal and prevent sediment resuspension.	Property owner (Winterberry Lane subdivision); Stratham Highway Dept. (potential)	$21,300 - $30,800	$49,050	P: 0.2 lb/yr N: 1.5 lb/yr	$12,300 (P) $1,700 (N)	L	M	Low
12	11 and 12 Strawberry Lane (Stratham)	Retrofit grassed swales into treatment swales designed to hold water for a longer period and provide higher pollutant removal efficiencies.	Stratham Highway Dept.; property owners	$20,300 - $29,200	$46,750	P: 0.3 lb/yr N: 2.2 lb/yr	$9,500 (P) $1,100 (N)	M	H	Medium
13	Domain Drive at Timberland Entrance (Stratham)	Reconstruct asphalt swale into a treatment swale with forebay, to provide treatment prior to discharge to existing the flood storage basin.	Timberland Inc. (property owner)	$3,000 - $4,300	$6,650	P: 0.04 lb/yr N: 0.3 lb/yr	$9,500 (P) $1,000 (N)	L	H	Medium
14	Cul-de-sac at the end of Marin Way (Stratham)	Retrofit grassed area with bioretention cell which uses the culvert as an overflow structure.	Property owner (corporate park area)	$37,900 - $54,800	$87,350	P: 1.1 lb/yr N: 8.5 lb/yr	$3,900 (P) $600 (N)	L	H	High
15	8 Marin Way (Stratham)	Install bioretention cell in grassed area; Use existing catch basin as an overflow structure.	Property owner (corporate park area)	$44,300 - $63,900	$102,100	P: 1.3 lb/yr N: 9.9 lb/yr	$3,900 (P) $600 N)	M	H	High
16	Adjacent to Timberland Parking Lot off Marin Way (Stratham)	Retrofit existing swales as treatment swales with pre-treatment forebays, to provide treatment prior to discharge to flood storage basin.	Timberland Inc. (property owner)	$20,300 - $29,200	$46,750	P: 0.3 lb/yr N: 2.2 lb/yr	$9,500 (P) $1,100 (N)	H	H	Medium
17	Timberland Parking Lot off Marin Way (Stratham)	Retrofit asphalt apron of catch basin into a bioretention cell, using catch basin for overflow.		$12,700 - $18,200	$29,450	P: 0.4 lb/yr N: 2.8 lb/yr	$3,900 (P) $600 (N)	L	H	Medium
18	588 Portsmouth Avenue (Greenland)	Retrofit the grassed area with a gravel wetland to provide enhanced water quality treatment prior to discharging to the Winnicut River.	Property owner; Greenland PW	$252,700 - $365,000	$400,850	P: 9.4 lb/yr N: 93 lb/yr	$2,200 (P) $300 (N)	H	M	High

[1] Capital Cost priority rank is based on the following for median costs (engineering design and construction): <$5,000: High; $5,000-$30,000: Medium; and >$30,000: Low.

[2] 20-year life cycle costs are based on medians of the ranges of engineering and construction costs plus annual O/M over a 20-year design life, presented as present-day value. Priority rank is based on the following for median costs:

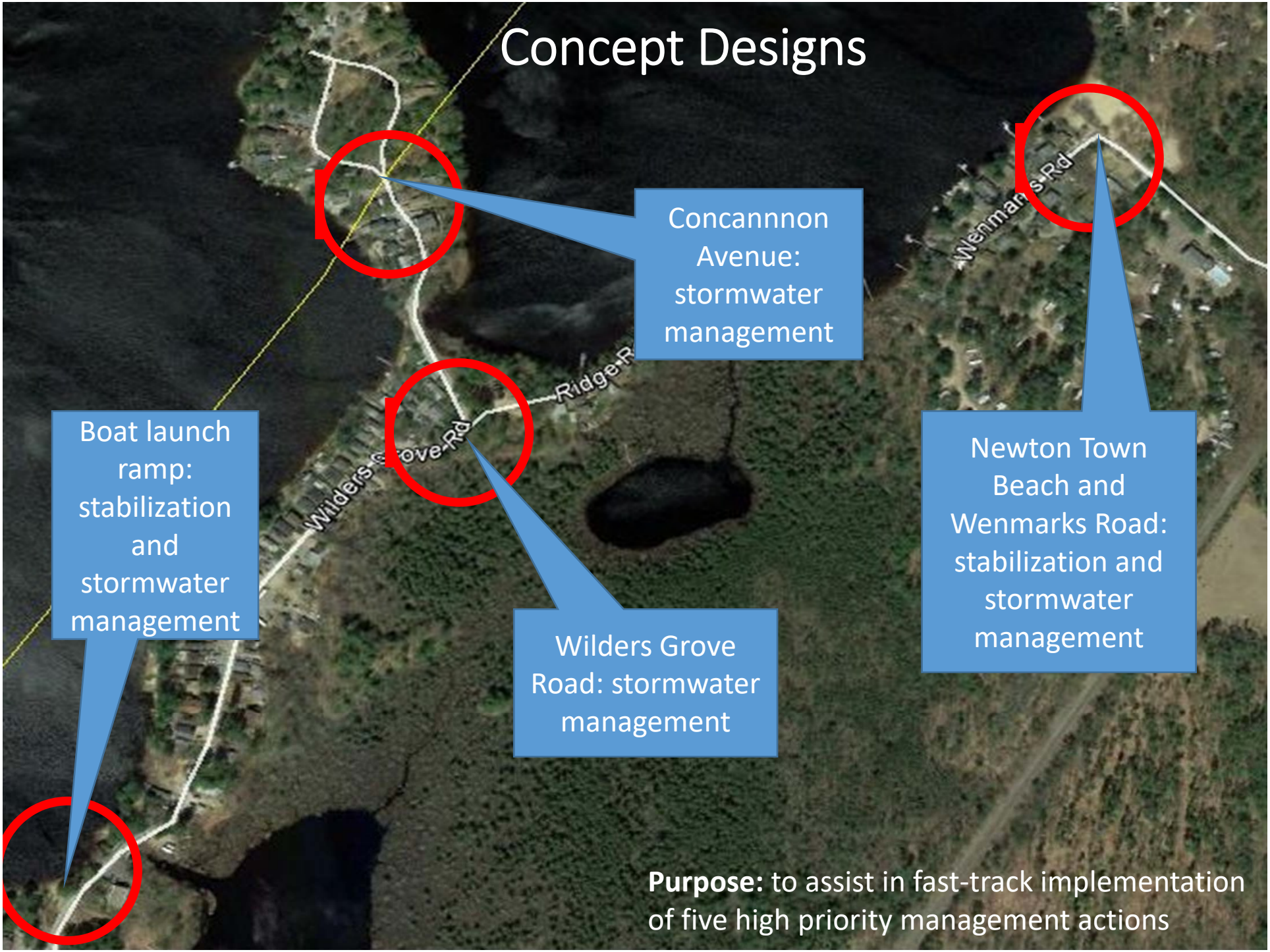
[3] Priority rank is based on the following ranges for P load reduction (the load reduction of N trends with P load reduction): [0.0 - <0.5 lb P/yr]: Low; [0.5 - 1.0 lb P/yr]: Medium; and [1.0+ P/yr]: High.

[4] Dollar ($) per Pound (lb) of P and N load reduction per year are based on the median ranges presented in Appendix A. Priority rank is assigned based on the following ranges for P load reduction: <$4,000: High; $4,000-$10,000: Medium; and >$10,000: Low.

[5] Public visibility/outreach priority based on: Location in recreational area or school, high population density = High; Location receives some pedestrian or vehicle traffic = Medium; Location receives very little pedestrian or vehicle traffic= Low

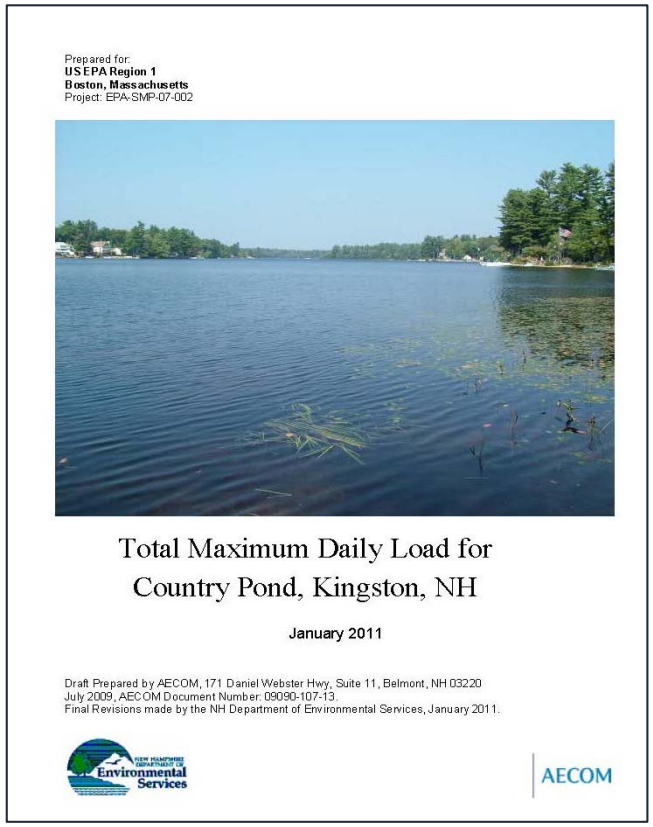
[6] Feasibility to construct priority ranking based on: ample construction access and space, on public property, few construction traffic impacts, no tree removal = High; Adequate construction access and available space, potential for some tree removal, medium traffic impact, nearby underground utilities = Medium; Potential underground utilities, location on private property, permitting challenges = Low

Concept Designs



Country Pond TMDL Update

Purpose: revisit 2010 TDML modeling output to assist in setting a water quality goal for the pond – draft output is in review


Prepared for:
US EPA Region 1
Boston, Massachusetts
Project: EPA-SMP-07-002

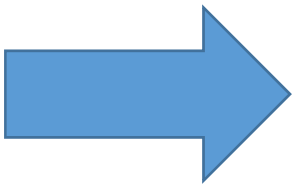
Total Maximum Daily Load for
Country Pond, Kingston, NH

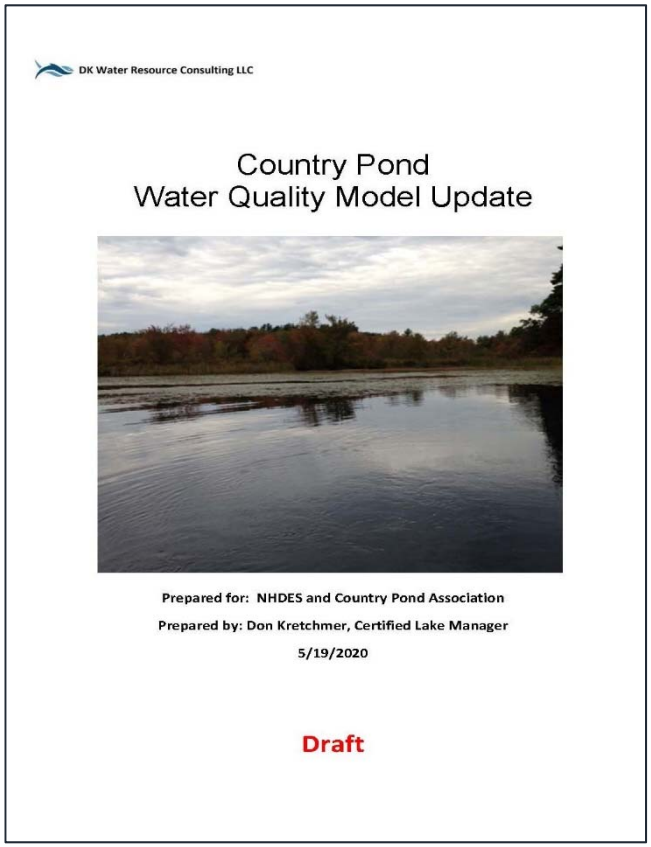
January 2011

Draft Prepared by AECOM, 171 Daniel Webster Hwy, Suite 11, Belmont, NH 03220
July 2009, AECOM Document Number: 09090-107-13.
Final Revisions made by the NH Department of Environmental Services, January 2011.

Environmental Services

AECOM




DK Water Resource Consulting LLC

Country Pond
Water Quality Model Update

Prepared for: NHDES and Country Pond Association

Prepared by: Don Kretchmer, Certified Lake Manager

5/19/2020

Draft

Outreach Plan for Country Pond

- CPLA – identify activities for the next 1-2 years including upcoming fall 2020 funding opportunities
- Engage and provide resources to property owners

  'Do Your Part'

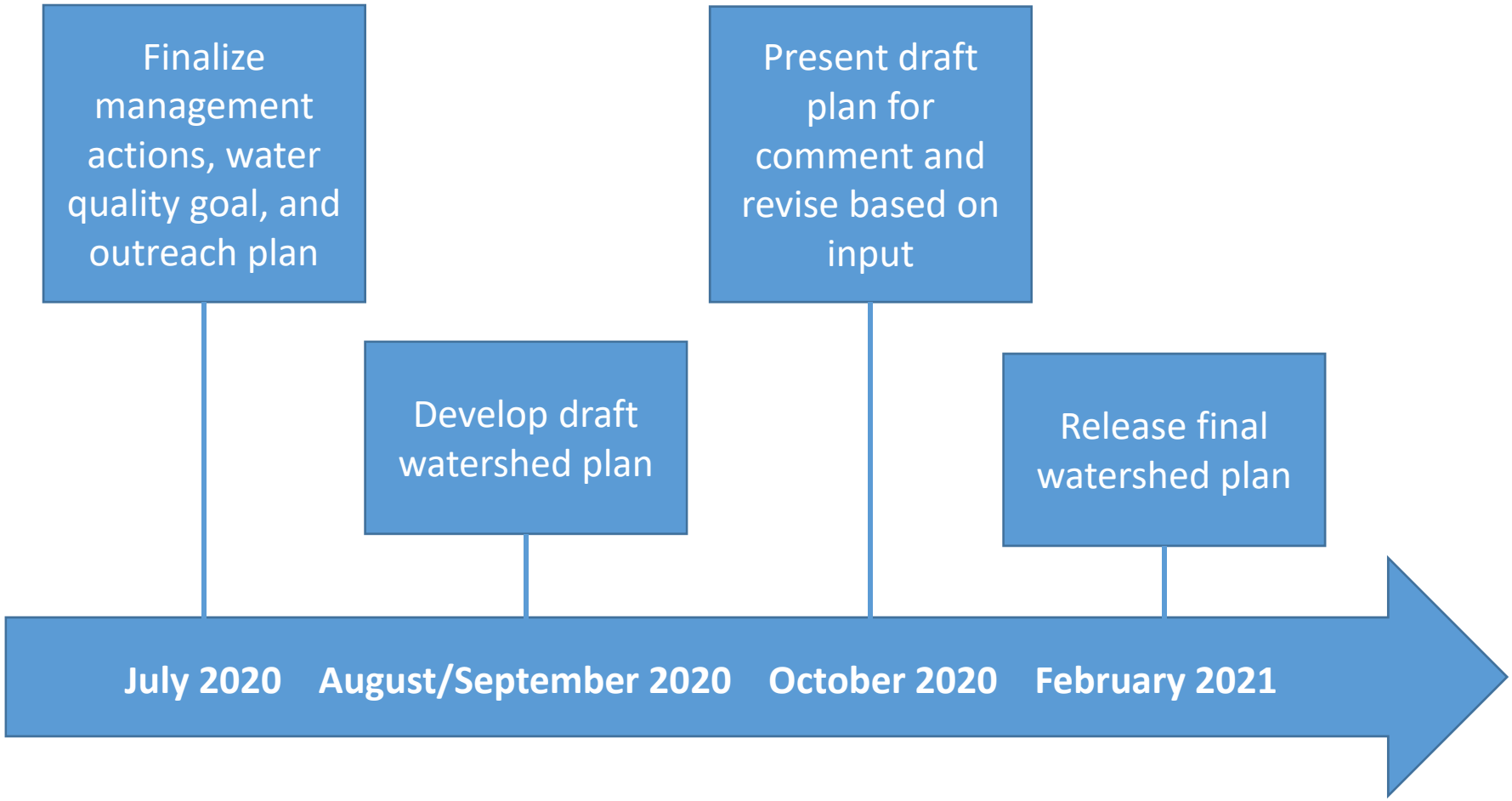
  'Let's Work Together'

  'Be a Partner with CPLA'

  'Clean Water for All'

  'Champions for Clean Water'
- Promote natural shoreline treatments
- Encourage proper septic system maintenance
- Coordinate with Newton and Kingston town stakeholders and decision makers
- All part of the comprehensive outreach and watershed based plan to engage all watershed stakeholders

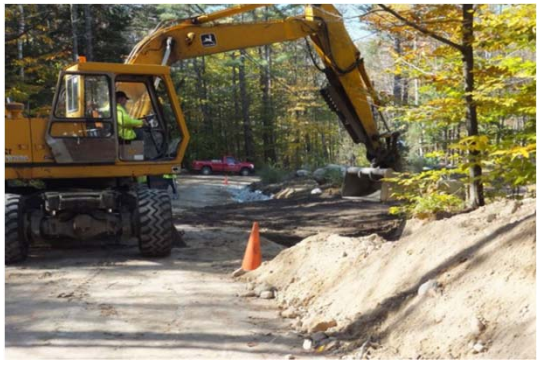
Next Steps

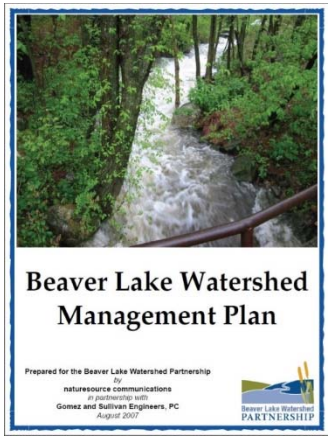

Finalize management actions, water quality goal, and outreach plan
Develop draft watershed plan
Present draft plan for comment and revise based on input
Release final watershed plan
July 2020
August/September 2020
October 2020
February 2021

Watershed Planning

It's a journey!

QUESTIONS?





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