

From: fhuard [<mailto:fhuard@net1plus.com>]

Sent: Friday, December 11, 2015 12:34 PM

To: Monroe, Pamela

Subject: NH SEC Docket 2015-05 MERRIMACK VALLEY RELIABILITY PROJECT

Are you aware that the project runs through a large watershed to one of Hudson, NH's finest pieces of CONSERVATION land, Robinson Pond? This watershed area falls within the area of the proposed project between David Drive, Lenny Lane and Kienia Road. The watershed also extends a large area around the pond. There are two brooks at David and Kienia that feed into the pond. A piping system that collects run off water also brings water down to the pond. The project will cross both of these brooks. The brook at Kienia has been dammed by beavers quite some time ago and has turned into a large body of water, more resembling a pond. Therefore a rather large crossing is needed and planned for this so called brook, including a 100 X 300' pulling pad and a massive tower 50-75 ft. from the shoreline. There will also be a considerable amount of woodland buffer removed. Robnson Pond is attached to Beaver Brook on the other end by a small tributary. Beaver Brook leads directly to the Merrimack River. This watershed also supplies water to the aquifers deep beneath the surface that is used for private drinking water. These facts so not appear to be stated in neither the project application, nor the applications to the DES for permits. Please comment on the procedures that you propose to prevent deleterious impacts to this conservation land, the water bodies they feed into and the aquifers that we use for our private drinking water.

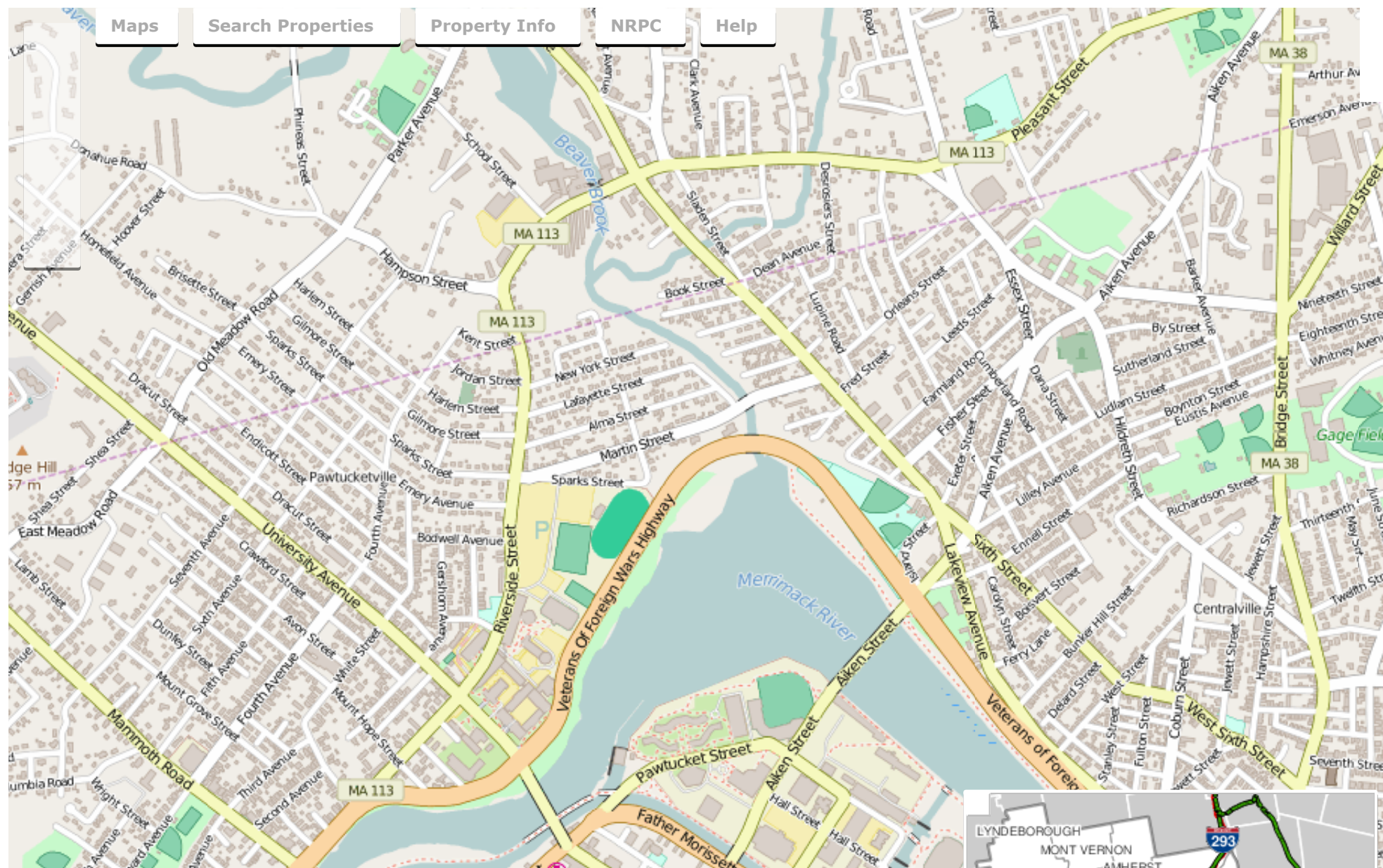
Please refer to the attached maps and information on Robinson Pond and it's watershed as well as the portions of the project application/appendixes.

Appendix AD (Page 4) David Drive and Brooks Fully Named

Appendix U (Pages 14-16) David Drive and Howard Brook at Kienia

Appendix I (Pages 9 and 10) David Drive and Howard Brook

Peggy Huard



1106 ft

Base Map: © OpenStreetMap and contributors, CC-BY-SA



TOWN OF HUDSON CONSERVATION LAND



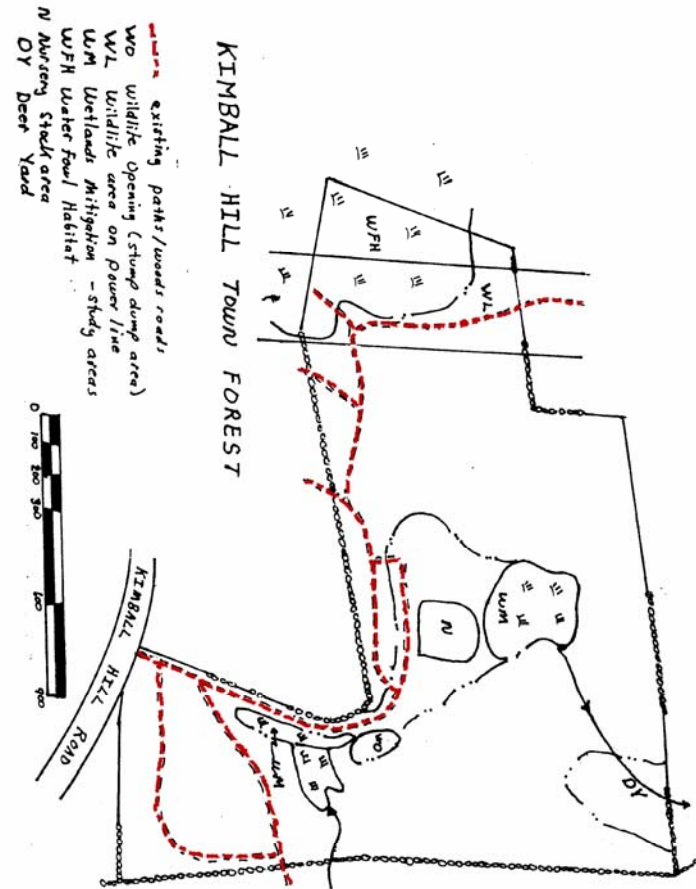
Compiled by Dana Jutras of Senior Troop
1002 for her Girl Scout Gold Award in 2006.

The Town of Hudson owns more than 50 parcels of land in the town. Although many are small, land-locked, or otherwise unusable, there are quite a few which have something to offer. The parcels described in this brochure are open to public use and offer educational and outdoor opportunities to all those who visit them.



Musquash Conservation Land

Town Forest Map



Town Forest

Size: 52.265 acres
Location: off of Kimball Hill Rd. near the Pelham town line. There is limited parking in front of the entrance gate.
Recreational Activities: cross country skiing, walking
History and Description: The property has both forest and wetland habitats. Trees include white pine, red, black, and white oak, red maple, hemlock, and northern and mixed hardwoods. Many unmarked paths extend across the land making it easy to get temporarily lost. The town maintains this land as a working forest with its own master plan.



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Leave No Trace

There are a few things to remember when visiting one of these sites so that others can enjoy them as well.

- Use existing trails don't make your own.
- Pack it in, pack it out. If you brought it with you, you should take it back home with you. Don't leave trash or food.
- Preserve the past. Observe but don't alter historical sites such as old home foundations or wells.
- Leave rocks, plants, and other natural elements as you find them. Take a picture instead of bringing things home.
- Avoid introducing or transporting non-native species.
- Observe wildlife from a distance.
- Never feed animals.
- Control your own pets (pick up after them) or leave them at home.
- Avoid wildlife during sensitive times: mating, nesting, raising young, and winter.
- Respect other visitors and be courteous when sharing the trail.

For more information, contact the Conservation Commission through the Community Development department at (603)-886-6005.

If you notice any problems or misuses of the land, please contact the code enforcement officer at (603)-886-6005.

Robinson Pond

Size: 88 acres

Location: both swimming area and boat launch are accessible from Robinson Rd. There are areas for parking both at the swimming area and boat launch.

Recreational Activities: boating, fishing, geocaching, picnicking, swimming

History and Description: Robinson Pond is thought to have been formed as a kettle hole from the melting of a large ice chunk broken off as the last glacier receded. Now it serves to drain a small 1100-acre watershed and provide a home for beaver, Canadian geese, ducks, turtles, and fish, namely bass and pickerel. The sandy beach and swimming area are thanks to the Hudson Junior Women's Club's efforts in 1971.

This piece of land may have been inhabited by nomadic hunter-gatherers as many as 10,000 years ago. Later European settlers lived here; a fact evidenced by stonewalls, apple trees, and a cellar hole found in the surrounding forests to this property. Trees knocked down by the 1938 hurricane were preserved by storing them in Robinson Pond. Two years later, two steam-powered sawmills were placed on what is now known as sawdust island, and most of the five million board feet of lumber was used to make ammunition boxes during World War II.



Parker Wildlife Sanctuary

Size: 41 acres

Location: The entrance is on the cul-de-sac of Woodcrest, which is off of Hazelwood. Parking is limited around the center of the cul-de-sac beside the street.

Recreational Activities:
bird watching, photography, walking

History and Description: Parker Wildlife Sanctuary was formerly a blueberry swamp, which explains the presence of wild blueberry bushes. The land is a part of the original farm which Peter Robinson purchased in 1763. The land stayed in the same family lineage until it was donated to the town for conservation purposes. The current descendent, Ruth Parker, resides in Hudson.

Parker Wildlife Sanctuary contains woods and wetlands that are home to over fifty species of birds and many land and water mammals including beaver, muskrat, mink, woodchuck, raccoon, rabbit, and skunk. The few cleared trails on the property are nice walks and offer some nice views of Robinson Pond. The family hopes the land will continue to preserve nature for many years and generations to come.



Alvirne Tree Farm

Size: 45 acres

Location: off of Derry Rd, across from Alvirne High School. There is plenty of parking in the Alvirne parking lot during non-school hours.

Recreational Activities:
cross country running,
cross country skiing,
hiking

History and Description: There are many trails across this property which are wide and clear enough for running or skiing. In some areas, there is evidence of tree cutting beside the trails since it is an active tree farm used by the high school.



Ingersoll Tri-Town Tree Farm

Size: 292 acres

Location: covers area in Hudson, Londonderry, and Windham; it can be entered by several spots along Mill Rd and Bockes Rd. in the towns of Londonderry and Windham respectively.

Parking is along the road next to the entrances.

Recreational Activities: walking

History and Description: This piece of land is a working forest which had been previously owned by the Ingersoll family since 1936. The land protects three public water supplies, diverse animal habitats, and some cultural heritage. It is home for animals such as moose, deer, mink, beaver, otter, ruffed grouse, and snowshoe hare. Besides animals, the land is also protecting cultural heritage sites, such as a prehistoric archeological site, stone walls, cellar holes, old wells, and remains of a mill pond dam. Some of the old carriage trails still exist and now serve as walking trails.



Preventing Exotic Aquatic Plant Spread

Exotic aquatic plants are not native to this region, and therefore have no predators. As a result they take over the water bodies they live in, harming native aquatic plants and making recreational activities difficult or unappealing. To help prevent them from spreading there are several things that can be done.

- Before entering and leaving a body of water, inspect your boat and trailer for plant fragments, removing and disposing of fragments away from water.
- Avoid boating in areas with dense plant growth.
- Pay attention to signs at boating launches warning of exotic plants in the area.

Water bodies in Hudson with exotic aquatic plants:
Ottarnic Pond, Robinson Pond



Eurasian watermilfoil



Fanwort

Ottarnic Pond

Size: 45 acres

Location: boat launch is accessible from Claveau's landing off Highland St.

Recreational Activities: bird watching, boating, fishing, photography

History and

Description: Access to the lake is a short dirt road leading to the boat launch. There is a small area for parking cars before the dirt gradually slopes into the water.

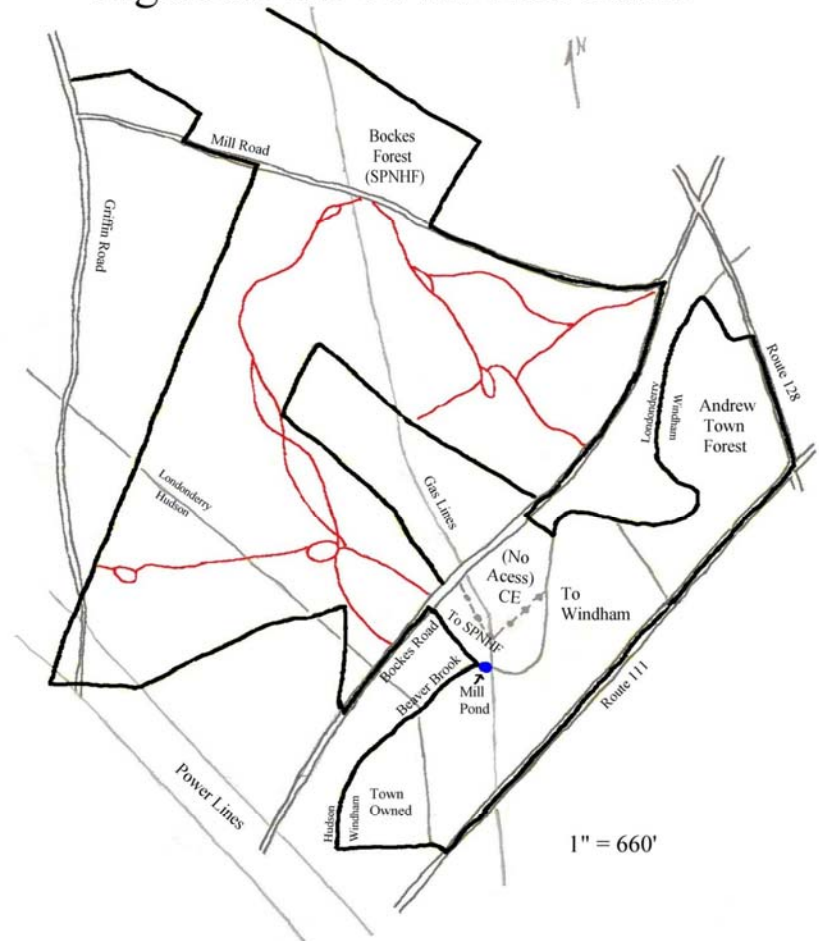
Before refrigerators were used, this lake used to be the main source providing the town with ice. Now, it is home to many animals including beavers, muskrats, turtles, geese, ducks, and a blue heron nesting ground. In the lake, large mouth bass, blue gills, sunfish, and pickerel can all be found.

In 2005, Ottarnic Pond was treated for Milfoil through DES. Now they participate in the Lake Host Program to continue monitoring the lake.



Ingersoll Tree Farm Map

Ingersoll Tri-Town Tree Farm



Merrifield

Size: 5.77 acres

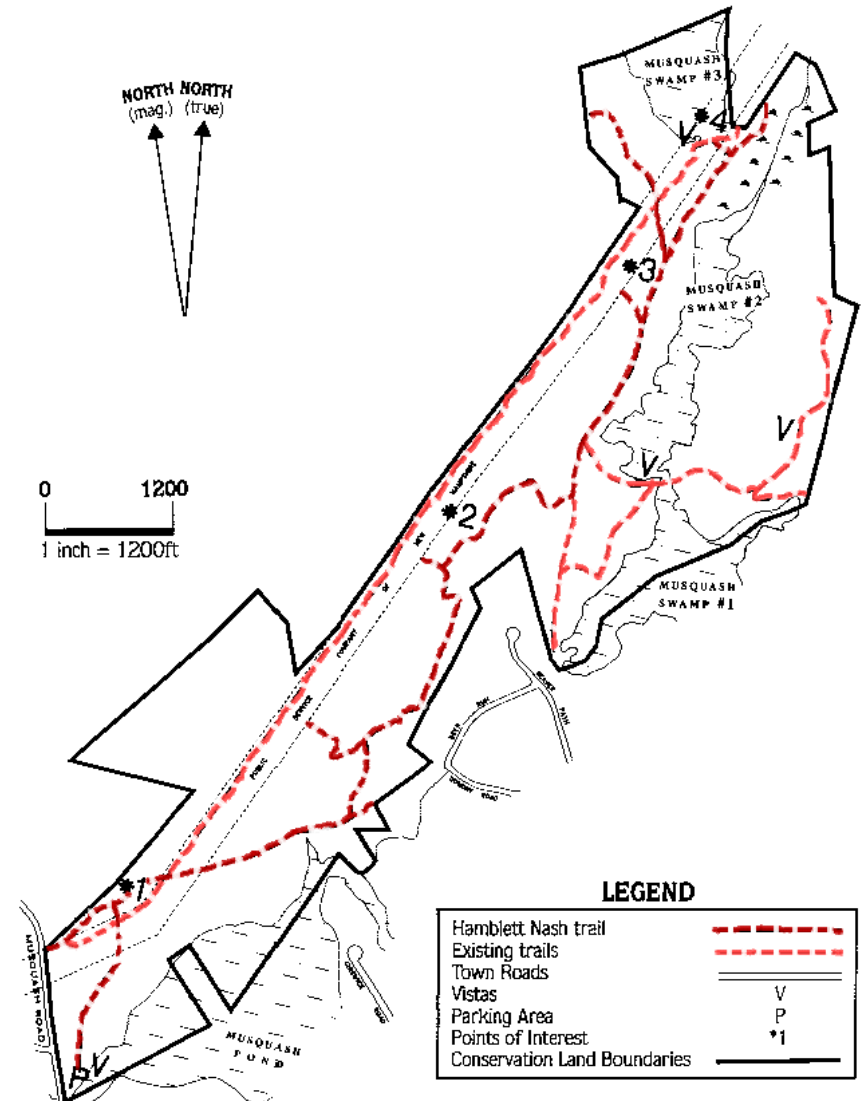
Location: off of Ferry St. (visible from the road), about .5 mi from the intersection with Rt. 111.

Recreational Activities: beach volleyball, geocaching, picnicking, playground

History and Description: This small park is close to and visible from the road. It is a great place to take the family as there is a playground and beach volleyball. Also, there are several picnic tables and grills which were installed by the Junior Woman's Club.



Musquash Conservation Land Map



Musquash Conservation Land

Established: 1991

Size: 416.5 acres

Location: off of Musquash Rd. just north of where the outlet from the pond crosses under the road. There is an area for parking at the entrance.

Recreational Activities: bird watching, canoeing, cross country skiing, walking, kayaking, photography

History and Description: The Musquash Conservation Land has many trails that are perfect for walking. At the entrance, near parking, there is a decent place in which to launch canoes and similar boats. There are also many historical sites to see which are numbered on the map.

1. Deacon Merrill Homestead – the remains of the house, well, barn, and corral, built in the early 1700s, can be seen here. It belonged to one of Hudson's first settlers, the Merrill family.
2. Merrill Hill Habitat – with its dry land and sunny slope, this area is home to some of New Hampshire's threatened plants and animals including slender bush-clover, rue anemone, smooth forked chickweed, and the eastern box turtle.
3. Upper Foundation – the foundations of a house and a barn thought to be built around 1830's because of the recent discovery of a dime at the site.
4. Third Swamp – a unique area because of its hydrologic position. It drains into both Musquash Brook and into Second Brook.



Merrill Park

Size: 9.3 acres

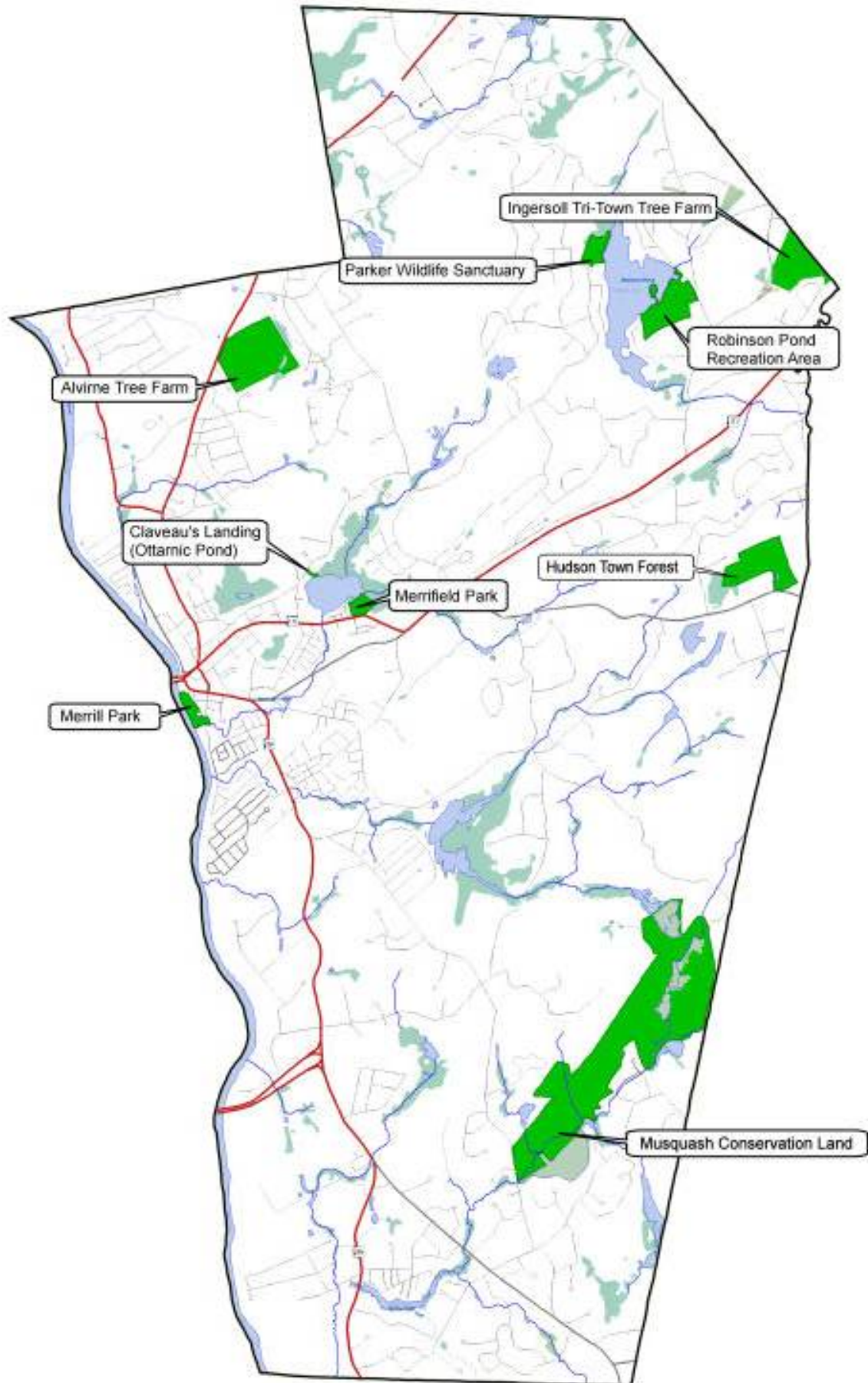
Location: turn onto Maple Ave from Central St and follow to the end where the road heads into the park. Parking is at the entrance, and there is enough for a few cars.

Recreational Activities: bird watching, canoeing, kayaking, photography, picnicking

History and Description: The park is in a pretty secluded area which was purchased and developed with a grant from the Land and Water Conservation Fund. It hosts a few picnic benches and contains a path which leads down to the side of the Merrimack River. Although cars are not allowed into the park, a canoe or kayak could be carried down the path to the river.



Hudson Conservation Lands Map





Volunteer Lake Assessment Program Individual Lake Reports

ROBINSON POND, HUDSON, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	832	Max. Depth (m):	9	Flushing Rate (yr ⁻¹)	1.3
Surface Area (Ac.):	88	Mean Depth (m):	3.3	P Retention Coef:	0.68
Shore Length (m):	2,900	Volume (m ³):	1,189,000	Elevation (ft):	211

TROPHIC CLASSIFICATION

Year	Trophic class
1979	EUTROPHIC
1988	MESOTROPHIC

KNOWN EXOTIC SPECIES

Variable Milfoil
Fanwort

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

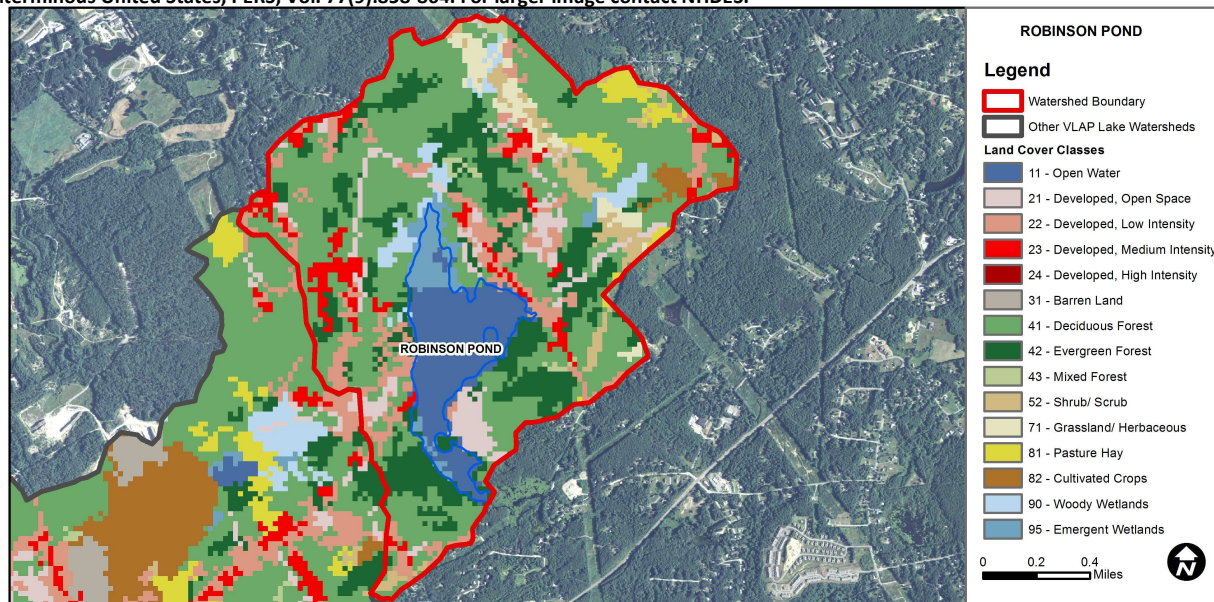
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	>=5 samples and median is >threshold.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Slightly Bad	>5 samples and median is > threshold.
Primary Contact Recreation	E. coli	Bad	>=1 exceedance(s) of geometric mean criterion and/or >=2 exceedances of single sample criterion, with 1 or more >2X criteria.
	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

ROBINSON POND - CAMP WINAHUPE BEACH	E. coli	No Data	No Data for this parameter.
ROBINSON POND - TOWN BEACH	E. coli	Bad	>=1 exceedance(s) of geometric mean criterion and/or >=2 exceedances of single sample criterion, with 1 or more >2X criteria.
ROBINSON POND - TOWN BEACH	Cyanobacteria	Bad	Cyanobacteria bloom(s).

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	8.96	Barren Land	0	Grassland/Herbaceous	2.54
Developed-Open Space	5.36	Deciduous Forest	41.72	Pasture Hay	2.24
Developed-Low Intensity	9.13	Evergreen Forest	15.64	Cultivated Crops	0.88
Developed-Medium Intensity	4.33	Mixed Forest	0.64	Woody Wetlands	2.29
Developed-High Intensity	0	Shrub-Scrub	3.66	Emergent Wetlands	2.63



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

ROBINSON POND, HUDSON, NH

2013 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

♣ **CHLOROPHYLL-A:** Chlorophyll levels were elevated particularly in July and August when levels exceeded 15.0 ug/L and indicated an algal bloom was occurring. Historical trend analysis indicates relatively stable chlorophyll with moderate variability between years.

♣ **CONDUCTIVITY/CHLORIDE:** Conductivity and chloride were elevated at all stations, particularly Sta. 7 Row and Sta. 6 Woodcrest Brook.

♣ **E. COLI:** July E. coli levels were elevated at Sta. 2 Launch Brook and Sta. 5 Stoney Lane Drainage following significant storm event prior to sampling and stormwater runoff likely contributed to elevated levels. E. coli levels were less than the state standard for surface waters at all other stations.

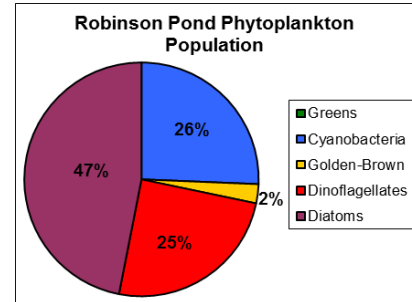
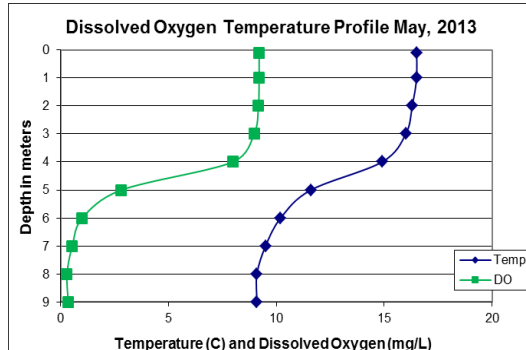
♣ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels were slightly above average and greater in July and September when turbidity was higher. Historical trend analysis indicates relatively stable epilimnetic phosphorus with moderate variability between years. Metalimnetic phosphorus was elevated in July and August during the algal bloom and cyanobacteria were visible in the August sample. Hypolimnetic phosphorus increased as the summer progressed due to internal phosphorus loading from bottom sediments. Sta. 5 Stoney Lane Drainage had elevated phosphorus levels in July and August. Samples were a dark brown/orange color and iron bacteria precipitate was noted in the August sample. Phosphorus levels were elevated at Sta. 6 Woodcrest Brook on each sampling event and the samples were also highly rust colored and turbid in July and August. This indicates that these stations are high in mineral and organic content which could contribute to the elevated phosphorus and conductivity. Sta. 7 Row phosphorus was elevated in July during low flow conditions.

♣ **TRANSPARENCY:** Transparency was good in May and June, decreased in July due to the algal bloom and time collected, improved in August because the cyanobacteria migrated to the metalimnion, and decreased again in September. Historical trend analysis indicates significantly decreasing (worsening) transparency since monitoring began.

♣ **TURBIDITY:** Epilimnetic turbidity was slightly elevated in July and September potentially due to algae or stormwater runoff from significant storm events. Metalimnetic turbidity was elevated in August and September due to a layer of cyanobacteria. Hypolimnetic turbidity was elevated July through September due to the release of organic compounds from bottom sediments under anoxic conditions. Turbidity was elevated in Sta. 5, 6 and 7 in July and/or August due to organic matter and high mineral content.

♣ **PH:** Metalimnetic and Hypolimnetic pH levels were less than desirable range on several sampling events.

♣ **RECOMMENDED ACTIONS:** The increased frequency and intensity of storm events highlights the importance of managing stormwater runoff, particularly in the Sta. 5, 6 and 7 sub-watersheds. It is recommended to perform a watershed survey to identify culverts, storm drains, areas of erosion and other potential pollutant loads, and then prioritize areas to implement stormwater best management practices. Consider contacting a Certified Stormwater Storm Water Quality Professional to evaluate the watershed. To reduce conductivity and chloride levels, encourage local road agents and winter maintenance companies to obtain a Voluntary NH Salt Applicator license through the UNH Technology Transfer Center's Green SnowPro Certification. Keep up the great work!



NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

Alkalinity: 4.9 mg/L

Chlorophyll-a: 4.58 mg/m³

Conductivity: 40.0 uS/cm

Chloride: 4 mg/L

Total Phosphorus: 12 ug/L

Transparency: 3.2 m

pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

Chloride: < 230 mg/L (chronic)

E. coli: > 88 cts/100 mL – public beach

E. coli: > 406 cts/100 mL – surface waters

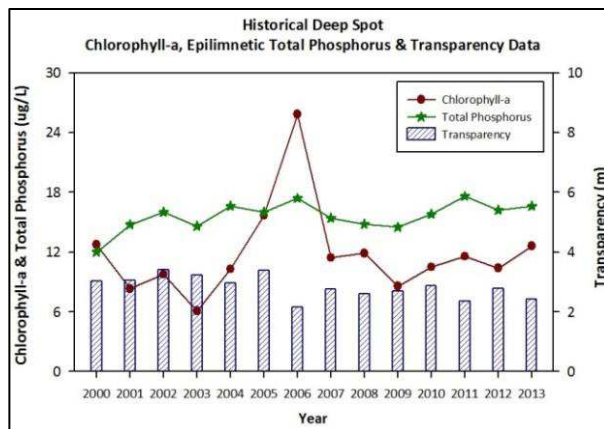
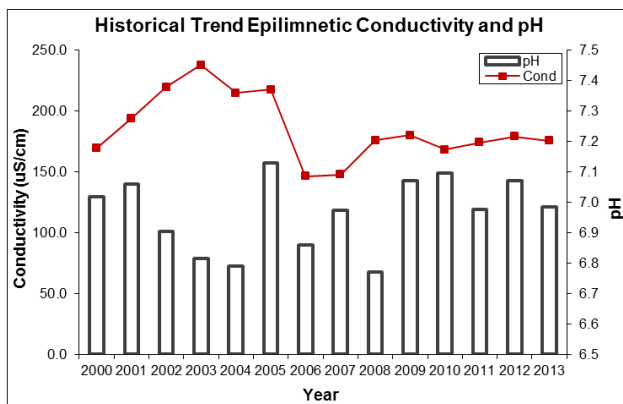
Turbidity: > 10 NTU above natural level

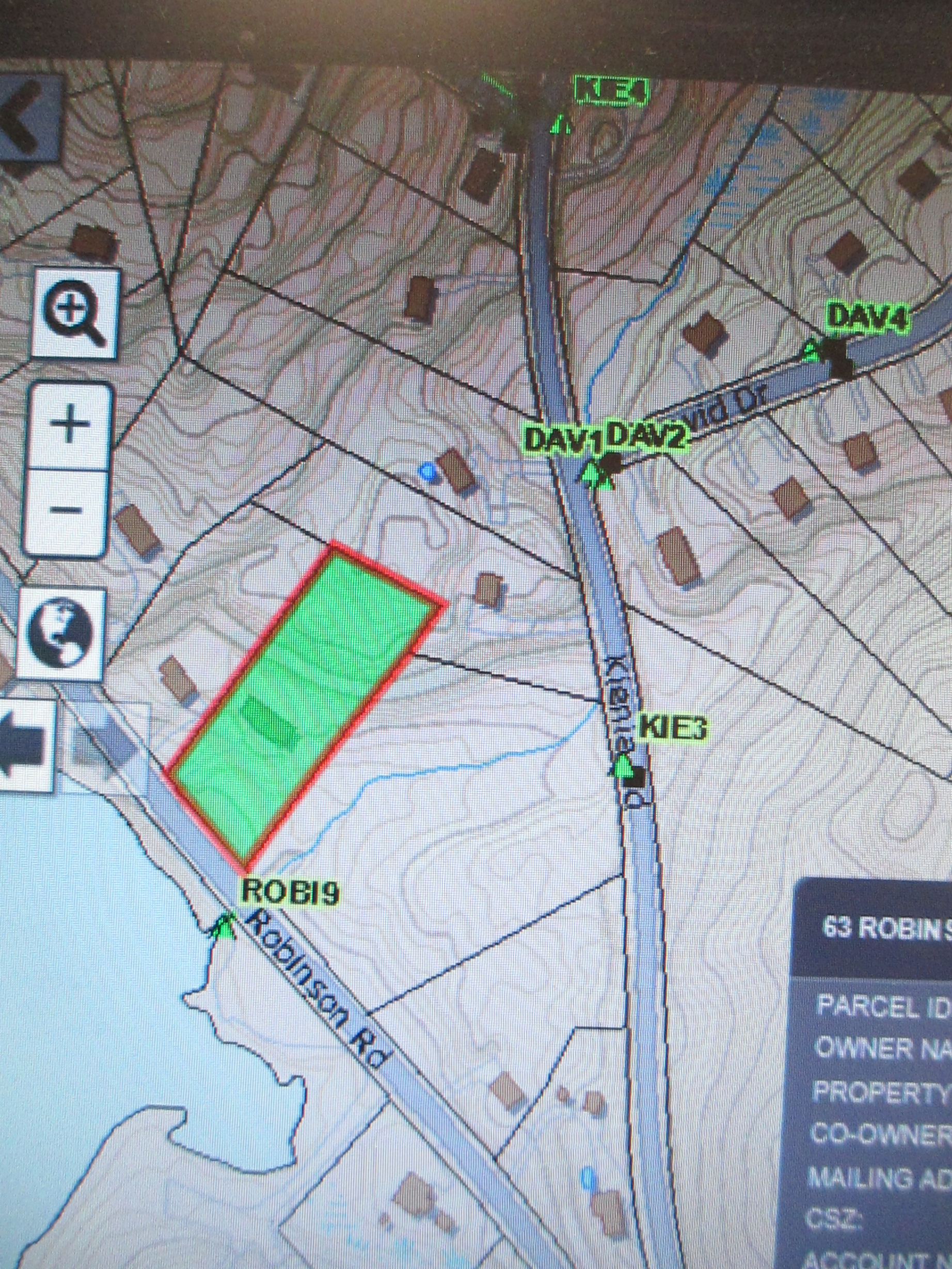
pH: 6.5-8.0 (unless naturally occurring)

Station Name	Table 1. 2013 Average Water Quality Data for ROBINSON POND									
	Alk.	Chlor-a	Chloride	Cond.	E. Coli	Total P	Trans.	Turb.	pH	
	mg/l	ug/l	mg/l	uS/cm	#/100ml	ug/l	m		ntu	
							NVS	V\$		
Epilimnion	15.1	12.6	34	175.7		17	2.43	3.25	1.32	6.99
Metalimnion				182.4		38			5.22	6.56
Hypolimnion				202.2		110			14.1	6.47
Sta 2 Launch Brook			40	225.9	170	25			0.87	7.03
Sta 3 Howard Brook			14	90.7	45	19			0.59	6.20
Sta 4 Juniper Brook			35	216.4	16	17			0.28	6.45
Sta 5 Stoney Lane Drainage			29	188.5	85	60			15.75	6.55
Sta 6 Woodcrest Brook			67	315.0	67	120			13.64	6.35
Sta 7 Row			73	349.7	47	82			16.09	6.39

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
Conductivity	Stable	Trend not significant; data moderately variable.	Transparency	Degrading	Data significantly decreasing.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.





ROBI9

Robinson Rd

DAV1 DAV2

DAV4

KIE3

63 ROBINSON

PARCEL ID
OWNER NAME
PROPERTY
CO-OWNER
MAILING ADDRESS
CSZ
ACCOUNT NUMBER

