



# **China Lake Shoreline and Stream Survey 2003**

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W,Y

44,50

# **Shorefront and Stream Survey: West Basin 2003**

## **Introduction**

### ***Shorefront Survey***

The shorefront and stream survey of the West Basin of China Lake was done on May 27, 28, June 5 and 12<sup>th</sup> to follow up the survey that David Landry of the China Lake Association did in June of 2000. The survey that David Landry did was of the East and North Basins and did not survey any part of the West Basin. The objective of both surveys was to identify sites of erosion and rate them on a scale of minor to severe effect on the lake water quality. Both David Landry and Jenna Richardson were trained and had experience with surveying. All the surveying was done within 15 feet from the shoreline. Binoculars were used where it was hard to see the shoreline. The results of this survey will help the China Region Lakes Alliance (CRLA) identify spots where the conservation corps might do work in the following summers. This survey also identifies how much of the total shorefront is being eroded.

A site was written up and photographed if it included 5 or more linear feet of exposed and eroding soils. The site numbers are a continuation of the East basin shoreline survey, which ended at site 43. The sites were not paced off, so the measure is a "best estimate" and somewhat subjective. It was noted when the site had evidence of previous erosion or was considered "at risk" for future erosion. A high percent of sites in the West Basin showed signs of erosion but were not currently eroding. Each site was given an estimate of the priority to fix it (see priority list). This was based on three factors. First was the amount of exposed soil eroding, second was the accessibility of the site to laborers and third was landowner interest in fixing the sites. All of the land surveyed is owned by the Kennebec Water District. They have a vested interest in fixing any sites that need work. We found that the total currently eroding and "at risk" shorefront was 1,341 feet. This number is much lower than the 3,161 feet of the East Basin. There is 35,180 Feet of total shoreline in the West basin, which means that 3.8% of the entire west basin is currently eroding.

Site 48 was not an eroding site. It was included to show "ice-barging" that sometimes occurs to large rocks. Local residents familiar with this part of the lake report that rocks have been stable for the past 20 years.

At the end of this report the reader will find a prioritized list of projects. This list can guide CLA, The Kennebec Water District, CRLA and the conservation corps for restoration projects.

### ***Stream Survey***

On May 26 the day before this survey there was about 3/4 inch of rain. The stream survey was done by finding the entry of the tributary into the lake and then getting out of the boat and walking up the stream 100 to 800 meters. The lake level on the day of the survey was at 3 inches over spillway. Because of spring rains the

streams were flowing higher than average. Some of the rivers dry up or only have subsurface flow during the summer. We noted the estimated flow rates for each stream on a scale of low to high. There were 8 streams total that we found in the survey.

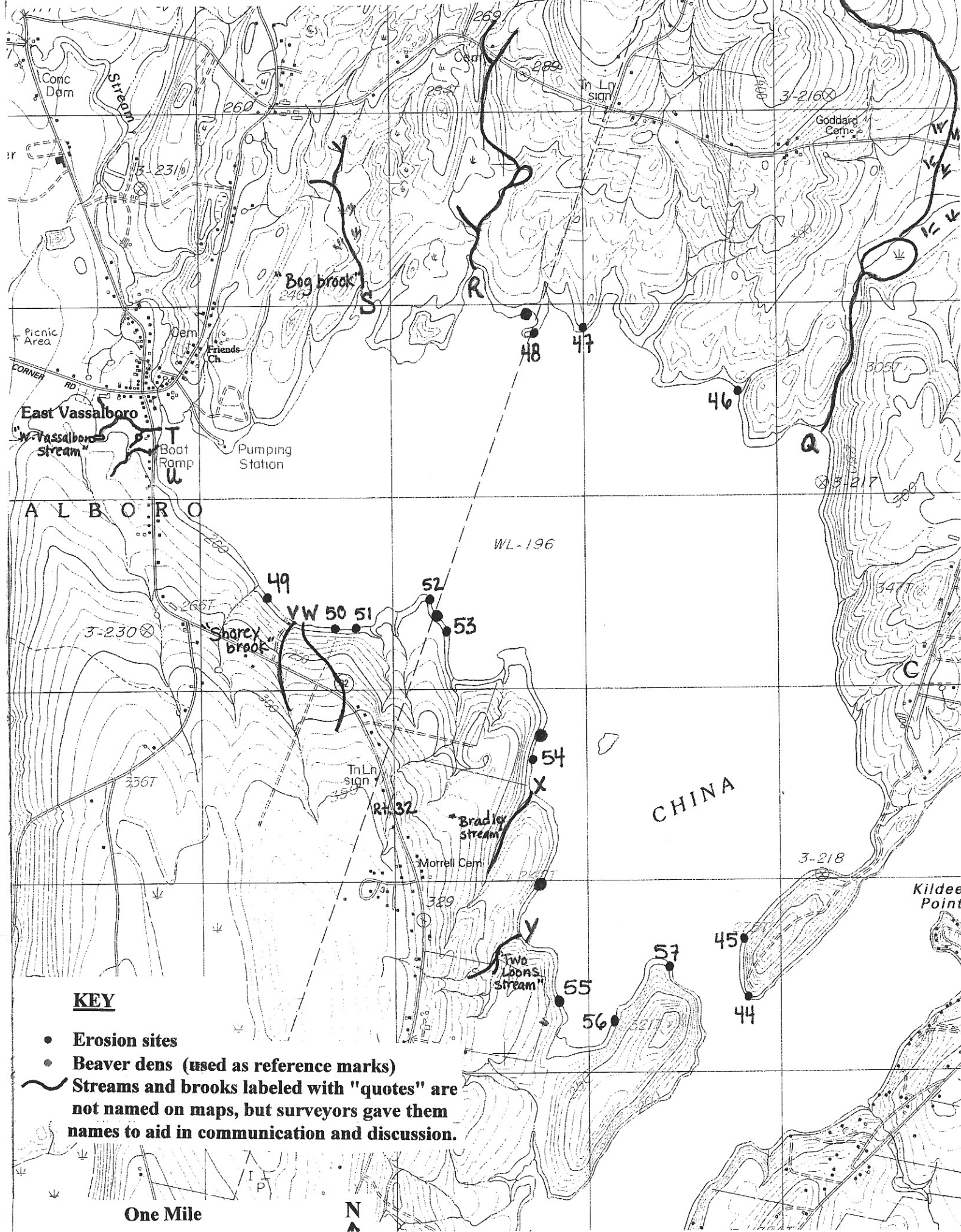
Although the streams on the north shore of the west basin drain a large area of land, most of it is undisturbed. There is not much development and few roads running through their direct watersheds. These streams were running clear and most likely do not contribute any significant amount of phosphorus to the lake.

All the streams and drainage ditches on the south shore of the west basin except the stream labeled "X" contribute noticeable amounts of soil and phosphorus into the lake. Although these streams drain a smaller area of land, it is more developed with roads, houses and agricultural land. The streams on this side of the west basin also have higher flows during large rain storms. This higher velocity could contribute significant amounts of phosphorus from upland erosion and from bank undercutting. Road work and development along Route 32 has the potential to worsen the problems seen in streams V and W, if proper best management practices are not correctly administered. Streams V, W and Y will need further evaluation.

Questions and comments can be directed to either the China Lake Association P.O. Box 215 China Village, Me 04926 or the China Region Lakes Alliance 571 Lakeview dr. China , Me 04358.



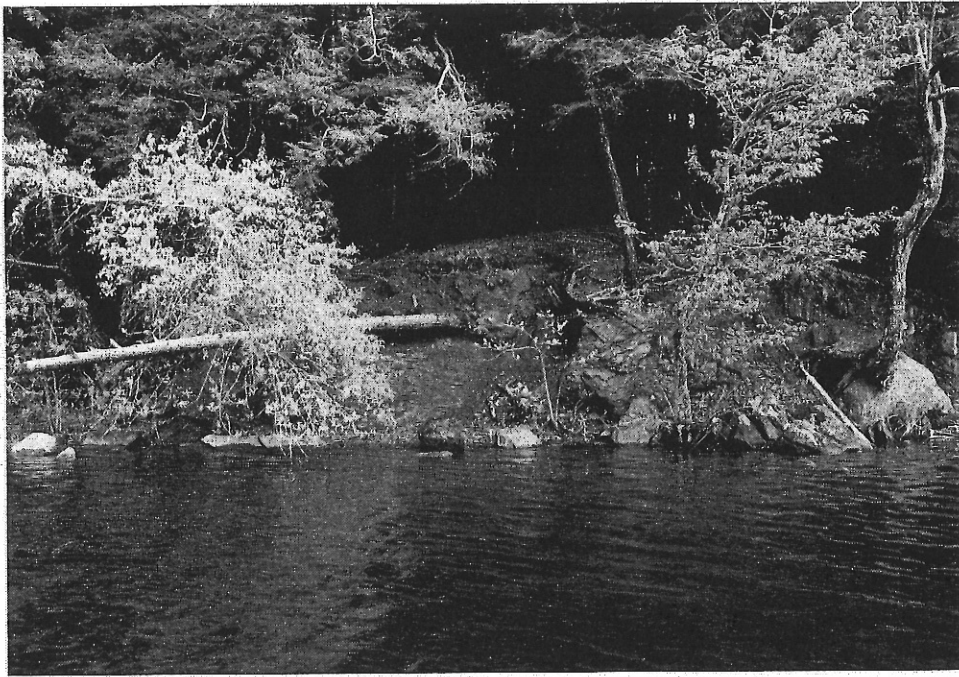
# West Basin Shorefront and Stream Survey 2003



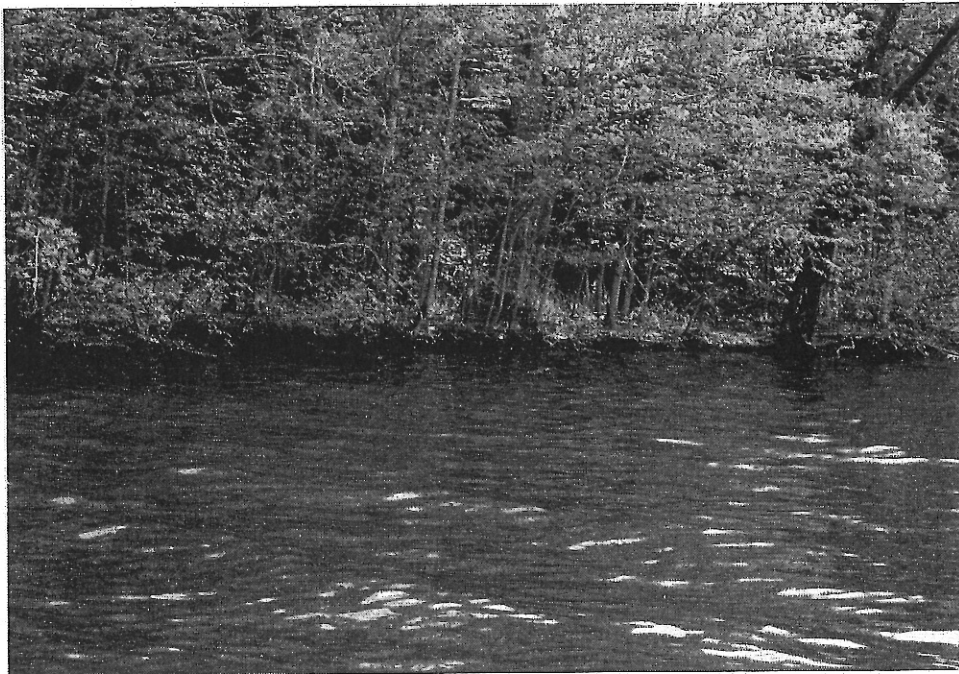
## Shoreline Sites

Site #	Site Description	How many photos?	Linear Feet of erosion
44	Upland erosion just East of KWD beach on North side of the narrows. Very steep slope.	1	10
45	50 Feet of low level erosion, but well vegetated	1	50
46	Very small amount of erosion, potential for much more if the water level is raised, 30 Ft. section	1	30
47	Minor eroding area, 100 ft., soft shore, but not much wave action in cove.	1	100
48	Evidence of past "ice-barging" of rock. No evidence of recent vegetation or soil damage.	2	-
49	150 Ft. of "at risk" area that might erode with higher lake levels	1	150
50	5-6 ft. of bare soil, where tree is being undercut, next to Shorey property	1	6
51	100 ft. of "at risk" area, very low in water with no rip rap barrier, just beyond Shorey Brook	1	100
52	100 ft. of "at risk" area	1	100
53	120 ft. of low shoreline with slight erosion, near beaver dam that is next to Mile Shoal, some dirt coming from under the trees	1	120
54	Steep bank, mostly vegetated, but slightly eroding	1	75
55	350ft. of slumping shoreline, next to the new house in boggy, wetland cove	1	350
56	250 ft. of "at risk" area, no active erosion, but low shoreline	1	250
57	Bank collapsing: 40 ft across with 5 ft. face, upland erosion, severe	1	40

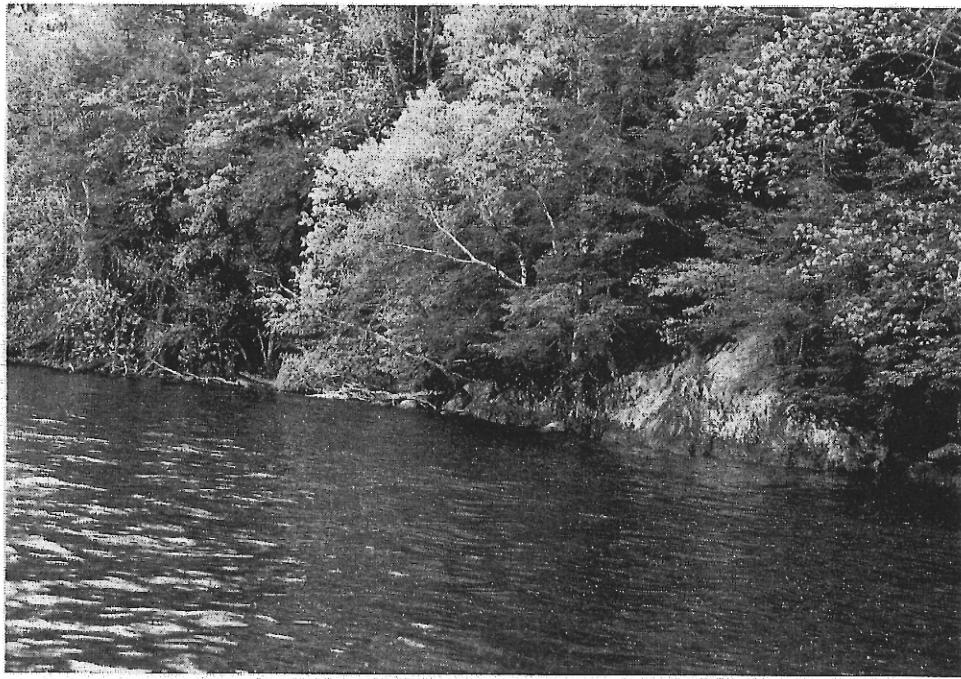
Estimated eroding shorefront noted in survey 1,341 feet with total shorefront in West Basin noted to be 35,180 feet. This means that 3.8 % of total shorefront in the West Basin is eroding.



Site 44



Site 45



Site 46



Site 47





Site 48a



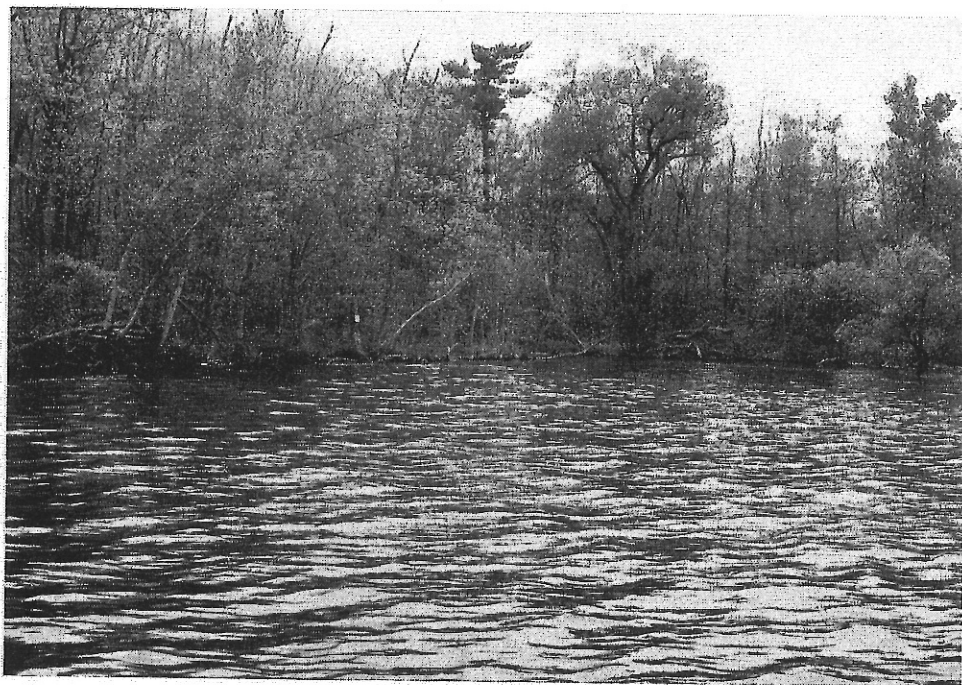
Site 48b



Site 49



Site 50



Site 51



Site 52





Site 53



Site 54





Site 55



Site 56



Site 57

### **Prioritized List of Shoreline Sites**

<b><u>Site #</u></b>	<b><u>Priority</u></b>	<b><u>Comments</u></b>
<b>57</b>	<b>High</b>	<b>Severe erosion</b>
<b>44</b>	<b>High</b>	<b>Steep slope, severe erosion</b>
<b>55</b>	<b>High</b>	<b>Slumping shoreline, large area</b>
<b>50</b>	<b>Medium</b>	<b>Severe erosion but very small area</b>
<b>53</b>	<b>Medium</b>	<b>Slight erosion, large area</b>
<b>47</b>	<b>Low</b>	<b>Minor erosion</b>
<b>54</b>	<b>Low</b>	<b>Steep bank, but mostly vegetated</b>
<b>45</b>	<b>Low</b>	<b>Minor erosion</b>
<b>46</b>	<b>Low</b>	<b>Minor erosion</b>

**At risk sites were not included in this list because they are not currently eroding.**

## **Stream Survey West Basin 2003**

### **Summary of Photographs**

**Q. Ward Brook-** this stream is the largest contributor to the West Basin draining several square miles of land. Between the lake and the Stanley Hill Road, the watershed of the brook contains forested land with no recent logging activity and a 20 acre upland pond. Closer to the Stanley Hill Road is a 15 acre wetland. The brook traverses the Stanley Hill Road East of Meadow Brook Farm. The headwaters of the brook are West of the Maple Ridge Road with the course between the Maple ridge and Stanley Hill Road being mainly undisturbed woodlands. Some light logging is taking place in this area. The stream is stained with tannins South of the Stanley Hill Road but is free of suspended matter.

**R. Small intermittent stream with minimal flow.** This stream has two small contributing branches starting North of the Stanley Hill Road. One branch is from a manmade pond (photo) on the East side of a residential property with a smaller branch being found on the West side of the house. Both branches cross the road in culverts join and the flow down to a 5 acre pond (photo) . Minimal flows are noted from the pond to the lake and locals note water flows only in very wet times.

**S. "Bog Brook"** runs clear (photo) from a 20 acre bog (photo) located 300 feet from the lakes edge. Signs of human activity along the stream and bog from many years ago are noted including an old dam at edge of bog. The source of the water is the land at the junction of the Brann road and the Stanley Hill Road. It is noted that a junk yard lies along and in some of the wet land above the bog. This brook is second in water volume (for the west basin - Ward brook being the biggest).

**T. Stream at Western side of East Vassalboro boat landing (photo).** Drains area along Route 32 (Photo) and from area to the South of Route 32 that includes a farm.

**U. Roadside drainage East of the landing (photo)** crosses the highway and ends in a small retention pond (photo). During periods of heavy rain the pond overflows into the lake.

**V. "Shorey Brook"** seen emptying into the lake (photo) immediately to the East of the Shorey Property. The stream's source is in wet areas South of Route 32 and then from road side ditching (photo). The stream can recruit significant volumes of water from the road side ditches and eroded stream banks are evident. (photo) The stream ran clear at the time of the survey. This stream is the third largest stream flowing into the West basin.

**W. "Shorey Brook- East".** This smaller stream empties into the lake 200 feet to the East of the first brook. It is smaller in it's usual contribution to the lake but recruits large amounts of water from Route 32 ditching. The stream crosses Route 32

obscured by undergrowth at mailbox 77/75(photo). Extensive stream bank stabilization was done about 8 years ago with rock and fabric seen (photo). Silt was evident (photo) in the stream. Before emptying into the lake water slows in a large low area (photo) where many of the fines seem to settle out. Of all the streams surveyed, this stream has the potential to carry the most soil into the lake during heavy rain events. A residential property is within 15 feet of the stream near Route 3 with runoff from the area evident along the stream bank.

**X. "Bradley Stream"** across from Bradley Island is low flow, intermittent draining adjacent wet areas.

**Y. "Two Loons Stream"** This low volume stream empties into the lake around a group of blow downs (photo). The banks are deeply cut (18-24 inches) (photos) with a lot of silt and fine material evident in lower part of the stream. The stream's watershed includes fields in the two loons farm area. There is evidence that during periods of heavy rainfall significant volumes of water and soil are washed into the lake.

There are 8 identifiable streams or intermittent water sources emptying into the West Basin not counting the thoroughfare from the East Basin. Ward Brook is the most significant stream both in area drained and volume of water contributed. All streams on the North side of the West basin run clear owing to the undisturbed forest or fields through which they flow. All of the Streams, except X, on the South side of the West Basin have the potential to dump soil into the lake given their proximity to Route 3. "Shorey Brook East" was a problem 8 years ago and continues to be a concern.

## Stream Sites

Site	Site Description	How many photos?
Q	Ward Brook: moderate flow, tannins in water make it appear brownish, but it is clear, no sedimentation, 3 ft. deep in inlet area, well vegetated stream banks	1
R	Small intermittent stream: low flow, about a foot wide, but probably not draining a large area, also probably dries up in the summer, running clear	3
S	"Bog Brook" Running clear from a large bog: moderate flow, Signs of human activity along the shore of the stream from many years ago. Wide stream and no undercutting, well vegetated, running clear	2
T	"West Vassalboro Stream" Low flow, drainage from West side of Vassalboro boat landing, drains from farm up the rd. at the four corners, running clear	2
U	Roadside drainage ditch, East of Vassalboro boat launch, comes from across Rt. 32, low flow, except in heavy rain when the retention pond it comes from overflows into the lake	2
V	"Shorey Brook" moderate flow, 3 ft across, a little smaller than Bog Brook, flowing heavily over many rocks, crystal clear	3
W	"Shorey Brook East" moderate flow in upland (mostly from roadside ditching), but low flow closer to lake There is a low area adjacent to lake where water slows down.	4
X	"Bradley Stream" Across from Bradley Island: low flow, barely a stream	1
Y	"Two Loons Stream" low flow, but evidence of high velocity flow during rain events. Lake in the cove where this empties is full of sand and silt that has been deposited there over the years.	3





Site Q



Site Ra



Site Rb



Site Rc





Site Sa



Site Sb



Ta



Tb

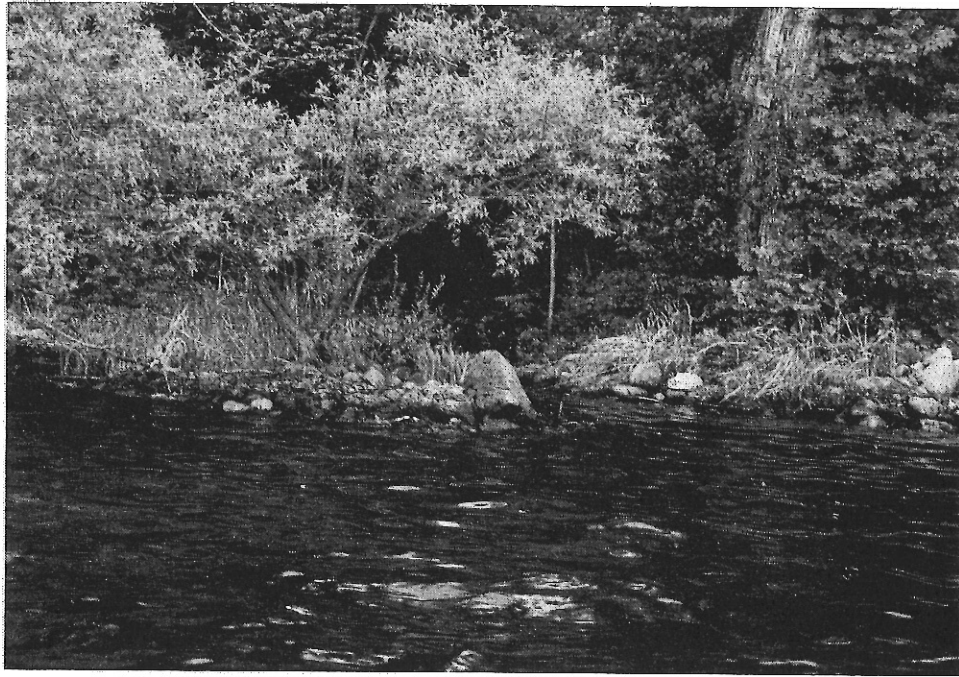


Site Ua

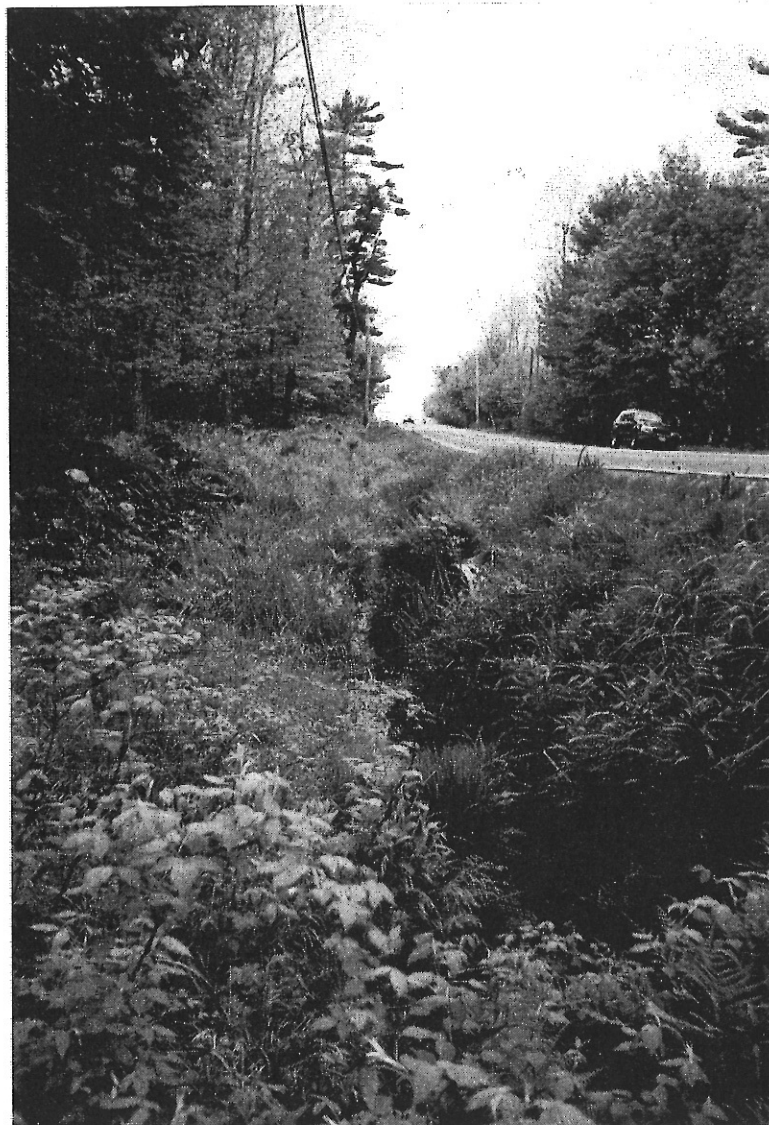


Site Ub





Site Va



Site Vb



Site Vc



Site Wa

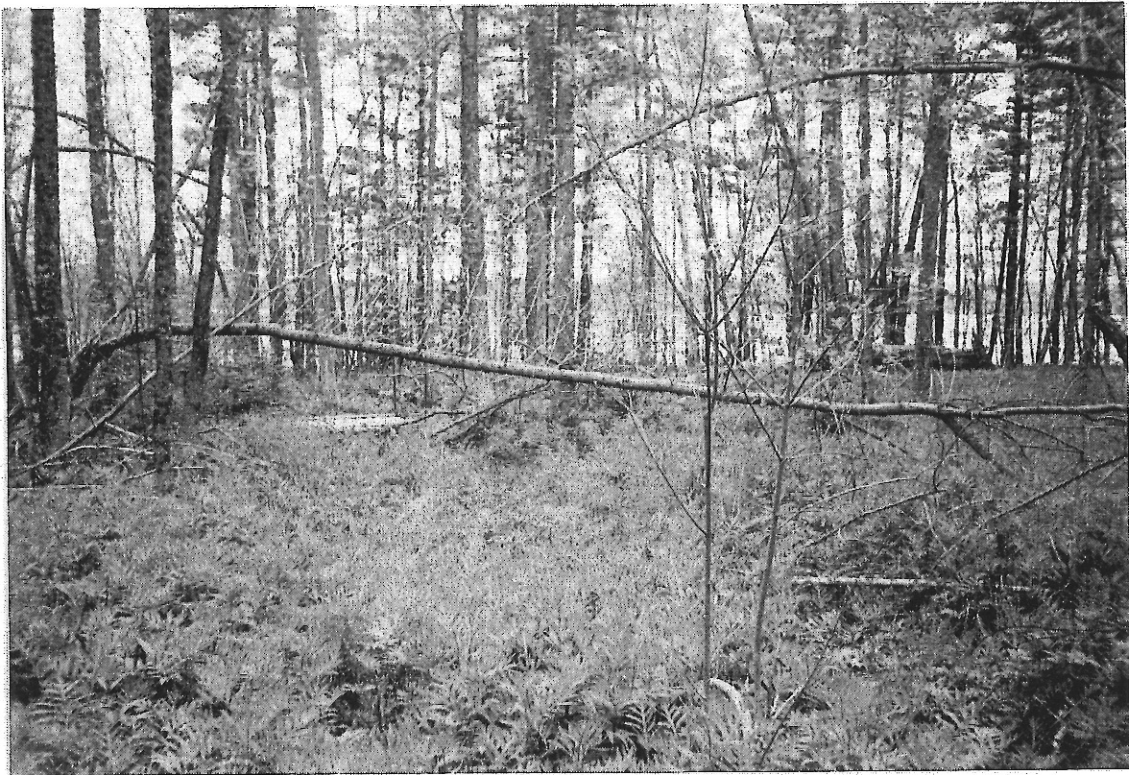


Site Wb



Site Wc





Site Wd



Site X



Site Ya



Site Yb





Site Yc

### Prioritized List of Stream Sites

<u>Site</u>	<u>Priority</u>	<u>Comments</u>
Y	High	Bank erosion is severe
W	High	Runoff from Rt. 32 deposits soil into lake
U	Medium	Drainage ditch with high velocity
V	Medium	Moderate flow from developed area
T	Medium	Flows from developed areas
X	Low	No sign of erosion, flows from
S	Low	undeveloped lands
Q	Low	same as above
R	Low	same as above