APPENDIX B HABITATS AND ENVIRONMENTALLY SENSITIVE AREAS

COASTAL FISH & WILDLIFE HABITAT RATING FORM

Name of Area: **Eighteen Mile Creek - Lake Erie**
Designated: **October 15, 1987**
County: **Erie**
Town(s): **Evans, Hamburg**
7½' Quadrangle(s): **Eden, NY**

Score	Criterion
25	Ecosystem Rarity (ER) One of the two largest New York State tributaries of Lake Erie; relatively undisturbed streams of this size that provide habitat for lake-based fisheries are rare in the Great Lakes Plain ecological region.
0	Species Vulnerability (SV) No endangered, threatened or special concern species reside in the area.
9	Human Use (HU) One of the most popular fishing areas in western New York.
6	Population Level (PL) One of the top 4 salmonid spawning streams among Lake Erie tributaries; geometric mean: (4 x 9)½
1.2	Replaceability (R) Irreplaceable.

SIGNIFICANCE VALUE = [(ER + SV + HU + PL) X R] = 48

DESIGNATED HABITAT: EIGHTEEN MILE CREEK

LOCATION AND DESCRIPTION OF HABITAT:

Eighteen Mile Creek empties into Lake Erie at the hamlet of Highland-on-the-Lake, on the boundary between the Towns of Hamburg and Evans, Erie County. The fish and wildlife habitat extends approximately five miles from Lake Erie to the confluence of the Main and South Branches of the creek, through the Towns of Hamburg, Evans, and Eden (7.5' Quadrangle: Eden, N.Y.). Eighteen Mile Creek is a large, meandering, warmwater stream, with predominantly rock and gravel substrates. The creek drains approximately 120 square miles of agricultural land, rural residential areas, and forested hills. Eighteen Mile Creek is situated in a steep sided, undeveloped, wooded gorge, characterized by shale cliffs (70-100 feet high) and mature deciduous forest. The lower half-mile of Eighteen Mile Creek is low gradient, occupying a broad, undisturbed, floodplain.

FISH AND WILDLIFE VALUES:

Eighteen Mile Creek is the second largest tributary of Lake Erie in New York State, and there are few comparable streams in the Great Lakes Plain ecological region. Undisturbed tributary streams that provide habitat for major spawning runs by salmonids and other lake-based fish populations are especially important in this region. Eighteen Mile Creek is particularly significant because large concentrations of coho salmon, chinook salmon and brown trout migrate from Lake Erie into the creek each fall, from late August through December (September-November, primarily), when salmonids ascend the streams to spawn (although unsuccessfully in most instances). In addition, steelhead (lake-run rainbow trout) migrate into Eighteen Mile Creek during the fall and between late February and April. Runs of trout and salmon occur beyond the junction of the Main and South Branches of the creek, but population levels are not well developed above this point. These fish populations are the result of an ongoing effort by the NYSDEC to establish a major salmonid fishery in the Great Lakes through stocking. In 1984, approximately 40,000 coho salmon, and 18,000 steelhead were released in Eighteen Mile Creek. Among New York's Lake Erie tributaries, Eighteen Mile Creek ranked third for numbers of salmonids stocked in 1984; the creek was one of only four in the region that received steelhead. Eighteen Mile Creek also supports substantial natural reproduction by smallmouth bass, and has runs of various lake-dwelling species, such as white sucker, carp, freshwater drum, and brown bullhead. Black redhorse (SC) were reported at the mouth of the creek in the 1920's, but this species has not since been confirmed in the area.

Eighteen Mile Creek provides a major salmonid fishery to anglers in the Lake Erie coastal region. Although access is somewhat limited by the surrounding topo-graphy, the stream received an estimated 3,800 angler trips during September and October 1982. Smallmouth bass fishing also attracts local anglers to the area in early summer.

IMPACT ASSESSMENT:

A **habitat impairment test** must be met for any activity that is subject to consistency review under federal and State laws, or under applicable local laws contained in an approved local waterfront revitalization program. If the proposed action is subject to consistency review, then the habitat protection policy applies, whether the proposed action is to occur within or outside the designated area.

The specific **habitat impairment test** that must be met is as follows.

> In order to protect and preserve a significant habitat, land and water uses or development shall not be undertaken if such actions would:

- destroy the habitat; or,
- significantly impair the viability of a habitat.

Habitat destruction is defined as the loss of fish or wildlife use through direct physical alteration, disturbance, or pollution of a designated area or through the indirect effects of these actions on a designated area. Habitat destruction may be indicated by changes in vegetation, substrate, or hydrology, or increases in runoff, erosion, sedimentation, or pollutants.

Significant impairment is defined as reduction in vital resources (e.g., food, shelter, living space) or change in environmental conditions (e.g., temperature, substrate, salinity) beyond the tolerance range of an organism. Indicators of a significantly impaired habitat focus on ecological alterations and may include but are not limited to reduced carrying capacity, changes in community structure (food chain relationships, species diversity), reduced productivity and/or increased incidence of disease and mortality.

The *tolerance range* of an organism is not defined as the physiological range of conditions beyond which a species will not survive at all, but as the ecological range of conditions that supports the species population or has the potential to support a restored population, where practical. Either the loss of individuals through an increase in emigration or an increase in death rate indicates that the tolerance range of an organism has been exceeded. An abrupt increase in death rate may occur as an environmental factor falls beyond a tolerance limit (a range has both upper and lower limits). Many environmental factors, however, do not have a sharply defined tolerance limit, but produce increasing emigration or death rates with increasing departure from conditions that are optimal for the species.

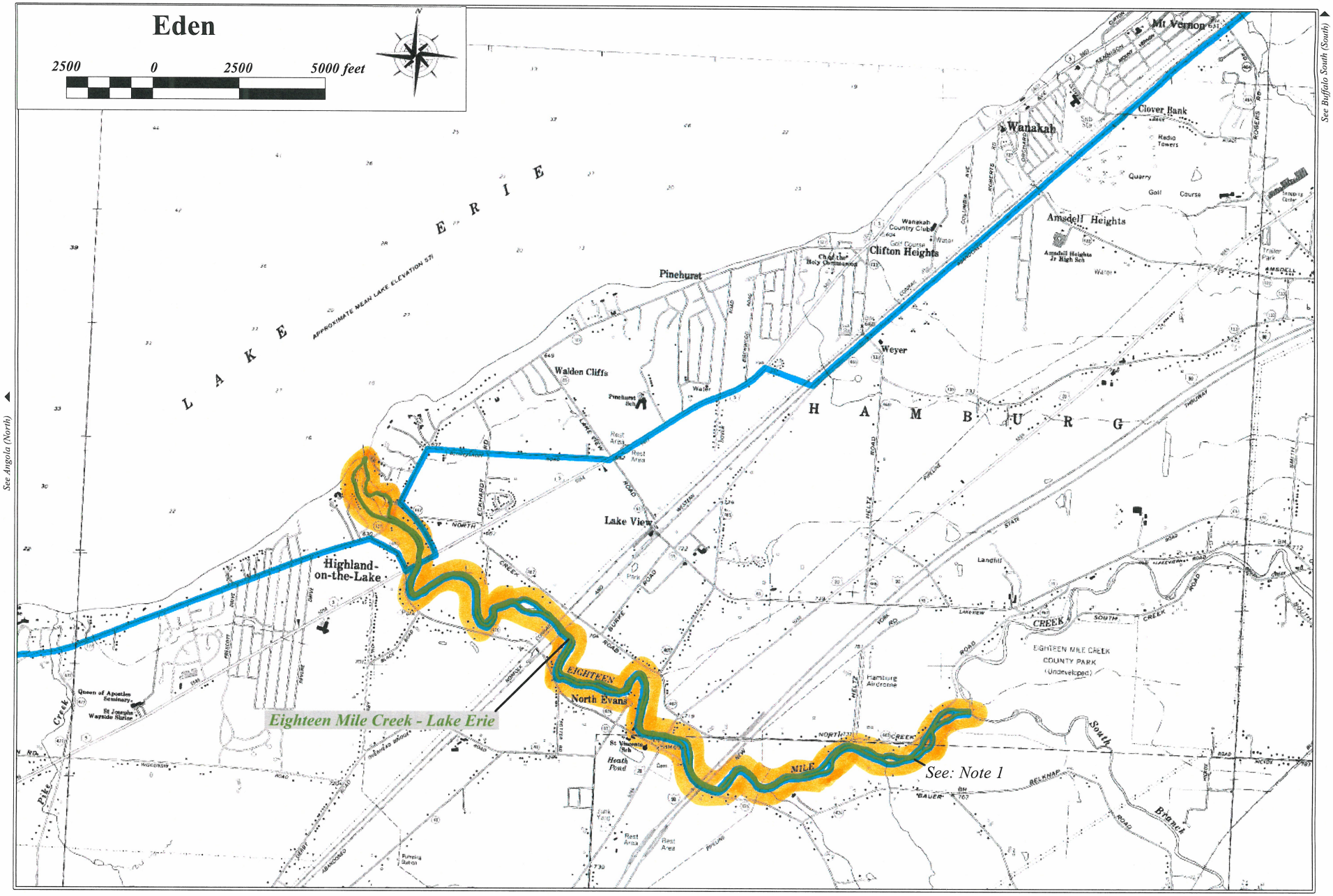
The range of parameters which should be considered in applying the habitat impairment test include but are not limited to the following:

1. physical parameters such as living space, circulation, flushing rates, tidal amplitude, turbidity, water temperature, depth (including loss of littoral zone), morphology, substrate type, vegetation, structure, erosion and sedimentation rates;
2. biological parameters such as community structure, food chain relationships, species diversity, predator/prey relationships, population size, mortality rates, reproductive rates, meristic features, behavioral patterns and migratory patterns; and,
3. chemical parameters such as dissolved oxygen, carbon dioxide, acidity, dissolved solids, nutrients, organics, salinity, and pollutants (heavy metals, toxics and hazardous materials).

Although not comprehensive, examples of generic activities and impacts which could destroy or significantly impair the habitat are listed below to assist in applying the habitat impairment test to a proposed activity.

Any activity that substantially degrades water quality, increases temperature or turbidity, reduces flows, or alters water depths in Eighteen Mile Creek would adversely impact on the fisheries resources of this area. These impacts would be most detrimental during spawning period, and in the spring after salmonids are stocked in the creek. Discharges of sewage or stormwater runoff containing sediments or chemical pollutants (including fertilizers, herbicides, or insecticides) would adversely impact on fish populations. Of particular concern are the potential effects of upstream disturbances, including water withdrawals, impoundments, stream bed disturbances, and effluent discharges. Barriers to fish migration, whether physical or chemical, would have a significant impact on fish populations in the creek. Development of hydroelectric facilities on the creek should only be permitted with run-of-river operations. Existing woodlands bordering Eighteen Mile Creek and its tributaries should be maintained to provide bank cover, soil stabilization, and buffer areas. Development of additional public access to the creek may be desirable to ensure that adequate opportunities

for compatible human uses of the fisheries resources are available. However, installation of breakwalls or jetties to create a "harbor of refuge" could induce substantial development of this unusual natural area, directly resulting in the loss of habitat values.


Eden
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L A K E E R I E
APPROXIMATE MEAN LAKE ELEVATION 571
H A M B U R G
Mt Vernon
Wanakah
Clover Bank
Radio Towers
Quarry
Golf Course
Amsdell Heights
Wanakah Country Club
Clifton Heights
Pinehurst
Weyer
Walden Cliffs
Lake View
Highland-on-the-Lake
Landfill
EIGHTEEN MILE CREEK COUNTY PARK (Undeveloped)
North Evans
Hamburg Airdrome
Heath Pond
Eighteen Mile Creek - Lake Erie
See: Note 1
See Angola (North)
See Buffalo South (South)
GL118

COASTAL FISH & WILDLIFE HABITAT RATING FORM

Name of Area: **Big Sister Creek**

Designated: **October 15, 1987**

County: **Erie**

Town(s): **Evans**

7½' Quadrangle(s): **Angola, NY**

Score	Criterion
9	Ecosystem Rarity (ER) Relatively large, undisturbed, low gradient stream; one of the major tributaries of Lake Erie in Erie County.
0	Species Vulnerability (SV) No endangered, threatened or special concern species reside in the area.
4	Human Use (HU) Recreational fishery for salmonids and warmwater species attracts a significant number of Erie County residents.
4	Population Level (PL) One of about 4 tributary streams in Erie County where concentrations of salmonids and smallmouth bass occur during spawning periods.
1.2	Replaceability (R) Irreplaceable.

SIGNIFICANCE VALUE = [(ER + SV + HU + PL) X R]

= **20**

DESIGNATED HABITAT: BIG SISTER CREEK

LOCATION AND DESCRIPTION OF HABITAT:

Big Sister Creek is located approximately one mile northwest of the Village of Angola, in the Town of Evans, Erie County (7.5' Quadrangle: Angola, N.Y.). The fish and wildlife habitat is an approximate two mile segment of the creek, extending from N.Y.S. Route 5 to the mouth. This portion of Big Sister Creek is a relatively wide, low gradient, warmwater stream, with the lower half-mile forming an estuary of Lake Erie. The creek has a drainage area of approximately 50 square miles, and is bordered by undeveloped woodland, agricultural land, mowed lawn areas, and low density residential development. Habitat disturbance is generally limited to the presence of bridges, litter, and discharges of stormwater and treated sewage effluent. Below Lake Shore Road (County Route 98), Big Sister Creek flows through Bennett Beach County Park, which provides access to the area for fishing and swimming (at the lake). Before the creek empties into Lake Erie, it flows northward along a sandy barrier peninsula, which reaches elevations of approximately 20-30 feet above the lake.

FISH AND WILDLIFE VALUES:

Big Sister Creek is one of the major Erie County tributaries of Lake Erie, and much of the channel (above County Route 98) remains in a relatively undisturbed condition. Stream ecosystems such as this, which provide valuable habitat for lake-dwelling fish populations, are unusual in the County. While not included as part of the habitat, it should be noted that the sand dunes bordering the mouth of the creek are the only such formations on the Lake Erie shoreline of New York, and are being evaluated by the National Park Service for possible inclusion in the national Coastal Barrier Resources System. Big Sister Creek is especially significant because concentrations of several salmonid species enter the stream during their respective spawning seasons (although reproduction is unsuccessful in most instances). Steelhead (rainbow trout) enter the creek between late February and April, and runs of coho and chinook salmon and brown trout occur from late August through December (September-November primarily). These fish populations are the result of an ongoing effort by the NYSDEC to establish a major salmonid fishery in the Great Lakes through stocking, although there have been no releases directly into Big Sister Creek. In addition to these salmonids, the creek supports a productive warmwater fishery, including smallmouth bass (which spawn here), channel catfish, rock bass, white bass, carp, and possibly freshwater drum and northern pike. Local concentrations of wildlife, including waterfowl, gulls, common terns (T), bank swallows, and raccoons, may sometimes occur in the area, but use of the area by these species is not known to be significant.

As a result of the abundant fisheries resources in Big Sister Creek, a significant number of Erie County anglers are attracted to the area. During salmonid runs, recreational fishing pressure extends well up to N.Y.S. Route 5. In general, however, the creek is most heavily fished from the banks within Bennett Beach Park, which provides good public access.

IMPACT ASSESSMENT:

A **habitat impairment test** must be met for any activity that is subject to consistency review under federal and State laws, or under applicable local laws contained in an approved local waterfront revitalization program. If the proposed action is subject to consistency review, then the habitat protection policy applies, whether the proposed action is to occur within or outside the designated area.

The specific **habitat impairment test** that must be met is as follows.

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> - destroy the habitat; or,
>
> - significantly impair the viability of a habitat.

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Significant impairment is defined as reduction in vital resources (e.g., food, shelter, living space) or change in environmental conditions (e.g., temperature, substrate, salinity) beyond the tolerance range of an organism. Indicators of a significantly impaired habitat focus on ecological alterations and may include but are not limited to reduced carrying capacity, changes in community structure (food chain relationships, species diversity), reduced productivity and/or increased incidence of disease and mortality.

The *tolerance range* of an organism is not defined as the physiological range of conditions beyond which a species will not survive at all, but as the ecological range of conditions that supports the species population or has the potential to support a restored population, where practical. Either the loss of individuals through an increase in emigration or an increase in death rate indicates that the tolerance range of an organism has been exceeded. An abrupt increase in death rate may occur as an environmental factor falls beyond a tolerance limit (a range has both upper and lower limits). Many environmental factors, however, do not have a sharply defined tolerance limit, but produce increasing emigration or death rates with increasing departure from conditions that are optimal for the species.

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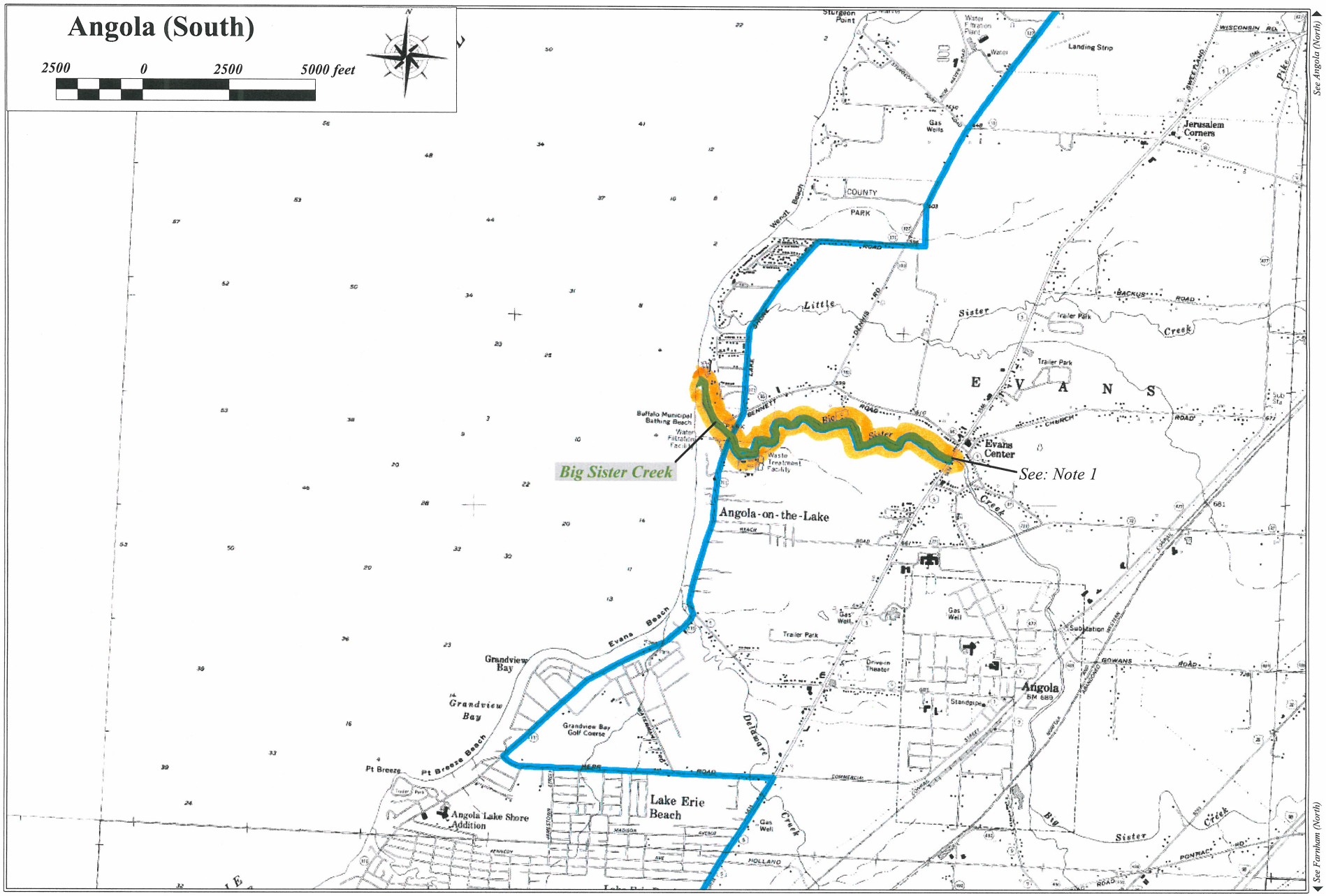
1. physical parameters such as living space, circulation, flushing rates, tidal amplitude, turbidity, water temperature, depth (including loss of littoral zone), morphology, substrate type, vegetation, structure, erosion and sedimentation rates;
2. biological parameters such as community structure, food chain relationships, species diversity, predator/prey relationships, population size, mortality rates, reproductive rates, meristic features, behavioral patterns and migratory patterns; and,
3. chemical parameters such as dissolved oxygen, carbon dioxide, acidity, dissolved solids, nutrients, organics, salinity, and pollutants (heavy metals, toxics and hazardous materials).

Although not comprehensive, examples of generic activities and impacts which could destroy or significantly impair the habitat are listed below to assist in applying the habitat impairment test to a proposed activity.

Any activity that degrades water quality, increases temperature or turbidity, or reduces flows in Big Sister Creek would adversely affect the fisheries resources of this area. Salmonid populations are vulnerable to disturbances only during their seasonal migrations into the creek. Warmwater fish species, which are generally year-round residents of the area, are most sensitive during spawning and incubation periods, which

extend from March through July. Barriers to fish migration, whether physical or chemical, would have a significant impact on the fish populations in Big Sister Creek. Clearing of riparian vegetation, or other stream bank disturbances, could reduce habitat quality. Discharges of stormwater runoff containing sediments or chemical pollutants will also result in adverse impacts on Big Sister Creek. Public access to this area should be maintained or enhanced to ensure that adequate opportunities for human use of the fisheries resources are available.


Angola (South)
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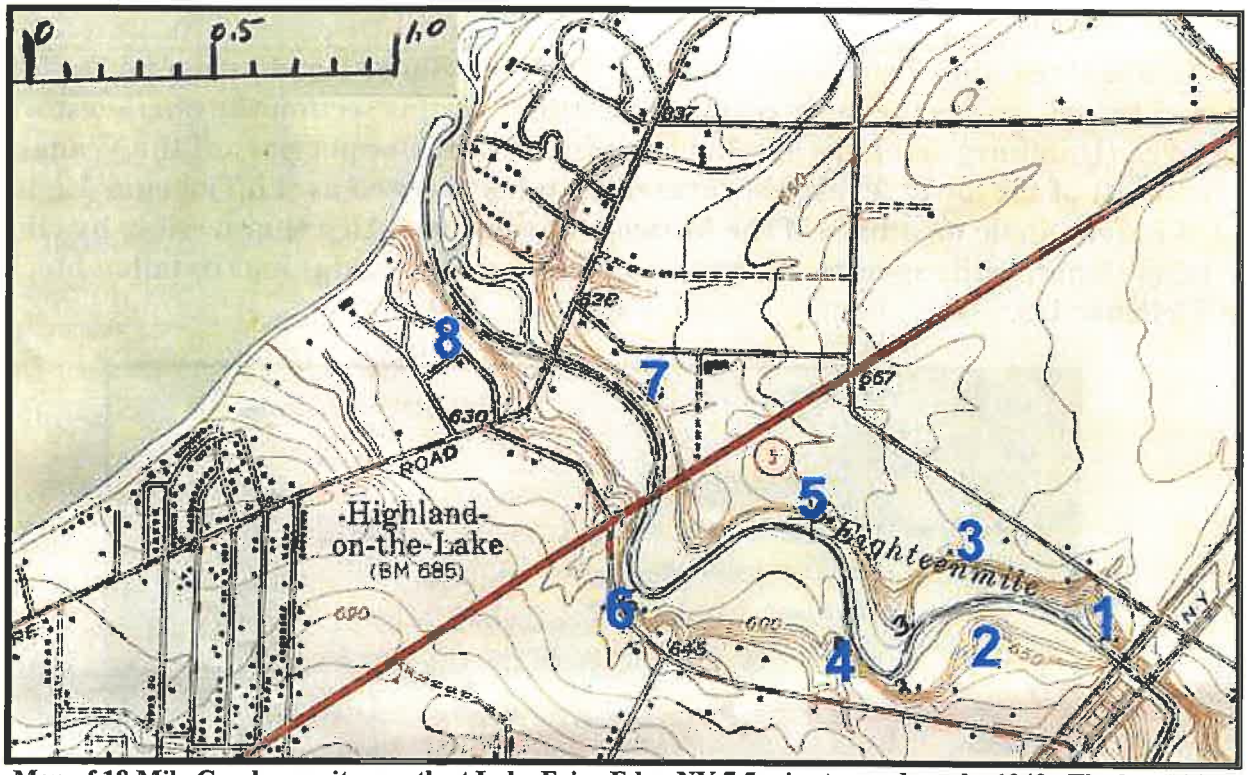
GL120
See Angola (North)
See Farnham (North)
Big Sister Creek
See: Note 1
Buffalo Municipal Bathing Beach
Water Filtration Facility
Waste Treatment Facility
Evans Center
Angola-on-the-Lake
Jerusalem Corners
Angola
Lake Erie Beach
Angola Lake Shore Addition
Grandview Bay
Grandview Bay Golf Course
Pt Breeze
Pt Breeze Beach
Evans Beach
Wendt Beach
Sturgeon Point
Landing Strip
Trailer Park
Drive-in Theater
Substation
Standpipe
Gas Well
COUNTY PARK
Little Sister Creek
Big Sister Creek
Delaware Creek
Lake Shore Road
Bennett Road
Backus Road
Church Road
Gowans Road
Wisconsin Rd.
Pike
Ponmac Rd.
Holland Ave.
Madison Ave.
Kennedy Ave.
Commercial
E V A N S

18 Mile Creek, near Highland and North Evans, Erie Co., NY

Eighteen (18) Mile Creek in Erie County is one of the best known exposures of the Ludlowville and Moscow Formations in Western New York. This locale, and the adjacent cliffs on Lake Erie, were the subject of two monographs by Amadeus Grabau (1898, 1899), and numerous subsequent studies to the present day. The Ludlowville and Moscow strata are exposed at the lower end of the creek, from its mouth at Lake Erie (a short distance north of Highland, NY) to North Evans, NY. The Creek at the stretch forms the boundary between the Towns of Evans (on the southwest bank) and Hamburg (on the northeast). The locality is most accessible by foot from Old Lake Shore Road where it crosses the creek, not far from its mouth. It should, however, be noted that there is no roadside parking permitted at this point. Grabau divided the exposures in the creek gorge into 8 sections, shown in the map below.



Map of 18 Mile Creek near its mouth at Lake Erie. Eden NY 7.5 minute quadrangle, 1949. The large blue numerals indicate the sections designated by Grabau. Scale is in km.

Section 8

The section of 18 Mile Creek between its mouth at Lake Erie and the Old Lake Shore Road bridge was called Section 8 by Grabau. The Wanakah Member of the Ludlowville Formation is exposed in the cliff on the southeastern bank of the creek (the Evans side). However, accessibility is difficult at high water, and the land generally posted.

Grabau's Section 8, 18 Mile Creek. View from the Old Lake Shore Road bridge looking downstream (Nov. 1999)

Section 7

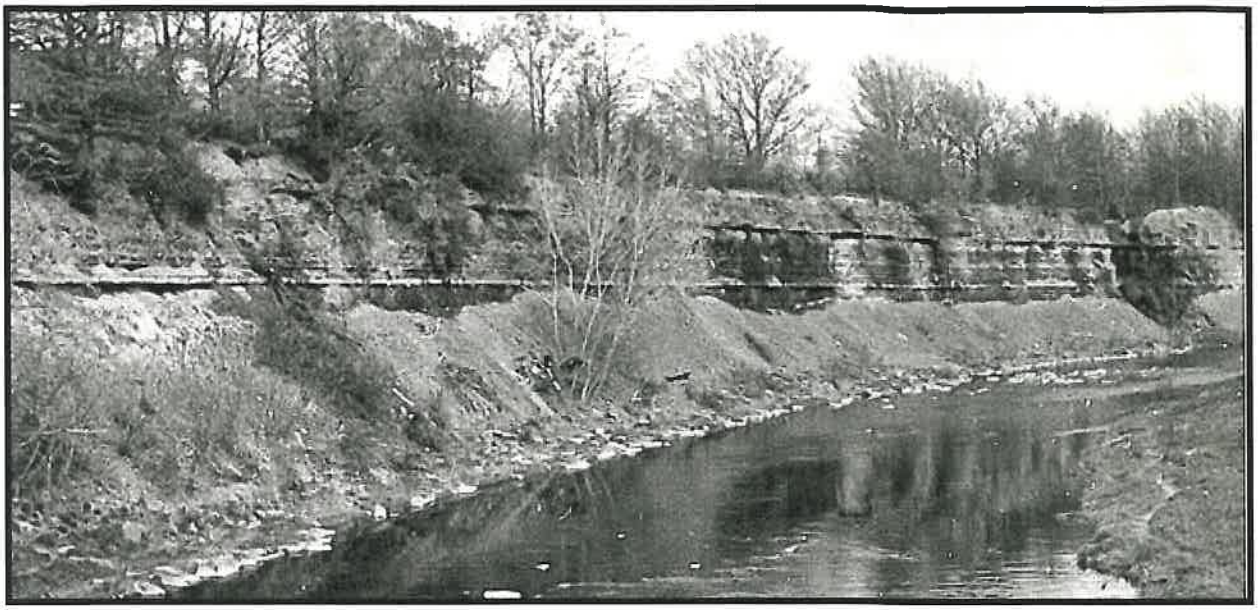
Grabau's Section 7 stretches from the Old Lake Shore Road bridge to the NY Route 5 bridge, and is the most readily accessible. In this section the northeast wall of the gorge (Hamburg side) has excellent exposures of the upper part of the Wanakah Shale (most of the lower levels are covered by talus), as well as the Tichenor Limestone and Windom Shale members of the Moscow Formation. All are accessible by climbing the talus slopes, while specimens may also be found in the talus and in fallen blocks of the Tichenor LS.

18 Mike Creek, Section 7, looking upstream from the Old Lake Shore Road bridge, November, 1999.

The Tichenor Limestone forms a prominent protruding band half-way up the cliff in Section 7. The Tichenor is called the "Encrinal Limestone" by Grabau, due to the profusion of crinoid fragments in this layer. This member of the Moscow

formation is approximately 30 to 37 cm thick in Section 7, consisting of two layers (KAW, personal observations). The upper, courser grained layer is ~20-25 cm thick, while the lower layer is 11 to 12 cm thick. The distinction between the two layers is often quite prominent, especially on well weathered surfaces. The upper layer is more resistant, and weathers with a relatively smooth dark-gray to brown surface. The lower layer weathers more quickly, with an uneven pitted surface and a lighter color than the upper layer. However, the distinction between the two parts sometimes disappears, especially in the middle of the section. Large "heads" of the tabulate coral *Favosites* are occasionally seen in cross-section in the lower part of the Tichenor Ls in Section 7. Some of these contain petroleum filling the "cells" of the coral colony. Pyrite is also a common constituent of the Tichenor. Its oxidation leads to rusty brown staining of the weathered surfaces of the limestone band, especially, but not limited to, the lower portion. The Tichenor Ls is richly fossiliferous, but fossils are difficult to extract. Collecting is most easily done on fallen blocks at the base of the talus slopes near the creek's edge. The weathered surfaces occasionally yield excellent specimens, especially of bryozoa. This author has observed 56 different species in the Tichenor Ls at Section 7 and the nearby Lake Erie cliffs.

The top-most 2 meters of the Wanakah Shale is the most fossiliferous portion of the member exposed in Section 7, both in terms of number of species and number of individuals. This upper portion of the Wanakah Member is now termed the "Blasdell Bed" (Kloc, 1983). Originally, Grabau designated the contained prominent fossil horizons by their dominant fauna components. The uppermost fossiliferous bed (approximately 10 cm below the Tichenor Ls) was called the *"Stictopora* Bed" due to the abundance of the branching bryozoan *Sulcoretipora incisurata* (originally called *Stictopora*). Below this is the highly fossiliferous "Demissa Bed", located approximately 33 cm beneath the Tichenor Ls. This bed contains the brachiopod *Strophodonta demissa*, as well as many other brachiopods (including the large *Spinocyrtia granulosa*), bryozoa, pelecypods, gastropods, trilobites, crinoids, etc. The "*Athyris spiriferoides* Bed" of Grabau is located approximately 2.75 meters below the Tichenor Ls. This horizon, marked by a layer of concretions, contains the brachiopod *Athyris spiriferoides*, often with the two valves still articulated, and often bearing numerous species of epizoites. At present this bed is largely covered with talus, but is occasionally accessible. A micro-stratigraphic column of the Upper Wanakah Shale, including the distribution of different faunal groups, can be accessed here: Wanakah Shale Microstratigraphic Column.



Section 7, 18 Mike Creek, looking upstream from the Old Lake Shore Road bridge- a closer view of the cliffs in the middle of the section. The Tichenor Ls forms a persistent band a short distance above the talus, and is also found as fallen blocks at the creek edge. The Genundewa Ls forms another protruding band a short distance from the top of the cliff. Photograph taken approximately 1970.

Section 7, 18 Mile Creek, view downstream from the NY Rt. 5 bridge, November 1999. For reference, the indentation in the cliff, below the white house above, is the same as that seen in the extreme right edge of the1970 picture above. The indentation has been cut by a small intermittent stream falling into the gorge at this point.

Two thin shale layers, the Genesee Shale and the Penn Yan Shale, and the Genundewa Limestone (all of the Genesee Formation) are also observable near the top of the cliff, but are inaccessible for collecting at this section (except for fallen blocks). The Tichenor and Genundewa Limestones are much more resistant to weathering than

the shales, and form two prominent protruding bands in the cliff that serve as excellent marker strata.

Section 5

The northeastern bank of 18 Mile Creek upstream from the NY Rt. 5 bridge was called Section 5 by Grabau. In this section the Tichenor Ls forms a sidewalk-like walkway at the base of the cliff, and a small falls in the creek near the upper end of this section. The uppermost (and arguably the most fossiliferous) portion of the Wanakah Shale is exposed in the creekbed at the lower end of this section, and is accessible at low water (or with wading).

The Windom Shale is especially well exposed for collecting here. The lowest 2 feet (60 cm) of the Windom are the most fossiliferous here. At the very base of the Windom is the Ambocoelia Bed, containing innumerable individuals of the small brachiopod *Ambocoelia umbonata*. Above this is the Spinatrypa/Coral Layer, also known as the BayView Coral Bed . This layer contains the brachiopods *Spinatrypa spinosa* and *Pseudoatrypa devoniana*, and the large rugose corals *Heliophyllum halli*, *Cystiphylloides americanum*, and *C. conifollis*. Above the Spinatrypa/Coral Layer is the more calcareous Smoke Creek Trilobite Bed. The brachiopods *Mucrospirifer consobrinus* and *Rhipidomella vanuxemi* are prominent here, as well as the small rugose corals *Stereolasma rectum* and *Amplexiphyllum hamiltoniae*. This layer also contains many individuals of the trilobite *Phacops rana*, generally as molts consisting of separated cephalon, thorax + pygidium, etc., although complete individuals are occasionally found.

(Left) Section 5, 18 Mile Creek, looking downstream from approximately the middle of the section. (Right) View of the section looking upstream from the lower end of the section. The Tichenor Ls forms the "sidewalk" in this section. Most of the exposed cliff in these views is the Windom Shale. The Genundewa Ls. is largely hidden by the vegetation at the top of the cliff. (Photos July 1997).

Section 1

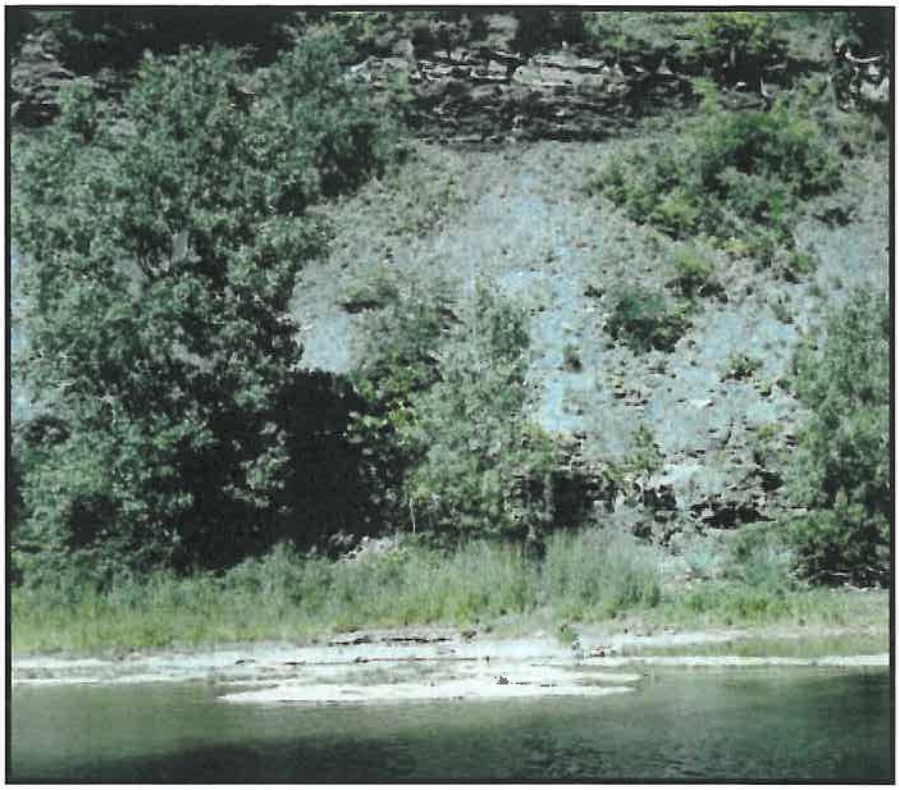
Grabau's Section 1of 18 Mile Creek is the most upstream section he described. It is approximately 2.2 km (as the crow flies) from the Lake Erie shore, and approximately 1. 1 km from the hamlet of North Evans. Section 1 runs from the railroad (Conrail) bridge crossing the creek at the upstream end to a small lateral ravine extending northeast from the main gorge at the lower end.

Section 1, 18 Mile Creek, looking upstream from the south bank towar the Conrail railroad bridge over the creek. When this picture was taken (July 1996) the water level in the creek was high, and the Genundewa LS is just under water on the north bank.

The lowest stratum exposed is the top of the Windom Shale of the Moscow Formation of the Hamilton Group (i.e. Middle Devonian) in the stream bead and base of the cliff. The remainder of the exposed rock is Upper Devonian of the Genesee, Sonyea, and West Falls Formations of the Seneca Group. From the top of the exposure, the units are:

- **the black Rhinestreet Shale (40 ft, 12.2m, of the West Fall Formation)**
- **the Sonyea Formation with the Cashaqua Shale (30 ft, 9.1 m) and the black Middlesex Shale (9.5 ft, 2.9 m)**
- **the Genesee Formation with the gray West River Shale (8.5 ft, 2.6 m) and the Genundewa and North Evans Limestones (combined thickness 1 ft, 30 cm).**

The Leicester Pyrite, which unconformably overlies the Windom Shale in other parts of Western New York is absent in Section 1 of 18 Mile Creek, Similarly, the Penn Yan and Genesee Shales (of the Genesee Formation) are absent, or are represented by thin shale layers separating the North Evans Ls from the Genundewa Ls or beneath the North Evans, above the Windom Shale.



Section 1, view of the north bank near the center of the section (July 1996), with blocks of the Genundewa Ls emergent at the waterline in the creek.

Of particular interest in Section 1 are the Genundewa and North Evans Limestones. The Genundewa Ls, called the "Styliolina Limestone" by Grabau, is comprized chiefly of the small conical shells of the cricoconarid *Styliolina fissurella* Hall. Some plant remains (branches or logs) are also present, as well as conodonts and occasional fish armor plates. The Genundewa varies from 4 to 8 inches in thickness (10 to 20 cm).

Underlying the Genundewa Ls is the North Evans Ls. This unit was termed the "Conodont Bed" by Grabau, who treats it as a part of the Genundewa Ls. The North Evans varies greatly in thickness, reaching a maximum of 10 to 13 cm in Section 1. Its contact with the Genundewa Ls also varies. At places it they are separated by a thin shale layer, while elsewhere they are in direct contact. The North Evans Ls is a coarse grained Ls made up of crinoid fragments, quartz sand, small pebbles, etc., suggesting that it is a sandbar deposit (see Brett, 1974). The primary interest in the North Evans for the paleontologist is the presence of large numbers of conodonts, arthrodire fish plates, cladodid shark teeth, and other fish remains. Thes conodonts and fish remains are phosphatic, and can thus be recovered from the rock by dissolution of the matrix with dilute acetic acid. The conodonts of the North Evans Ls have been extensively studied and figured by Bryant (1921). Buehler and Tesmer (1963) provide an extensive list of the conodont and fish remains in the North Evans/Genundewa combination. A

description of the stratigraphic units at Section 1 has recently been published by Over *et al.* (1999).

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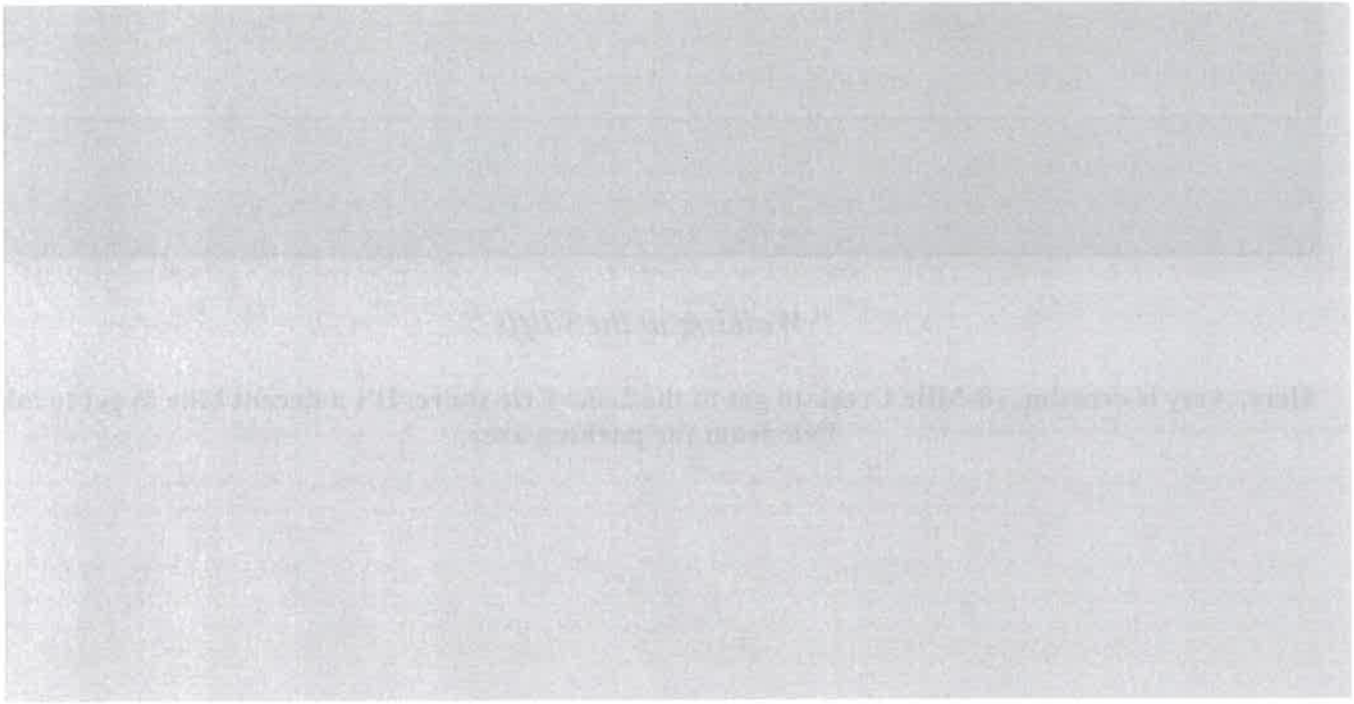
Return to Devonian Sites Page
Return to NY Paleontology

Page last revised Feb. 5, 2009

Last Update: 7/12/04

Location:
18 Mile Creek, Lake Erie Cliffs of NY, and the Penn Dixie Paleontological and Outdoor Education Center.

~385 Million Years Old
Middle Devonian, Givetian
Hamilton Group, Ludlowville and Moscow Formations



"360 Degree Panoramic View of the Lake Erie Shore Near 18-Mile Creek"

" Walking to the Cliffs "

Here, Amy is crossing 18-Mile Creek to get to the Lake Erie shore. It's a decent hike to get to lake Erie from the parking area.

" Collecting at the Cliffs "

Here, one can see Amy, Harris, and Renee. In the far background is Roy from Times Scientific. He found a little pocket of trilobites way back there. Although you can't see it, he has a 4 foot grin on his face.

Wrong Way Rob of Times Scientific was also suppose to come along. However he had a "sore throat." We felt bad and found some trilobites for him, however, they also had "sore throats" and couldn't come back with us.

" Paydirt "

Soon after we got there, we found one of the famous trilobite layers of the Hamilton Group. The image shows some of the enrolled trilobites we were finding.

Enrolled ones are far more common than prone trilobites. Also, you may notice many are still covered in matrix. They will stay covered until we get them home, where we can properly clean them with an air abrasive unit.

" A beautiful day in the life of two fossil collectors! "

In the far background to the left, where the cliffs end, is the opening of 18-Mile Creek into the sewer, oops, Lake Erie.

" We're not in Kansas anymore! "

Buffalo on the horizon. IMPORTANT WARNING: If you are looking for the four-legged kind, this web page may not be for you.

Additional site images

Here is a cross-section of the cliff exposures, showing the formations.

View a sample of our fossils found at 18 Mile Creek

About the Area

During this time period, in the Middle Devonian, a mountain building phase was beginning. This is called the Acadian Oregony, and occured when a landmass called Avalon collided into, what is today, eastern North America. This collision was the first step in the assembly of the supercontinent Laurussia. The collision of Avalon began to create a large mountain range called the Acadian Mountains along eastern North America. Rivers running down the Acadian mountains picked up sediments and carried them into the Castskill basin, a basin just west of the Acadian mountains and running parallel to it. This basin was flooded by the Kaskaskia Sea. The Kaskaskia epicontinental sea, was just west of the Acadian mountains. It covered New york west of the Hudson river, as well as many other states down to, what is today, the gulf of mexico The sediments from the Acadian mountains eventually made their way into the Kaskaskia Sea. This occured throughout the Middle and Late Devonian. The sediments flowing into the sea created sedimentary deposits that formed the sedimentary rock layers seen today in New York, and specifically those found at 18-Mile Creek. The most fossiliferous shale and mudstone at 18-Mile Creek tends to be the Wanakah shale of the Ludlowville formation and the Windom Shale of the Moscow formation.

During the Middle to Late Devonian period, the global climate was much warmer than it is today. Also, New York was almost on top of the equator. As a result, the warm shallow Catskill basin, spoken of earlier, was the home of a wide variety of creatures, such as coral reefs, and many other invertebrates, such as brachiopods, pelecypods, crinoids, cephalopods, red algae, and gastropods. The corals and algaes contributed to the reef building of the time period. Trilobites were common in the Devonian as well, but by this point they were on the decline. By the end of the Devonian period, most were extinct.

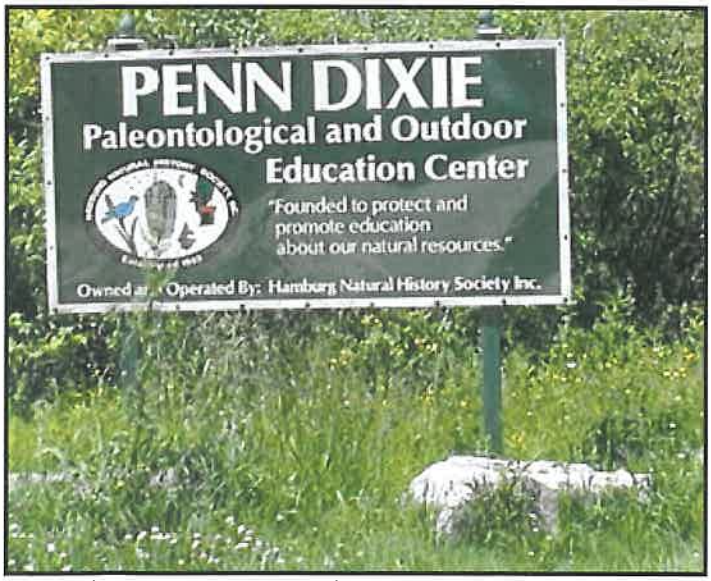
In addition, the Devonian period is known by some as the "Age of Fishes." Armored fish, placoderms, and primitive sharks lived in the Devonian period. In fact, most modern fish can trace their ancestry back to that time period. By the end of the period, fish had evolved jaws and became the major predators of their time. The problem with these fish, however, is the fact they were mainly cartilagenous, meaning to us they do not fossilize much. However, the dermal armor, scales, and teeth did, and these parts become the major links to fish of that time period.

Note that the area of 18-Mile Creek is so large it is divided into eight distinct sections, with each housing differences in rock formations and, then, of course, fossil specimens. Found at the mouth of Eighteen Mile Creek is the Lake Eerie Cliffs, which contains some of the same exposures as Eighteen Mile Creek. For clarification, it is this area and several of the other sections which contain fossils of trilobites, gastropods, corals, crinoids, brachiopods, pelecypods, and cephalopods. This is where we have mainly collected.
For a much more detailed explanation of this area, check out this site: New York Paleontology

Where is it?

18-Mile Creek is about ten miles south of Buffalo, lying between the Towns of Evans (to the southwest) and Hamburg (to the northeast). More specifically, it is found off of Old Lake Shore Road (this road crosses the creek near its mouth), but be warned there is no public parking on this road. At the bridge over 18-mile creek, almost under it, there use to be a house with a nice man & a cute dog who let collectors and fishermen park there for a small fee. The state bought the land, and demolished the house. The last time I was there, there was an empty lot where his house use to be. Fisherman and fossil collectors still park in the lot. Once the state decides what to do with the land this parking situation could change.

Be sure to obtain permission before collecting along 18-mile creek, as the cliffs are private property, and the owners do not like unannounced fossil collectors. However, if you walk up the creek to the mouth, you will see cliffs along the shore of Lake Erie. Collecting fossils from the talus slopes and ones that wash up along the beach is currently tolerated.



Now if you want a more family orientated place to collect at, try the Penn Dixie Paleontological and Outdoor Education Center. This is a "Fossil Park" that is is situated in Hamburg, NY, near the 18-mile creek area. The Penn Dixie Education Center is situated on an old quarry that has exposed the same formations as found at 18-mile creek (however the trilobite layer is found by digging 1-2 feet below the surface).
The Penn Dixie Site is open to the public every Saturday from May through October, 9 AM to 12 noon

to collect fossils for a small fee. They also have a few "Family Fossil Fun Days" and "Junior Paleontologist Days" during the summer. Please visit their website for directions and updated and additional times they are open: Penn Dixie Paleontological and Outdoor Education Center.

Recomended Equipment:

- Sturdy rock hammer and chissel (to split the rocks you find)
- Protective eye equipment (yep its time to blow the dust off those old chemistry goggles!)
- Newspaper/old towels/etc. - Some of these fossils are very brittle, and can break on your long trek to the car if you're not careful!

Other Recomendations:

- Some of the best fossils (and the fossils on this page) are found in the rubble that has already fallen at the base of the cliffs. This type of collecting is much safter and more exposure friendly then the "Run for your life, I just knocked down the cliff" alternative.
- Also, most of the complete trilobites are found still partially/mostly inside the rock. I would suggest not "operating" on the potential complete fossil at the site, but taking it home and then carefully extracting it to see if it is complete.
- Air abbrasive units tend to work the best at extracting these fragile fossils from the rock (all of our trilobites were extracted with a home-made air abrasive tool, which shoots baking soda at high speed).
- Be sure to look in or near the water as well. In the shallow water, you can often find nice polished specimens of corals and various brachiopods.
- Wear thick shoes; there are broken bottles all over the place.
- Please note that almost all of the trilobite fossils we find here are only partial fragments. Very few are whole. Also, most of the whole ones are enrolled. Therefore, do not expect to find many complete trilobites, as it takes many trips to the site to find those elusive "trophy" specimens.

Recomended Books:

Devonian Biostratigraphy of New York
International Union of Geological Sciences
Subcommission on Devonian Stratigraphy, (Part 1 and Part 2)
Editors: Willian A. Oliver, Jr. and Gilber Klapper
July 1981, Washington D.C.

This is an incredibly informative book, however it is somewhat difficult to find. Your best bet is probably a University Library.

Links:

- **New York Paleontology**

Very good site for fossils of New york State

Fossils Found at the Ludlowville and Moscow Formations at the Lake Erie Cliffs on the mouth of 18 Mile Creek in NY

This page may take a while to load (there are 8.26 billion images to load).

Fossils here include:
Trilobites

The trilobites insisted on playing football with the pleurodictyum, and therefore had to be moved to a separate page

Nautoloids, Brachiopods, Crinoids, Coral, Bryozoan, Unidentified stuff

(The smallest divisions in the ruler are 1/8")

Nautoloids

? sp.
Straight shelled Nautoloid

This appears to be some sort of poorly preserved straight shelled nautoloid.

Formation:
- Hamilton Group: Wanakah Member (Ludlowville Formation) or Windom Member (Moscow Formation)

Age:
- Middle Devonian, ~387 - 378 m.y.

Location:
- Hamburg, Erie Co., NY

Size:
-

***Spyroceras* ?sp.**

I beleive this is an imprint of a Spyroceras sp., a type of straight shelled nautoloid.

Sorry the scan is so bad..

Formation:
- Hamilton Group: Wanakah Member (Ludlowville Formation) or Windom Member (Moscow Formation)

Age:
- Middle Devonian, ~387 - 378 m.y.

Location:
- Hamburg, Erie Co., NY

Size:
-

This is a tiny fragment of another one.

Formation:
- Hamilton Group: Wanakah Member (Ludlowville Formation) or Windom Member (Moscow Formation)

Age:
- Middle Devonian, ~387 - 378 m.y.

Location:
- Hamburg, Erie Co., NY

Size:
-

Brachiopods

***Athyris* spiriferoides (Eaton ....)**

The easiest way to find these specimens is by slowely combing the beach at the water line.

Formation:
- Hamilton Group: Wanakah Member (Ludlowville Formation) or Windom Member (Moscow Formation)

Age:
- Middle Devonian, ~387 - 378 m.y.

Location:

	• Hamburg, Erie Co., NY **Size:** •

***Longispina?* mucronatus? (Conrad)**
pyratized shells
For some reason, this type of brachiopod is often found pyratized

These pyratized brachiopods are fairly common in these formations.
Another one can be seen in the 1st Phacops image on this page.

Formation:
• Hamilton Group: Wanakah Member (Ludlowville Formation) or Windom Member (Moscow Formation)
Age:
• Middle Devonian, ~387 - 378 m.y.
Location:
• Hamburg, Erie Co., NY
Size:
• ~3/4" (18mm)

Another one can be seen in the 1st Phacops image on this page.

Formation:
• Hamilton Group: Wanakah Member (Ludlowville Formation) or Windom Member (Moscow Formation)
Age:
• Middle Devonian, ~387 - 378 m.y.
Location:
• Hamburg, Erie Co., NY
Size:
• ~1/2" (12mm)

***Rhipidomella* sp. (Hall)**

This is the front and back view of a Rhipidomella. These fossils are very flat and fragile

Formation:
• Hamilton Group: Wanakah Member (Ludlowville Formation) or Windom Member (Moscow Formation)

Age:
- Middle Devonian, ~387 - 378 m.y.

Location:
- Hamburg, Erie Co., NY

Size:
- ~7/8" (22mm)

***Spirifer* macronatus (Hall ....)**

In this first image, the two halves of the shell started to come apart before it fossilized, creating this interesting specimen. The second image shows how they are commonly found.

Formation:
- Hamilton Group: Wanakah Member (Ludlowville Formation) or Windom Member (Moscow Formation)

Age:
- Middle Devonian, ~387 - 378 m.y.

Location:
- near Hamburg, Erie Co., NY

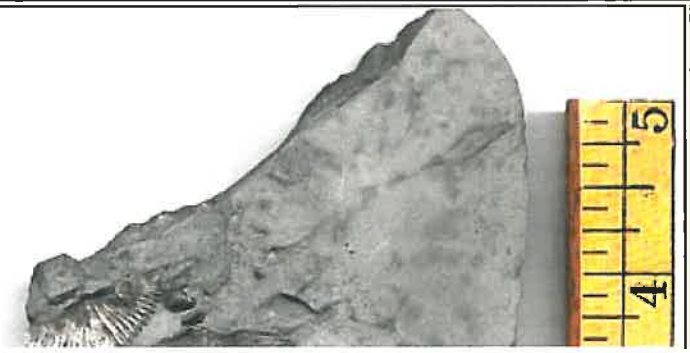
Size:
-

Formation:
- Hamilton Group: Wanakah Member (Ludlowville Formation) or Windom Member (Moscow Formation)

Age:
- Middle Devonian, ~387 - 378 m.y.

Location:
- Hamburg, Erie Co., NY

Size:
-



	This one is still in matrix **Formation:** • Hamilton Group: Wanakah Member (Ludlowville Formation) **Age:** • Middle Devonian, ~387 - 378 m.y. **Location:** • near Hamburg, Erie Co., NY **Size:** •

***Stropheodonta* demissa (Conrad ...)**	
	**Formation:** • Hamilton Group: Wanakah Member (Ludlowville Formation) or Windom Member (Moscow Formation) **Age:** • Middle Devonian, ~387 - 378 m.y. **Location:** • Hamburg, Erie Co., NY **Size:** •

Crinoids

Whole crinoids are difficult to find. Usually just fragments are found.

Crinoid colomn pieces are commonly found near the beach shore.

The lower crinoid colomn section has the bryozoan, Leptotrypella sp., encrusting it.

Formation:
- Hamilton Group: Wanakah Member (Ludlowville Formation) or Windom Member (Moscow Formation)

Age:
- Middle Devonian, ~387 - 378 m.y.

Location:
- Hamburg, Erie Co., NY

	Size: • ~1/4" Diameter (6mm)
	NO IMAGE YET: This fossil is still being prepped, and should be finished by early June. **This is part of a crinoid calyx.** **Formation:** • Hamilton Group: Wanakah Member (Ludlowville Formation) **Age:** • Middle Devonian, ~387 - 378 m.y. **Location:** • Hamburg, Erie Co., NY **Size:** • ~1/4" Diameter (6mm)

Corals

Pleurodictyum *americanum*
(single cell coral)

All of these specimens were found by carefully searching the beach at the water line.
Notice the Pleurodictyum growing on a Spirifer in the lower image.

Formation:
• Hamilton Group: Wanakah Member (Ludlowville Formation) or Windom Member (Moscow Formation)
Age:
• Middle Devonian, ~387 - 378 m.y.
Location:
• Hamburg, Erie Co., NY

	Size: •

***Stereolasma* rectum** **(horn coral)**	
	**Abundant specimens can be found by searching the beach at the water line. Also, the ones at the water line tend to be polished by the waves.** **Formation:** • Hamilton Group: Wanakah Member (Ludlowville Formation) or Windom Member (Moscow Formation) **Age:** • Middle Devonian, ~387 - 378 m.y. **Location:** • Hamburg, Erie Co., NY **Size:** •

Bryozoan

Hederella sp.	
	**This is a an interesting image of Hederella sp. growing all over a piece of horn coral (*Stereolasma* rectum).** **Formation:** • Hamilton Group: Wanakah Shale Member (Ludlowville Formation) **Age:** • Middle Devonian, ~387 - 378 m.y. **Location:** • Hamburg, Erie Co., NY **Size:** •

Rhombopora sp.	

NO IMAGE YET

This is a close-up of the Bryozoan on the matrix with the pyritized shell and the enrolled *Phacops* rana.

Formation:
- Hamilton Group: Wanakah Shale Member (Ludlowville Formation)

Age:
- Middle Devonian, ~387 - 378 m.y.

Location:
- Hamburg, Erie Co., NY

Size:
-

Unidentified stuff

If you konw what any of this stuff is, please let me know, thanks!

Some kind of Nautoloid?

Due to the poor preservation, I have no clue what this is.

The diagonal "striations" along the sides are also throwing me off (although they are probably the key to getting this thing

	identified). The striations can be seen better in the zoomed in image. Although, not clearly visible, these "striations" occur on both sides of the specimen, and appear to run its length. **Formation:** • Hamilton Group: Wanakah Shale Member (Ludlowville Formation) **Age:** • Middle Devonian, ~387 - 378 m.y. **Location:** • Hamburg, Erie Co., NY **Size:** •

Back to Site Page

New York State Department of
ENVIRONMENTAL CONSERVATION
www.dec.ny.gov

Public Fishing Rights Maps

Eighteen Mile Creek


Eighteen Mile Creek County Park Section

Description of Fishery

Eighteen Mile Creek and its South Branch, located near Hamburg in Erie County, support an outstanding run of Lake Erie steelhead. Together these streams provide over 13 miles of angling opportunity. Steelhead can be found in the stream from mid-October into early May. There are 1.4 miles of public fishing rights easements on Eighteen Mile Creek. In addition, over two and a half miles of the main stream and the South Branch are open to the public in the Eighteen Mile Creek County Park, owned by Erie County. The main stem in the County Park is managed with a catch and release, artificial lures only regulation. The lower section of the creek offers good smallmouth bass angling opportunity in spring and summer.

Trout Fishing Regulations

Eighteen Mile Creek and South Branch Eighteen Mile Creek from mouth upstream to the first impassable falls (except section below): **Trout and salmon; open all year, 12 inch minimum size, daily limit 3 per person.**

Eighteen Mile Creek in Erie County Park property: **Trout and salmon; open all year, catch and release, artificial lures only.**

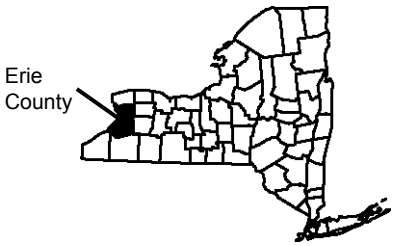
Check fishing regulation guide for other Great Lakes tributary regulations that may apply.

Primary Fish Species

Rainbow Trout

Brown Trout

Location



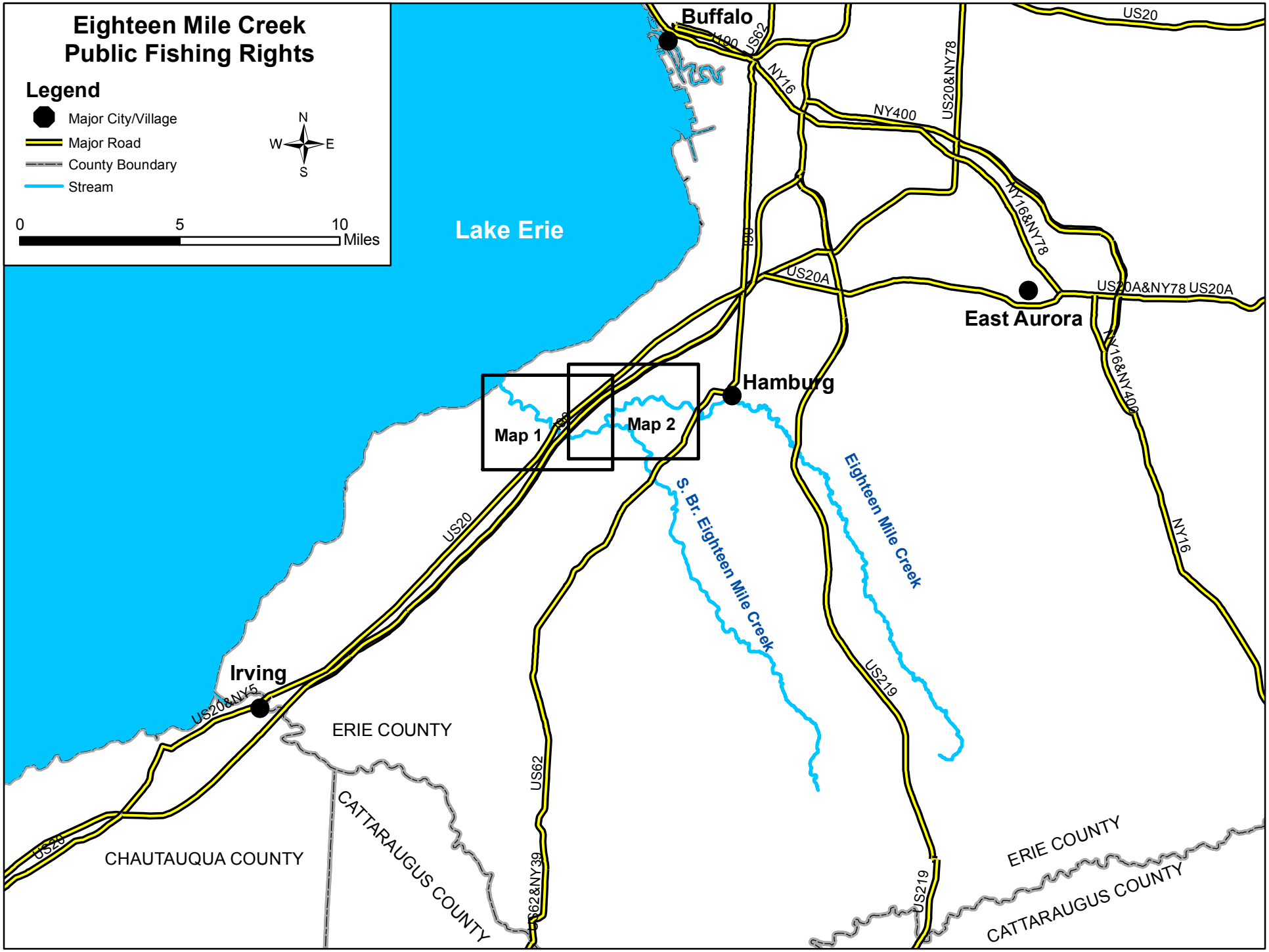
About Public Fishing Rights

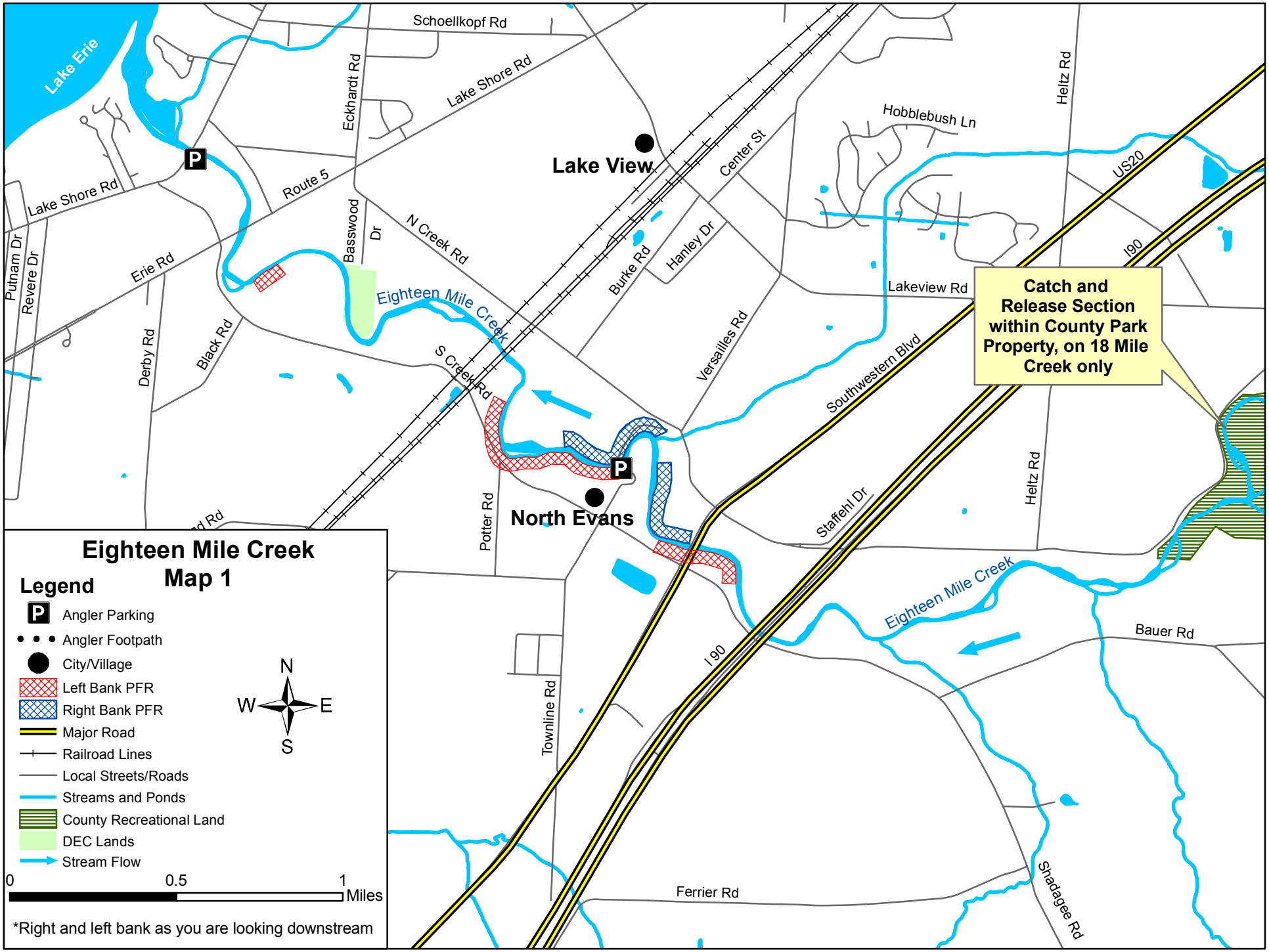
Public Fishing Rights (PFR's) are permanent easements purchased by the NYSDEC from willing landowners, giving anglers the right to fish and walk along the bank (usually a 33' strip on one or both banks of the stream). This right is for the purpose of fishing only and no other purpose. Treat the land with respect to insure the continuation of this right and privilege. Fishing privileges may be available on some other private lands with permission of the land owner. Courtesy toward the land-owner and respect for their property will insure their continued use.

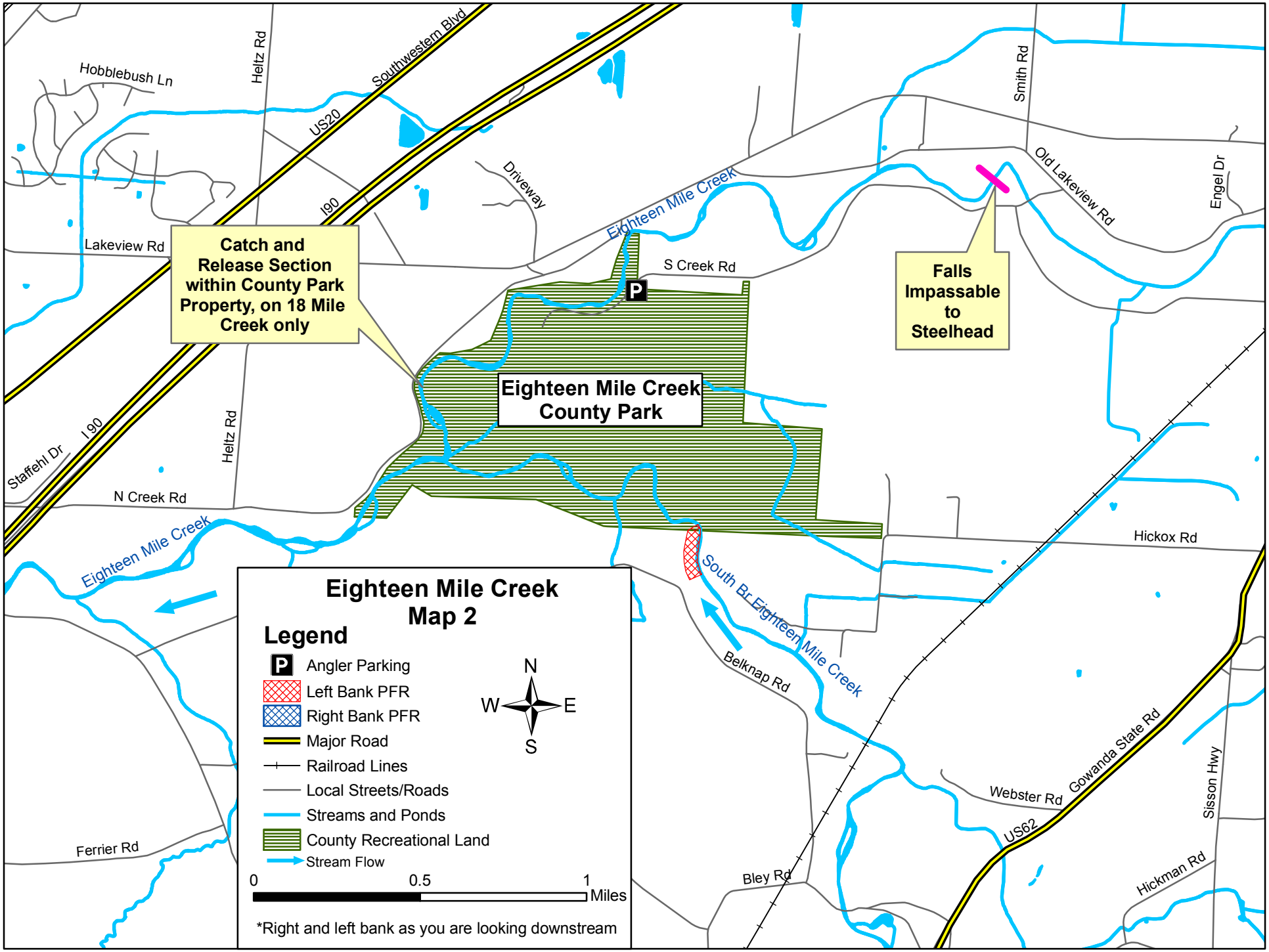
These generalized location maps are intended to aid anglers in finding PFR segments and are not survey quality. Width of displayed PFR may be wider than reality to make it more visible on the maps. Please look for this PFR sign to ensure that you are in the right location and have legal access to the stream bank.

For more information on this creek or if you believe PFR marked areas on these maps are incorrect or missing PFR signs, please call the Region 9 Fisheries office: (716) 372-0645.

Ver. 2/09


Eighteen Mile Creek
Public Fishing Rights
Legend
Major City/Village
Major Road
County Boundary
Stream
N
W
E
S
0
5
10
Miles
Lake Erie
Buffalo
NY16
NY400
US20&NY78
US20
NY16&NY78
US20A
US20A&NY78 US20A
East Aurora
Hamburg
NY16&NY400
NY16
Map 1
Map 2
S. Br. Eighteen Mile Creek
Eighteen Mile Creek
US20
US219
Irving
US20&NY5
ERIE COUNTY
US62
US62&NY39
CATTARAUGUS COUNTY
CHAUTAUQUA COUNTY
US20
ERIE COUNTY
CATTARAUGUS COUNTY


Eighteen Mile Creek
Map 1
Legend
Angler Parking
Angler Footpath
City/Village
Left Bank PFR
Right Bank PFR
Major Road
Railroad Lines
Local Streets/Roads
Streams and Ponds
County Recreational Land
DEC Lands
Stream Flow
N
W
E
S
0
0.5
1
Miles
*Right and left bank as you are looking downstream
Lake Erie
Schoellkopf Rd
Eckhardt Rd
Lake Shore Rd
Route 5
Lake View
Center St
Hobblebush Ln
Heltz Rd
US20
I90
Lakeview Rd
Catch and Release Section within County Park Property, on 18 Mile Creek only
Basswood Dr
N Creek Rd
Burke Rd
Hanley Dr
Putnam Dr
Revere Dr
Erie Rd
Derby Rd
Black Rd
Eighteen Mile Creek
S Creek Rd
Versailles Rd
Southwestern Blvd
North Evans
Potter Rd
Staffehl Dr
Heltz Rd
Eighteen Mile Creek
Bauer Rd
Townline Rd
I90
Ferrier Rd
Shadagee Rd


Hobblebush Ln
Heltz Rd
Southwestern Blvd
US20
I90
Driveway
Smith Rd
Old Lakeview Rd
Engel Dr
Eighteen Mile Creek
Lakeview Rd
Catch and Release Section within County Park Property, on 18 Mile Creek only
S Creek Rd
P
Falls Impassable to Steelhead
Eighteen Mile Creek County Park
Staffehl Dr
I90
Heltz Rd
N Creek Rd
Eighteen Mile Creek
Hickox Rd
South Br Eighteen Mile Creek
Belknap Rd
Webster Rd
Gowanda State Rd
US62
Sisson Hwy
Ferrier Rd
Bley Rd
Hickman Rd
Eighteen Mile Creek
Map 2
Legend
P Angler Parking
Left Bank PFR
Right Bank PFR
Major Road
Railroad Lines
Local Streets/Roads
Streams and Ponds
County Recreational Land
Stream Flow
N
W
E
S
0
0.5
1
Miles
*Right and left bank as you are looking downstream

FILE

COPY

UNIVERSITY AT BUFFALO
STATE UNIVERSITY OF NEW YORK

Department of Anthropology
Faculty of Social Sciences
380 MFAC, Ellicott Complex
Buffalo, New York 14261
(716) 636-2414
FAX (716) 636-3808

May 16, 1991

Ms. Karen Jung
Town Planning Board
Town of Evans
42 North Main Street
Angola, NY 14006

Re: Proposed Development at Bennett Beach, Town of Evans, NY

Dear Ms. Jung:

It has recently come to my attention that there is an important prehistoric archaeological site located in the sand dunes and along the banks of Big Sisters Creek at Bennett Beach in the Town of Evans. I am informing you of the presence of this site so that the proposed development of the beach property by Paul Snyder and the City of Buffalo will not adversely affect an important cultural resource.

The Bennett Beach site was reported to me by a local amateur archaeologist, and was recently inspected by a professional archaeologist on the staff of the Archaeological Survey, State University of New York at Buffalo. We have recorded the site as UB 2617 in the archaeological site files at the Department of Anthropology, and are reporting the site to the New York State Office of Parks, Recreation and Historic Preservation in Albany.

The available evidence indicates that the site was repeatedly occupied by the native populations of western New York throughout the last 2,500 to 3,000 years. Inspection of the site indicated that intact archaeological deposits, including prehistoric living surfaces, hearths and pits are well preserved within the sand dunes and are likely to be preserved within the ground in other portions of the property.

We strongly recommend that a thorough archaeological survey by a qualified professional archaeologist be conducted at the Bennett Beach property prior to any construction activities that could affect any archaeological contexts. A thorough survey would provide the developer, the property owner, and the Town of Evans with the information necessary to develop the property without the destruction of an irreplacable cultural resource.

Please feel free to contact me at the above address or at 636-2297 if I can be of any assistance.

Sincerely,

Elaine B. Herold

Elaine B. Herold, Ph.D.
Director, Archaeological Survey

A Preliminary Description

of the

Bennett Beach (UB 2617), Bennett Bridge (UB 2914) and Bennett House Sites (UB 2623)

Town of Evans
Erie County, New York

Reports of the Archaeological Survey
Volume 35, Number 4

State University of New York at Buffalo

Department of Anthropology • Archaeological Survey

Jim Bucki
583-2720

A Preliminary Description of the

Bennett Beach (UB 2617), Bennett Bridge (UB 2914) and Bennett House Sites (UB 2623)

Town of Evans,
Erie County,
New York

by

David A. Ingleman

Douglas J. Perrelli, Ph.D., RPA
Principle Investigator

Reports of the Archaeological Survey, Volume 35, Number 4
Department of Anthropology, State University of New York at Buffalo

June 2003

Submitted in partial fulfillment of an Archaeological Survey Internship
APY 498 State University of New York at Buffalo

Bennett Beach Site UB 2617

This section of the report presents a summarized description and interpretation of the prehistoric Bennett Beach site. The material utilized for this site description are both from collections at the SUNY at Buffalo Archaeological Survey and in the private collection of Mr. James Bucki of Derby, New York.

Site Location. The Bennett Beach site is located west of Old Lake Shore Road, essentially at the foot of Bennett Road in the Town of Evans, Erie County, New York (MCD 02913). The site is concentrated on the large dunes west of Big Sister Creek, however artifacts have been found on both sides of the creek bank. Photos 1-23 depict the site's setting at the time of investigations from the early 1990s to the early 2000s. The setting of the excavations at Locus C are depicted in Photos 24-25.

Site Size/Boundaries: Horizontal. The site is bounded by Lake Erie to the west; however it is likely that there are underwater prehistoric deposits in the lake, just off shore. Early and Middle Archaic lake shore sites in particular may now be submerged as the shore line has advanced significantly since then. Artifacts from the beach examined span an area about (900 ft) long from Dunes 3 to 4, and about (400 ft) from the lake water line to the creek. Prehistoric deposits inland, east of the creek are known only through Dr. Gramly's poorly documented examination. Because Bennett Beach is multi-component, the site size undoubtedly changed as different prehistoric groups used the site.

Site Size/Boundaries: Vertical. Because the site is mostly known through surface collections and controlled excavations have only occurred in one portion of the site (Locus C), the vertical limits of the site are poorly known. At Locus C several TUs were excavated, however the deepest excavation occurred in TU only to a depth of 20-30 cm below ground surface. Deeply buried deposits are expected both adjacent to Big Sister Creek and within the sandy ridge and sand dunes that are prominent topographic features within the site.

Artifact Summary. The artifact assemblage at the SUNY at Buffalo was analyzed in detail while artifacts from the and the Bucki collection are only highlighted here. A total of 1,873 prehistoric artifacts, including ecofacts are in the SUNY at Buffalo collection. A breakdown of artifacts by type is given in Table 4. In addition to this, Bucki has several thousand prehistoric artifacts in his personal collection from the site. Bucki claims that most of his collection came from Dune 3, mostly Locus E trending towards Locus F. A total of 168 historic artifacts were recovered from the Bennett Beach site (UB 2617) excavations in Locus C.

Table 4. Summary of Bennett Beach Site Prehistoric Artifacts in the SUNY at Buffalo Collection.

Artifact	Count	Mass (g.)
Fire Cracked Rock	391	38,940.85
Flakes	1178	866.3
Utilized Cobbles	20	8,197.5
Cores	34	739.9
Biface	2	14.1
Projectile Points	6	--
Miscellaneous Artifacts	48	--
Pre-historic Pottery	109	1031.1
Faunal	85	77.1
Total	**1,873**	**49,866.85**

Photo 24. James Bucki (left) and Douglas Perrelli at Locus C, during initial site reconnaissance in June 1991.

Photo 25. Shot of Locus C, facing northwest, depicting the setting during excavation by the Buffalo State College field school in 1997.

Unique and Ceremonial Artifacts. In the northeast, prehistoric ceremonial sites are often associated with prominent bluffs, large vistas and large bodies of water- all of which are present at Bennett Beach. The poorly documented work of Gramly reports to have recovered a slate gorget in a burial context near the Bennett House site. Because Bennett Beach provides a variety of life sustaining and potentially ritually significant resources, use as a ceremonial site seems likely. For example, turtle and clam/muscle shells are unique beach resources important in Iroquoian ritual and are available at Bennett Beach. During excavation in Locus C, excavators uncovered a recently deceased snapping turtle including all of the shell and articulated bones. Though this find was modern in age, snapping turtles were an important resource for making turtle shell rattles.

Unique and potentially ceremonial artifacts recovered from the site include an ornamental stone pendant (Photo 67) from Locus C excavations, and shell pendent (Photo 68) from the surface of Dune 3, now in the Bucki collection.

A clay obtuse-angle elbow pipe was surface collected from Dune 3 and remains in the Bucki collection, awaiting further study (Photo 69). The pipe appears stylistically similar to late Early Woodland period Middlesex focus, plain obtuse-angle elbow pipes of stone (Ritchie 1980: 202). These pipes are widely prevalent on Adena and Middlesex sites. Middlesex is associated with Adena culture and placed later temporally than the Meadowood phase of the Early Woodland (c. 360-610 BCE) (Ritchie 1980: 204, Granger 1979: 25).

The pipe can be interpreted as part of a tobacco ritual, possibly similar to those observed at fishing sites as noted by early European explorers. For example, Jesuits witnessed Huron men praying and sacrificing tobacco to the spirits at fishing camps (Perrelli 2001:61). Of course, ceremonial use is not implicit, because smoking certainly functioned as a form of relaxation and enjoyment. Native smoking pipes in historic times were primarily made and used by men unlike most other pottery made and used by women (Perrelli 2001:63). The Petun and Neutral –the historic inhabitants of Western New York- are particularly known as cultivators and traders of large quantities of native tobacco (*Nicotiana rustica*) (Fenton 1978:22, Perrelli 2001:65). The pipe has never been cleaned, in order to preserve any incrustations for residue and C-14/AMS analysis. Study of the residue in the bowl of the pipe may contribute to the study of regional smoking practices, and tobacco horticulture.

Local Context. In terms of setting, Bennett Beach has affinities to at least two other Lake Erie Eastern Basin shore prehistoric fishing camp sites in New York State. The Peacock site (UB 817) is located in the town of Barcelona, Chautauqua county, where Chautauqua Creek flows into Lake Erie about 35 km south west of Bennett Beach. One of the greatest similarities is that the creek enters Lake Erie at an angle, creating a peninsula of land, having the greatest amount prehistoric activity. However, Big Sister Creek enters Lake Erie at Bennett Beach at a much greater angle than Chautauqua Creek flowing into Lake Erie. Significantly, the Peacock site lacks sand dunes. The Peacock site was summarized by Marian White as "...a site with a predominate Middle Woodland occupation and some Late Woodland occupation...The site could have been used as a Late Woodland farming station or fishing camp (UB site files)."

Peacock was visited by White but not thoroughly investigated. The site collection at SUNY Buffalo was made by a local collector. At the time of recording, it was the only known Late Woodland lake shore site thought to be a fishing camp. Artifacts included small net sinkers, 26 thick Levana points, five Jack's Reef Pentagonal, one Jack's Reef Corner Notched point, and non-collared, cord-roughened, grit tempered pottery. The Jack's Reef Corner Notched and Pentagonal type, and to a lesser degree, Levana points are associated with the Kipp Island phase of the Middle Woodland. The Late Woodland occupation is slight, but diagnostic artifacts include one broken Madison point, eight cord-roughened body shreds from three different vessels, and 31 shell tempered "sherdletes."

Ritchie thought that Kipp Island culture was produced when Intrusive Mound Culture of Ohio, interacted with local Point Peninsula culture. Kipp Island sites are located on waterways where many species of fish could be obtained in abundance. Kipp Island in eastern New York has been radiocarbon dated from 310 +/- 100 to 630 +/- 100 CE (Ritchie 1969: 118-119). These characteristics, and associated diagnostic artifacts seem to fit the Peacock site. The presence of Kipp Island cultural diagnostic artifacts from the Peacock site and the absence of the same phase at the Bennett Beach site could be significant. It is possible that due to fish movements, creek movements, or cultural reasons the Bennett Beach site stopped being used for fishing during this period.

The Donovan site (UB 2401) was originally recorded by Houghton (#69) and Parker (#55) early in the twentieth century. Houghton's description is the most useful, as he describes the site as a camp situated on a high bluff north of the mouth of Eighteen Mile Creek. Houghton goes on to note the presence of notched points, a chalcedony drill, a stone with pitting, and a shale sinker "for a fishing line, around which a notch has been sawed." This could imply a net-sinker similar to those found at Bennett Beach, or possibly a weight for hook and line fishing. The location on the high bluff is also reminiscent of the Bennett Beach dunes and sandy ridges (UB Site Files). UB 2864 is also located at the mouth of Eighteen Mile Creek, and may in fact be the same site. This is a recently located surface site, presumably Archaic, which produced flint chips and one Archaic point, however, no fishing tackle.

Other lakeshore sites consist of mostly burial and village sites, ranging from the Middle Woodland to the Late Woodland. At the mouth of Cattaraugus Creek, there was a burial mound, UB 707. The Ripley or Dewey's Knoll site (UB 113) is summarized as a Late Woodland village and cemetery, located about 45 km south west of Bennett Beach. Another Parker site, (ACP #70), the Lotus Bay site (UB 2402) was described as a multi-component village site. This site differs from the others in that there is no creek directly present at this site, and Parker mentions no fishing tools or activities.

Although not on Lake Erie, Bennett Beach may share the closest affinity to the Martin site of Grand Island. The Martin Site is a multi-component, prehistoric fishing camp, located on Grand Island along the Niagara River near Lake Erie. The site was recurrently occupied from the Early Archaic to the Late Woodland, however the Middle Woodland appears to be the period of most intensive occupation. The fishing tackle consisted of 53 net sinkers. Fish remains consist of walleye, freshwater drum, channel catfish, lake sturgeon, muskellunge, white bass, largemouth bass and smallmouth bass. Interestingly, despite excellent bone preservation conditions. no fish hooks or harpoons of bone, shell, antler, or wood were recovered (Zubrow and Buerger 1994).

Site Integrity. Though Bucki reported finding two discrete depositional layers eroding out of the dunes, the site integrity remains unclear in the dune area. It is important to note that the majority of the pottery fragments are large, suggesting little post depositional breakage. Most importantly, the dunes particularly seem to be natural and undisturbed. If excavated these dunes have the potential to yield a great deal of information. The dunes are dynamic in nature and shift location, exposing new cultural material to the weathering elements. Features appear to be in situ, however, historic debris such as ferrous metal objects have been observed to appear very near the feature areas on the dunes. Radiocarbon dates must be obtained from the organic material collected from features and from pottery encrustations. It is hoped that such testing could shed light on the age, cultural affiliation and integrity of the features and the sites associated artifacts. Locus C is regularly graded to promote sand deposition and this area is probably too disturbed to yield any further valuable archaeological information. However, the excavation in this area commenced shortly after it was exposed by dune erosion and the results are thought to be valid. There is also a possibility that in yet untested areas, the ancient flood plain of Big Sister Creek now buried under alluvial deposits could yield good, stratified, archaeological data about Bennett Beach's earliest inhabitants.

Adequacy of Site Boundaries. The Bennett Beach site limits are poorly known. Though surface collections along the public portion of the beach have located several loci of prehistoric activity, the portion of the park inland of Big Sister Creek, as well as north and south of the park remain uninvestigated.

Significance. Bennett Beach appears to be the largest prehistoric site known to exist on the New York State Lake Erie shore, with the exception of the Ripley site, which is located a considerable distance to the south. The Bennett Beach site appears to have been situated to take advantage of the abundant fish resources available at Big Sister Creek and Evans Bar. Evidence for this hypothesis appears in the form of the hundreds of net sinkers that have been collected at the Bennett Beach site. Other resources were undoubtedly also collected at this location, as the unique habitat found here provide several extractive opportunities. The site may have also served ritual functions.

Research Potential. Bennett Beach's research potential is very high. This site has the potential to provide us with an example of a fishing campsite, perhaps one the largest in the region. The best represented component at Bennett Beach appears to be the Owasco culture. This is problematic as Hart and Brumbach (2003) have recently suggested that Owasco is not a valid cultural historical unit, and recommend discontinuing its use. However, they supply no alternative construction for the sites and artifacts previously assigned to this period. Further research at Bennett Beach has the potential to contribute information to this recently discovered gap in the otherwise some what well known prehistoric cultural historical sequence defined in New York State. Radiocarbon dates from pottery sherds will no doubt be instrumental in discovering the chronologic placement of the dominate Owasco like pottery at Bennett Beach.

Opinions differ on the timing of the emergence of fishing as a subsistence activity. Some argue that in the Eastern Woodlands, fishing developed in the Early Archaic and others argue for a Late Archaic start (Petersen et al. 1984). Cleland describes the evolution of the prehistoric fishery in the northern Great Lakes, as cumulative technological process, where by new techniques of fishing were added, but methods were not retired. As Cleland summarized, "Thus, we see in the northern Great Lakes region the development of spearing and angling during the Late Archaic, the addition of harpoons and net fishing during the Middle Woodland, and the continued use of all of these techniques during the Late Woodland (Cleland 1982:773)." Cleland (1982) proposed that the greatest number of fish were taken in the fall and spring. In the spring, when waters reach 5 to 10 degrees centigrade, the spawning run is triggered, and fish move into rivers and creeks that flow into lakes. In the fall, lake spawning fish generally congregate on silt-free, shallow-water, gravel shoals and reefs from late November and December (Cleland 1982:768).

Conversely, Petersen et al (1984: 199-223) argue that net fishing became an economic endeavor in the eastern part of North America for the earliest Archaic people. They list net fishing as a diagnostic trait of the Early Archaic transition from the Late Paleo Indian period. They however, do not dispute the post Late Archaic developments described by Cleland (1982). Martin (1989) argues that gill nets were in use Middle Woodland. She cites a lack of differentiation in site locations between Middle and Late Woodland

sites as support for her argument. There is also debate as to the mechanism that enabled the new subsistence activity. Some argue that fishing started as a response to increased population densities, others argue that it was an opportunistic response to new aquatic resources produced by environmental changes, which in turn produced an increased in population (Fagan 2000:371).

The Bennett Beach site appears to be situated as to take advantage of these two seasonal fisheries. The Evans Bar, located about 1 mile off the shore of Bennett Beach, is a rocky or gravely, shallow water shoal important for spawning fish. Today the Evans bar, and a similar landform off of Van Buren Point, near Dunkirk New York are the premier fish holding localities in the Eastern Basin of Lake Erie (Donald Einhouse Appendix A: Interviews, Appendix C). Big Sister Creek also holds abundant fish resources and provides spawning habitat for several fish species (New York State Department 1987, Appendix B). These data suggest that the Bennett Beach site has the potential to provide information potentially significant in the Inland Shore Fishery debate.

Further, fisheries biologists believe that historically walleye spawned in Big Sister Creek. Recent attempts by the New York State DEC, Lake Erie Unit to rehabilitate walleye spawning in Big Sister Creek have failed, and the program has been discontinued (Donald Einhouse Appendix A: Interviews). The NYS DEC Lake Erie Unit has however, expressed interest in finding archaeological evidence of walleye spawning in Big Sister Creek to corroborate their theory (Donald Einhouse Appendix A: Interviews, Appendix C). This type of multidisciplinary, applied archaeology, geared at solving contemporary environmental problems is what van der Leeuw and Redman (2002:597) see as the "future of archaeology."

However, there are some notable limitations to the research potential of this site. Heavy, historic foot-traffic on the site probably began as soon as the Bennett Homestead opened its doors to summer guests in 1875, and sustained a high level, in its later and present function as a public beach. During this time, obvious artifacts such as pottery vessels, and large stone and copper tools were undoubtedly removed by countless visitors as curiosities. This should result in a biased sample with more small pottery frags, and chert debitage than large sherds and projectile points or bifaces. The dunes, and with them intact prehistoric features were undoubtedly partially destroyed. It is curious then why early archaeologists, such as Houghton and Parker did not know of them. Perhaps the dunes were in a n-transform, resulting in burial, and only in the twentieth century did they erode out enough too be noticed. Both the launching and landing of small boats off the beach, involving dragging the vessels across the beach must have been detrimental to features, especially those exposed on the surface at surface Locus C. This rational led to the archaeology at Locus C, essentially salvage work. Construction and subsequent demolition of the Buffalo Bathing Bath House (MDS 12) could have disturbed the prehistoric deposits associated with Locus C. Also, Dr. Gramly's work at the site remains wholly undocumented. This is most unfortunate due to the sensitive nature of the burial deposits he may have encountered.

Pg. 3 UB 2617 site description, cont.

C. Discussion: The Bennett Beach site (UB 2617) is eligible for the National Register of Historic Places based on the above criteria. A total of 1,500 prehistoric artifacts are in the SUNY at Buffalo collection, and a much more extensive collection remains in the possession of an amateur collector, Mr. James Bucki. Bucki claims that most of his collection came from Dune 3, mostly Locus E trending towards Locus F. A total of 168 historic artifacts were recovered from the Bennett Beach site (UB 2617) excavations in Locus C, however it is considered to have a low research potential.

Prehistoric cultural material recovered is consistent with the Early, Middle and Late Woodland phases of occupation, with a less well-represented Late Archaic component. Prehistoric pottery, at UB spans from the Early Woodland to Iroquoian (n=109) fragments. Site characteristics are consistent with a recurrently occupied, seasonal fall and spring fishing camp.

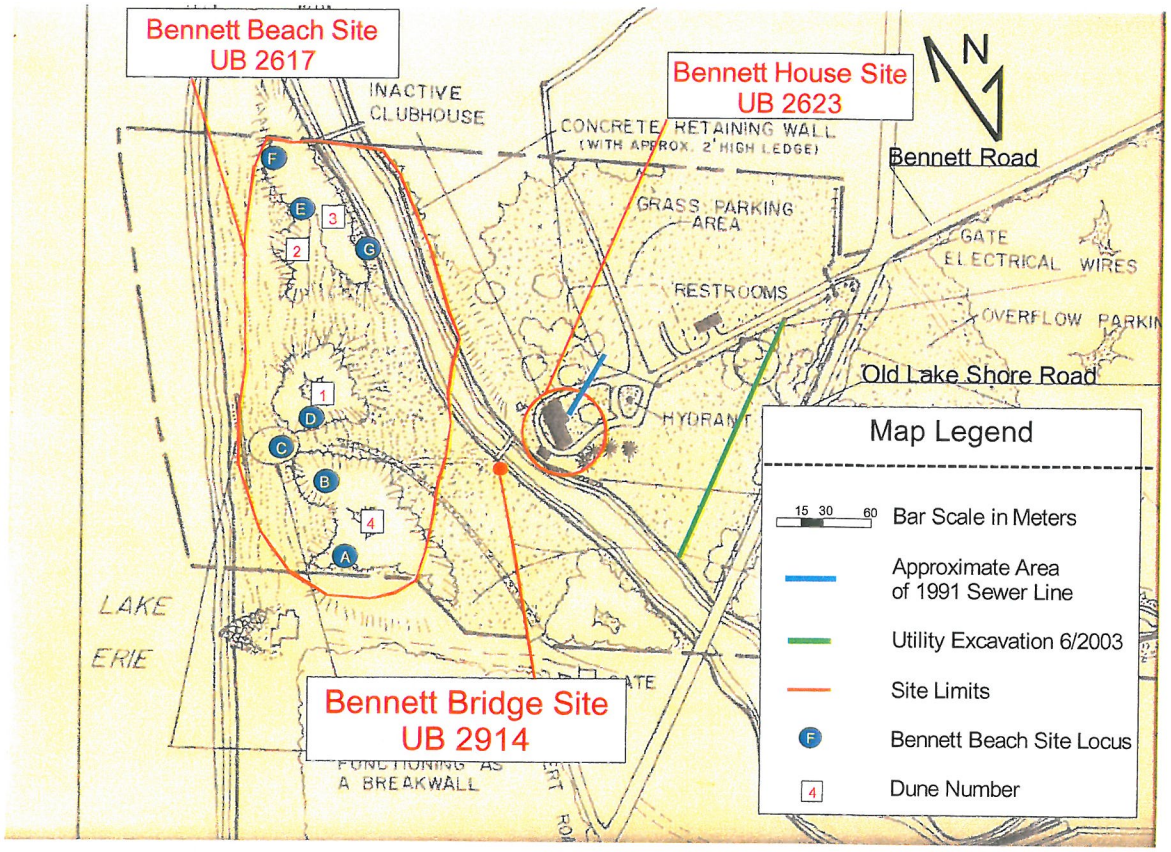
The site point collection includes Madison points (post 1100 AD), Levana points (c. 900- 1200 AD), both from the Late Woodland, Meadowood points, (c. 500 BC) from the Early Woodland, an Orient Fish Tail Point (c. 1044-763 BC) from the transitional Late Archaic to Early Woodland (Ritchie 1961:31,33,35,39), unidentified stemmed points, probably belonging to the Late Archaic (c. 3500 BC) and a large slate spear point which is un-dated. The spear point could have been used as a digging tool, an ice cutter for winter ice fishing, or to dispatch large fish (i.e. walleye, sturgeon) after landing them (Cleland 1982:763). A total of 109 prehistoric pottery fragments were recovered that are in the SUNY at Buffalo collection. Of these, 9 were described as Middle Woodland, 4 as Vinette 2, 36 as Owasco, and 9 as Iroquoian. The remainder were too deteriorated or damaged to classify.

The artifact assemblage is rounded out by rough bifaces, debitage, simple blade tools, a circular stone pendent, a (late Early Woodland?) clay smoking pipe, thermally altered chert, and sand stone flakes. Utilized cobbles, excluding thermally altered rocks, make up a small percentage of total artifacts recovered, only 20 total (13 net sinkers included). A pile of net sinkers was found on the surface of a dune without other artifactual association. Net sinkers from the site average 438.825g, while the average for the pile is 478.4083g. There are 1,873 total prehistoric artifacts in the SUNY Buffalo collection (excluding all ecofacts), as well as historic (n=307) artifacts.

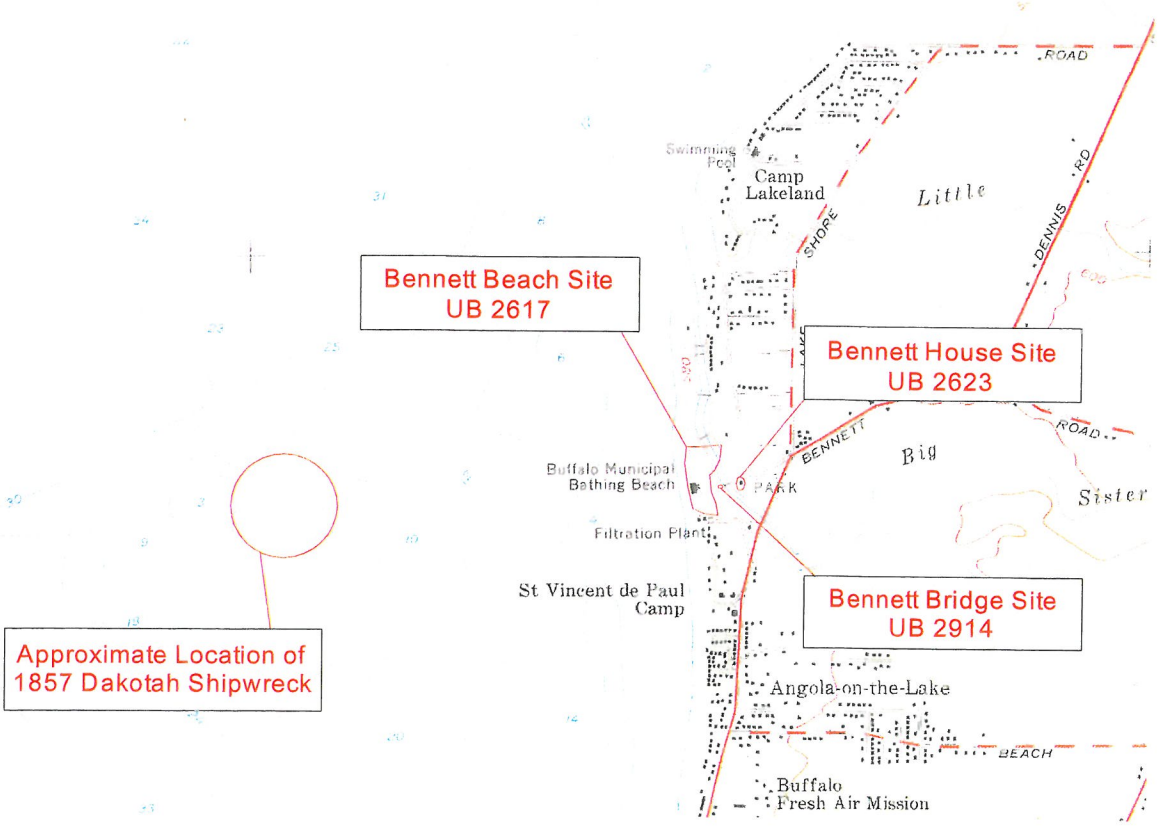
The six features documented at Bennett Beach probably represent the traces of the living or activity floors of structures, as excavators thought, or the remains of smoking racks used to preserve fish, although no post molds for such a rack have been identified.

9) Photography See Reports of the Archaeological Survey, Vol. 35, No. 4, Photos 1-??.

10) Map References USGS 7.5' Quad Name Angola, New York
UTM coordinates 662600m E 4733100 N



CONFIDENTIAL: SITE LOCATIONS NOT FOR PUBLIC RELEASE



Bennett House site (UB 2623)

This section of the report presents a description of the historic Bennett House site and includes a New York State prehistoric site inventory form. The Bennett House, also known as the Bennett Homestead site was identified inventoried with the OPRHP by the Erie County Historic Resources Survey in 1981 (USN 029-13-0008, Appendix C). The UB Archaeological Survey began site documentation in 1991 when the house layout was mapped by Elaine Herold and Douglas Perrelli conducted the first archaeological investigations at the site. Five Shovel Test Pits were excavated under the floor of an addition, after work crews, in the process of renovating the structure, removed the floor boards, to expose dirt floors. Unfortunately, the City of Buffalo showed a wanton disregard for the historic potential of this site and the structure was demolished sometime after 1993 and before 2003.

Context. The historic context of the Bennett House site relates to the change from an isolated 1820's homestead and lodge boarding east-west travelers in sparsely populated frontier country before the roads were improved; to a popular destination for middle class, urbanite summer vacations once road and rail infrastructure improved in the late nineteenth to early twentieth century. The area developed a summer cottage and recreation industry that dominated the local economy until the today (Town of Evans 2005).

Joseph Bennett's exciting and prominent life began in Vermont in 1803. He was a drummer boy during the war of 1812 and when he was 15 he sailed on trading vessel that covered Cayuga Lake. However, Joseph's training in navigation and nautical arts ended in 1820 when his father Samuel moved the family to a farm plot in Williamsville. Nine years later his family moved to Evans, where he would live for more than 80 years. Bennett is best understood through his own journal writings that have been transcribed and are on file at the Town of Evans Historical Society (Bennett n.d.).

Joseph or "Deacon" Bennett first came to the Evans area in November 1820, when his father Samuel moved the entire family from a home in Amherst. They traveled along the shore of Lake Erie, headed for the Western Reserve, Ohio with a horse team and wagon as well as any possessions the family could carry, all traveling on foot. By evening, the Bennett family decided to stop at the next boarding location they found to rest for the night. They came upon an empty log house and stayed the night and the next day while waiting for an ice storm to pass. The next day, Aaron Salisbury and several other locals convinced the family to stay and occupy the empty house. Samuel Bennett made improvements to the house and took a tavern license, and kept a 'log house hotel.' Three days after arriving in Evans, the young Joseph Bennett put on ice skates and skated down to the mouth of Big Sister Creek, adjacent to the project area. This was the first time that Bennett saw the land that would soon become a possession of his family and stay as such until after his death (Greene 1997:5-52).

Bennett entered the lake trade early in his youth he bought and captained the small-sloop the "Ohio" in 1824 (Smith 1884:575). Later, Bennett spent three years in Pennsylvania's Susquehanna Valley where he supervised crews blasting new canals where he met and married 19-year-old Mary Roat, of Englishtown, New Jersey. Bennett moved back to Evans in 1829 and purchased the home of Mr. Aldrich in 1830 for $3,500 which would become known as the Bennett House (UB 2623) (Vogel 1979). Bennett added two rooms and finished off the inside with lath and plaster. Also in 1830 Bennett's wife Mary developed breast cancer and went to live with an oncologist in Locke (now Lockport) for a year and a half. Bennett paid the doctor $10 down payment, plus room and board and another $10 after successful treatment of the cancer (Bennett n.d.).

Joseph Bennett was a prominent local man at this time holding many elected public offices. Bennett helped organize the Baptist Church at Evans Center in the early 1830s, and served as superintendent of the Sabbath school for forty-seven years (Smith 1884:579). By 1840 he had become a militia captain and was working to resolve disputes in maritime disasters. He worked on the Erie Canal, was a postmaster in Evans, served a term in Albany as an assembly member, and served as the Town of Evans coroner and supervisor for many terms, starting in 1841. Bennett, although a religious man, was not part of the temperance movement. According to his journal by at 1853 Bennett was attending Anti-temperance movement parties and drinking "healthy quantities of whisky" a favorite drink (Bennett n.d.).

Photo 83. Picture of Joseph Bennett, date unknown (courtesy Evans Historical Society).

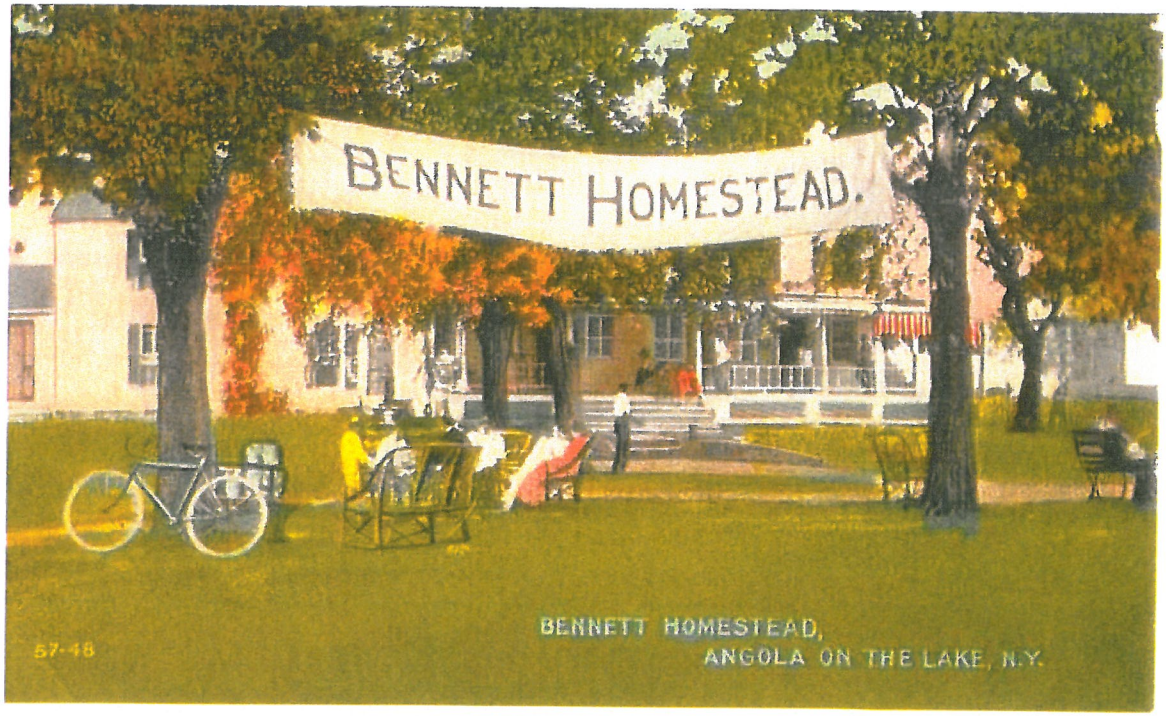


Figure 19. Front of the Bennett Homestead, probably dating to 1908.

Figure 20. Similar view as previous, probably dates to around the same time.

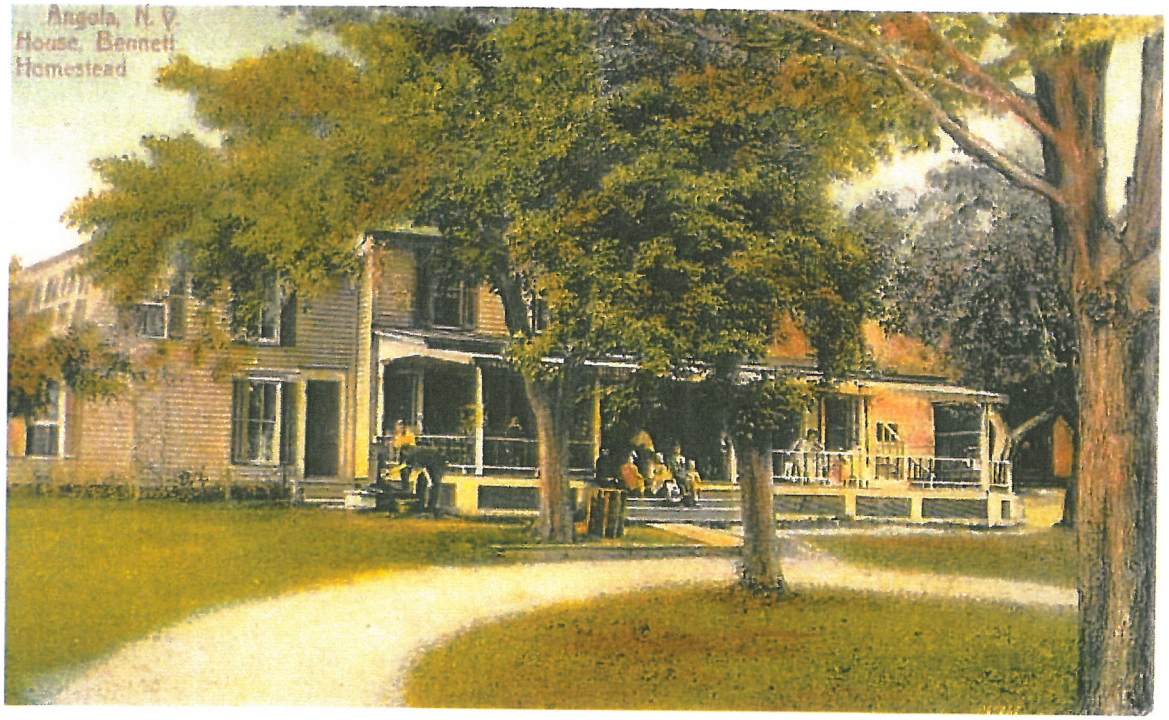


Figure 21. Postmarked August 3, 1908. Shows old chain bucket wooden pump. Also trunk by side of road. Allie Seeley is first person on left, front row.

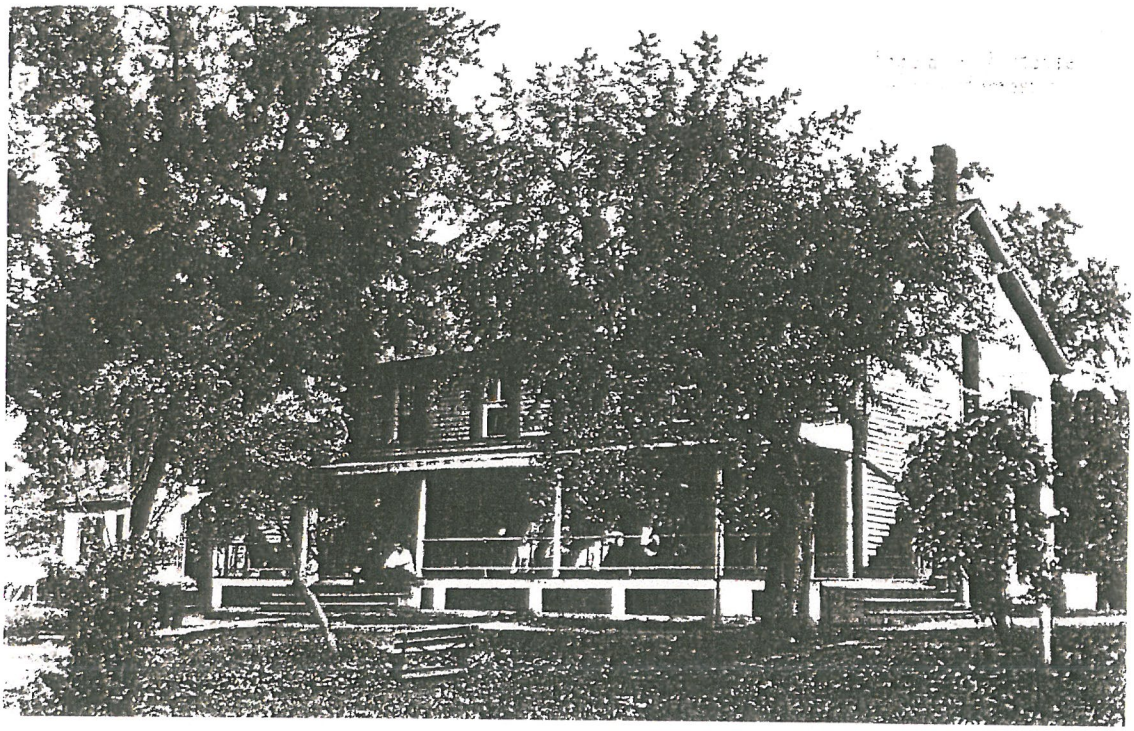


Figure 22. Post card depicting Bennett House, facing southwest. Note activity on the porch. From James Bucki collection.

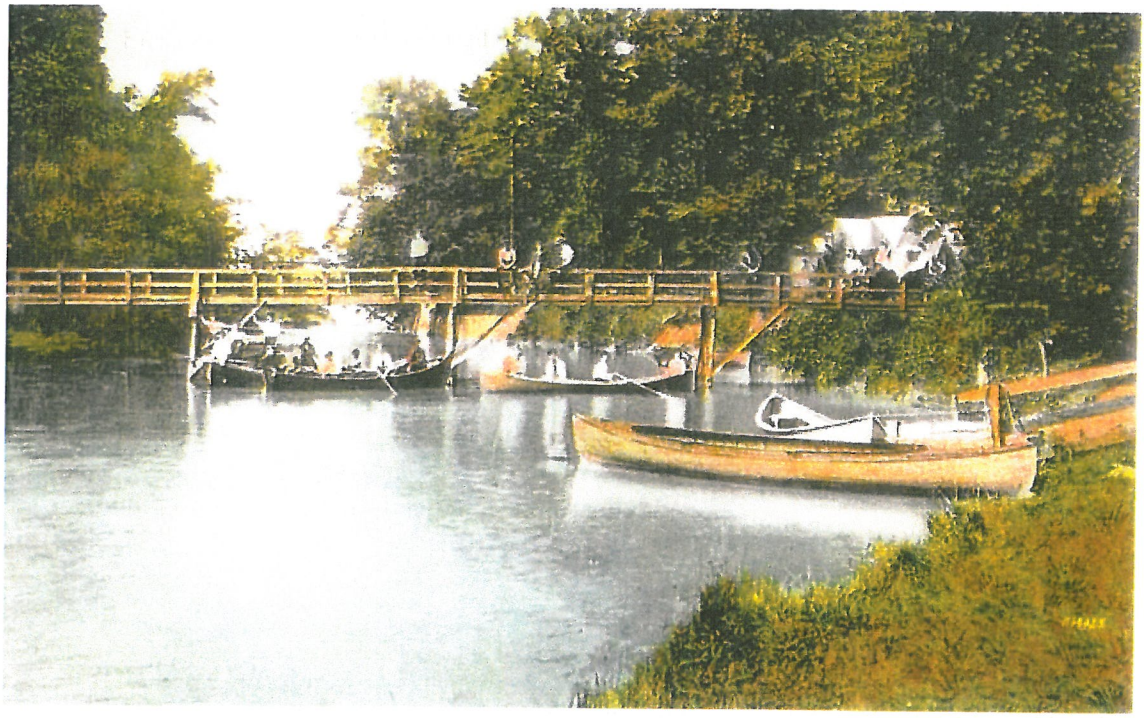


Figure 23. Post card view downstream depicting Bennett Homestead bridge over Big Sister's Creek.

Figure 24. Post card depicting Bennett Homestead bridge over Big Sister's Creek.

Site Size. The site limits are somewhat arbitrarily defined as encompassing the entire extent of the Bennett Homestead including the primary structure and a small outbuilding located 13.8 m to the west as documented in 1981 and 1991, plus a buffer zone. This area measures about 35m (north to south) by about 25 m (east to west). This site area is probably misleading, as several important and associated activities no doubt occurred much farther away from the building complex. Unfortunately, the only documented archaeological investigations at the site are limited to five Shovel Test Pits (STPs) dug at irregular intervals under the floor boards of an addition to the original house, before the whole structure was demolished. The layout of the site as documented in 1991, including STP locations is depicted in Figure 35.

Site Location. The Bennett House site is located in the Town of Evans, Erie County, New York (MCD 02913). The site encompasses the former Bennett House and its immediate surrounding area. Photos 84-89 depict the site's setting at the time of investigations in 1991. The site is situated east of Big Sister Creek, west of Old Lake Shore Road, essentially at the foot of Bennett Road.

Site Characteristics. The site is situated on the Lake Erie Plain, near the present shore line. It is located just slightly inland, just past a large sand ridge that runs parallel to the shoreline. This topographically prominent feature may have provided some shelter to this structure from the otherwise strong, prevailing westerly winds that come off the lake.

Architecture. At the time of inventory, the estimated construction date for the original portion of the house was circa 1830. Additions were noted to have occurred in 1880, 1882 and 1884 to accommodate summer boarders (Appendix C). In 1991 Herold working on information from two local informants, Jack Empke of the Evans Historical Society and Judy Cowe identified the original portion of the house as the two story high, one room deep section with a cellar (Figure 35). The style of the original house section may be best describes as representative of the folk I-House style (McAlester and McAlester 1984:96-97).

Artifact Summary. The material found in both the surface collection and the five STPs excavated seem to be consistent with a rural nineteenth century homestead, of the type expected to be associated with a structure like the former Bennett Homestead. A very large amount of material was recovered from the limited field work conducted here including burlap frags, unidentified cloth frags, 1 woven basket frag, 1 leather piece, 1 metal button, 1 leather baseball glove, one while ball clay pipe stem and one pipe bowl, 14 bone, 2 undecorated white wear fragment, 1 green bottle glass, 1 red transfer print whiteware, 2 blue transfer print white wear, 1 black transfer printed whiteware, 1 aqua bottle fragment, 9 olive green bottle glass, 1 wooden utensil handle, 29 brick frags, 62 mortar, 12 machine cut nail, 3 green window glass, 7 clear window glass frags. A full list of materials recovered is presented in Table 20.

Features. Considerable evidence for features was discovered by Perrelli's investigations in 1991. These include possibly burnt soil and ash deposits in shovel test profiles and a filled in, stone lined well located to the west of the structure. Sheet midden deposits are often associated with early to mid nineteenth century structures (Versaggi 2001). However, after 1875, the year Bennett transformed his land into a beach resort, sheet middens accumulation may have decreased due to an increased effort to keep the land in near pristine condition. However, at this same time, artifactual deposits and features indicating a sudden increase in summer boarders should be expected.

Integrity. The integrity of the deposits at the time of Perrelli's field investigations appears to have been very high. The floor boards had recently been removed and artifacts occurred on the surface, including bottle glass fragments, a wooden utensil handle and a leather baseball glove. The shovel test profiles too displayed evidence of complex stratigraphty with good context. However, since the Bennett House was razed, sometime between 1993 and 2003, no archaeological investigations have occurred at this site. It is likely that the integrity of the site deposits was severely handicapped by this demolition.

Historic Research Potential. This study represents only a preliminary examination of the site. Additional data would be needed to characterize its deposits further. Initial results suggest it has considerable research potential. The research potential for the site is especially high, because the site is clearly associated with Joseph Bennett's rise to prominence in the local community during the period that it archived significance in the mid to late nineteenth century.

Potential Impacts. No impacts are planned for the site. However, if construction or other earthmoving activities occur at or near this site, an archaeological survey will need to be conducted to asses the existence and integrity of any associated cultural deposits.

Recommendations. Because this initial survey indicates that the Bennett House site has the potential to yield important information on the history of western New York, it appears to be eligible for inclusion on the National Register of Historic Places under Criterion D. However, because the site is also associated with Joseph Bennett, an influential early settler who led a prominent life, it may also be eligible under Criterion B. Therefore, before any disturbances to the site are executed, a thorough archaeological investigation should be performed. The site limits likely extend farther than those depicted here, however no testing has been conducted to confirm this. No evidence of former farm outbuildings or semi-permanent structures built for the resort goers in the later eighteenth and early twentieth century have been identified. Before any disturbances are carried out anywhere within the Bennett Beach Park limits are carried out, a complete cultural resource study will be necessary to assess the research potential of that area. An OPRHP historic site inventory form is presented below.

RECOMMENDATIONS

The Bennett Beach site and vicinity has great potential to increase our knowledge of history and prehistory at the local and regional scales. Preservation and stewardship of the archaeological resources at Bennett Beach is of the utmost importance. Before further activities that could impact any part of Bennett Beach or adjacent areas is commenced, Phase 1A/B reconnaissance surveys should be conducted. Because of the incredible research potential of this site, it is important that no more archaeological data is lost to human activity. A five meter (15 ft) shovel test grid across the entire park, except for the beach area is recommended to test for prehistoric and historic deposits. Natural conditions such as dune erosion are also damaging the archaeological integrity of the site. Therefore, the preservation of the dune structure should be addressed. Vegetation blocks and grass could be inexpensive solutions for preserving the dunes.

The remains of the 1857 wreck of the Dakotah provide interesting research opportunities to study a underwater archaeological site, possibly yielding insight to 19th century commercial shipping on the Great Lakes. Various methods of identifying underwater cultural resources exist. The SCUBA method is probably the most efficient and effective way to investigate this site and local amateur divers have identified the wreck and use this method informally (OTA 1987:38). Conservation of underwater resources is important and should also be considered. Excavation of any underwater cultural resources should not commence unless there is a threat to these materials or a sufficient research design exists. If these initial criteria are met, excavation should only continue if the archaeologist can ensure that the conservation of the recovered underwater cultural resources (Hamilton 1996:43).

The most important and immediately accessible data that should be studied further exists in the form of collections held by James Bucki and the Marian E. White Museum/Archaeological Survey, University at Buffalo. More in-depth study of these large and diverse collections will yield a wealth of information about the site with local and regional implications. Extensive lithic and ceramic assemblages have been recovered along with faunal and paleo-botanical material from features.

Historic resources are also abundant and important. The site is associated with the life of prominent local Joseph Bennett and relates to the development of the tourism and summer resort industry he helped to develop. This industry remains a mainstay of the local economy today. The story of the development of a frontier boarding house and farmstead into a large summer resort is vividly detailed in Bennett's journal, lending the historic research potential a special and well-developed context. Archaeological deposits can help tell this story.

Justification On the Need for Erie County to Protect and Purchase Pine Lodge

Statement by Bruce Kershner,
Professional Forest Ecologist and
National Old Growth Forest Authority

The Pine Lodge property is a nationally rare environmental treasure and would be irreplaceable if lost to development. It would serve the population of Buffalo metro area and Erie County by clearly making a superb addition to adjacent Bennett Beach County Park.

It should be noted that Pine Lodge was *twice* placed into **New York State's Official Open Space Plan's top 10 priorities for Region 9 to be acquired as public open space/park.** Specifically, it fell into the Region's top 10 priorities **twice** as **"Lake Erie Shoreline Open Space & Lake Access"** and as **"Old Growth Forest Sites."**

What should be realized is the alternative to NOT purchasing it: the high likelihood that the site will be more intensively developed, as can be seen with the cottage developments along the rest of the shore in the direction of Buffalo:

- lake shore erosion would greatly increase, since the protective barrier of the currently stable sand dune would be destabilized when its forest is removed due to cottage construction
- river erosion would greatly increase here as well since the old growth forest protects the mouth of Big Sister Creek
- the scenic assets that the site now provides for Bennett Beach users and the surrounding neighborhood would be endangered by replacing it would "just another" lake cottage development
- the opportunity for the public to enjoy the recreational and open space use of a sizable, undeveloped, exceptionally scenic lake shore property would be lost

The ecological significance and uniqueness of Pine Lodge rates "nationally significant."

- The Pine Lodge property contains several acres of Old Growth Hemlock Forest
- This site is ***one of only two sites in the world*** where old growth hemlock grows on sand dunes ! The other site is in a *national park* in the Midwest.
- This site is the ***oldest forest on the entire coast of Lake Erie***, both the U.S. and Canadian shores. The trees have verified as reaching ages of to 525 years old, probably older.
- The trees in this ancient forest are ***tied as the oldest living things in New York State***
- Besides being an ecological, scenic and scientific treasure, ***this primeval forest is an outstanding "Living Historic Monument."*** It is the only place along the lakefront of Erie County to see the original historic landscape of the Native Americans, before Europeans came here. It should be considered as important and irreplaceable as a historic building or archeological Indian village dating back to the 1500s. *If such a human-made historic treasure was found, would there be any doubt that it should be purchased and protected*? It would be an invaluable educational resource for the children and the public of Erie County.

Justification On the Need for Erie County to Protect and Purchase Pine Lodge

Statement by Bruce Kershner,
Professional Forest Ecologist and
National Old Growth Forest Authority

The Pine Lodge property is a nationally rare environmental treasure and would be irreplaceable if lost to development. It would serve the population of Buffalo metro area and Erie County by clearly making a superb addition to adjacent Bennett Beach County Park.

It should be noted that Pine Lodge was *twice* placed into **New York State's Official Open Space Plan's top 10 priorities for Region 9 to be acquired as public open space/park.** Specifically, it fell into the Region's top 10 priorities **twice** as **"Lake Erie Shoreline Open Space & Lake Access"** and as **"Old Growth Forest Sites."**

What should be realized is the alternative to NOT purchasing it: the high likelihood that the site will be more intensively developed, as can be seen with the cottage developments along the rest of the shore in the direction of Buffalo:

- lake shore erosion would greatly increase, since the protective barrier of the currently stable sand dune would be destabilized when its forest is removed due to cottage construction
- river erosion would greatly increase here as well since the old growth forest protects the mouth of Big Sister Creek
- the scenic assets that the site now provides for Bennett Beach users and the surrounding neighborhood would be endangered by replacing it would "just another" lake cottage development
- the opportunity for the public to enjoy the recreational and open space use of a sizable, undeveloped, exceptionally scenic lake shore property would be lost

The ecological significance and uniqueness of Pine Lodge rates "nationally significant."

- The Pine Lodge property contains several acres of Old Growth Hemlock Forest
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The analysis and conclusions set forth in the independent consultant's report are clear and concise.

- "The forest community on the site is hemlock-northern hardwood forest. Trees on this parcel have been dated from 200-500 years old. A hemlock forest itself is not uncommon. What makes Pine Lodge unique is that it is growing on a Great Lakes dune. **There is only one other plant community like this in the world,** Sleeping Bear National Park in Michigan."

- "...it is the community (the assemblage of plants and animals) and its presence on a sand dune that makes Pine Lodge **a locally, regionally and globally rare and unusual forest."**

- **"Excepting forest communities on vertical rocky cliffs, the trees in the hemlock-hardwood forest at Pine Lodge are the oldest in New York State and may be second only to those at Allan Seger Natural Area (Pennsylvania) in the northeastern United States."**

- "Due to ~~serve~~ severe limitations for site construction and the sensitive and rare ecological system related to vegetation and dune structure, Great Lakes Environmental, deems the construction of a single-family home or any structure on the dune at Pine Lodge would [be] detrimental to the ecosystem of the site. The property owner's proposal includes the construction of a 125-foot retaining wall and planting of stabilizing vegetation to sustain the dune. **In our opinion these measures or any mitigating measures will not maintain the ecological integrity of the dune."**

- This report addresses 10 separate development issues, ranging from soils and erosion to vegetation and archeology and the negative impacts on each individual issue, cumulatively the adverse impacts of these issues would be devastating to the integrity of the dune and the long term health of the old growth trees and this rare ecosystem.

OLD GROWTH FOREST SITE REPORT
Western New York Old Growth Forest Survey
Niagara Frontier Botanical Society

DATE: 17 Feb 96
12 May 96
additional notes Oct. 15, 2003

1. LOCATION:

SITE NAME: Pine Lodge Site

IDENTIFICATION NUMBER: E-12

COUNTY: Erie

TOWN: Evans

DIRECTIONS: The site is in Angola-on-the-Lake, NY. Exit NYS Thruway at Angola and proceed north toward Lake Erie on Eden-Evans Road. Cross NYS Routes 20 and 5 to Lakeshore Road. Turn right and proceed past the intersection with Bennett Road and past Bennett Beach Park. The first driveway on the left after Bennett Beach leads to the old Pine Lodge. The Pine Lodge grove occurs on a sand dune directly behind the old lodge on the eastern side of the mouth of Big Sister Creek. It faces directly on Lake Erie. Remnants of this community continue along the sand dune slope below a row of summer homes east of the Pine Lodge grove.

2. MAP:

3. SIZE/SHAPE: 2-3 acres, roughly rectangular on 18 acre property

4. OWNERSHIP: Lenn Lease Inc., Box 155, Cheektowaga, NY 14222

5. FOREST COMPOSITION: (D)-dominant Hemlock-Northern hardwoods forest

OVERSTORY	UNDERSTORY
Tsuga canadensis (D)	Berberis sp. (alien)
Fagus grandifolia	Prunus virginiana (D)
Prunus serotina	Acer rubrum
Magnolia acuminata	M. acuminata
Pinus strobus	Taxus sp.
Quercus rubrum	Lonciera candensis
Populus sp. (deltoides)	Lonicera sp. (alien?)
	Sambucus racemosa
	Ribes americanum (alien)
	Rubus sp.
	Cornus sericea

SAPLING LAYER	GROUND LAYER
A. rubrum	Trillium grandiflorium Maianthemum canadense (D) Smilacian recemosa (D) Polygonatum biflorum Solidago sp. Aster sp. Impatiens sp. Erythronium americanum Aralia nudicalis Osmunda regalis Thalictrum diocium Polygonum cuspidatum (alien) Arisaema triphyllum Equisetum sp.

6. **CORE SAMPLE DATA:**

We counted rings on two stumps located on the sand dune slope facing the lake within a few hundred feet east of the Pine Lodge grove. These trees are of average to slightly small size for this site.

Stump #1 - Tsuga canadensis - 18 1/2" diam. 10' from the base - 315 years
Stump #2 - T. canadensis - 22" diam. at 20' from base - 376 years: at 24' from base - 334 years. Using 40 years/4 feet of growth, we estimate this tree to be 576 years old.

We cored one tree in the Pine Lodge grove.

* Core #1 - T. canadensis - 58" circ. - ~~222~~ 191 rings with 3/4" inch of the core unretrievable. This sample was hard to read. We conservatively estimate the tree to be ~~250~~ 210-220 years old.

7. **DISTURBANCE:** Pine Lodge was in the 19th and early 20th century a picnic and camping ground. It has seen much disturbance incluсding the construction of paths, a Japanese garden, tent platforms, cabins, and a lakeside observation platform. Most of these cultural items are now removed and what remain are ruins. Undoubtably, the owners removed dead tress and fallen limbs in the past. However, we do not believe that the site was ever logged commercially.

8. **SLOPE/ASPECT:** 30 degrees lakeside, flat to 15 degrees landside, facing west

* Core recounted and corrected in lab by C. Rosenburg. The core is available for inspection

9. **RECOMMENDATIONS AND COMMENTS:** Lenn Lease Inc. has no address other than a post office box and no phone number. We believe that most of the trees in this grove are probably old-growth specimens. Some may be 500 years or older, and many are over 200 years old. Therefore, this grove (along with Leolyn Woods at Lilydale) represents the highest density of old-growth trees and possibly the oldest trees (outside of the cliff cedars at Letchworth State Park) in our region. Its location directly on Lake Erie is unique. The site also has an interesting social history. Recommended for further study. Hemlock forest on sanddune may also be unique in state or region.

10. **CONTACT PERSON:** This informant is knowledgeable on local history but not on the botany of Pine Lodge

NAME - Bill Houston

ADDRESS - 11 Glenwood, Angola, NY 14006

PHONE - (716) 549-2079

SURVEY MEMBERS:

Bruce Kershner, 353 Fruitwood Terrace, Williamsville, NY 14221: (716) 634-7158. 21 PARK LANE COURT WILLIAMSVILLE 14221

James Battaglia, ~~10630 Boyd Road~~, ~~Clarence~~, NY ~~14031-2213~~: (716) ~~759-8855~~. 626-1950

Michael Siuta, 55 Norma Drive, West Seneca, NY 14218: (716) 822-2544.

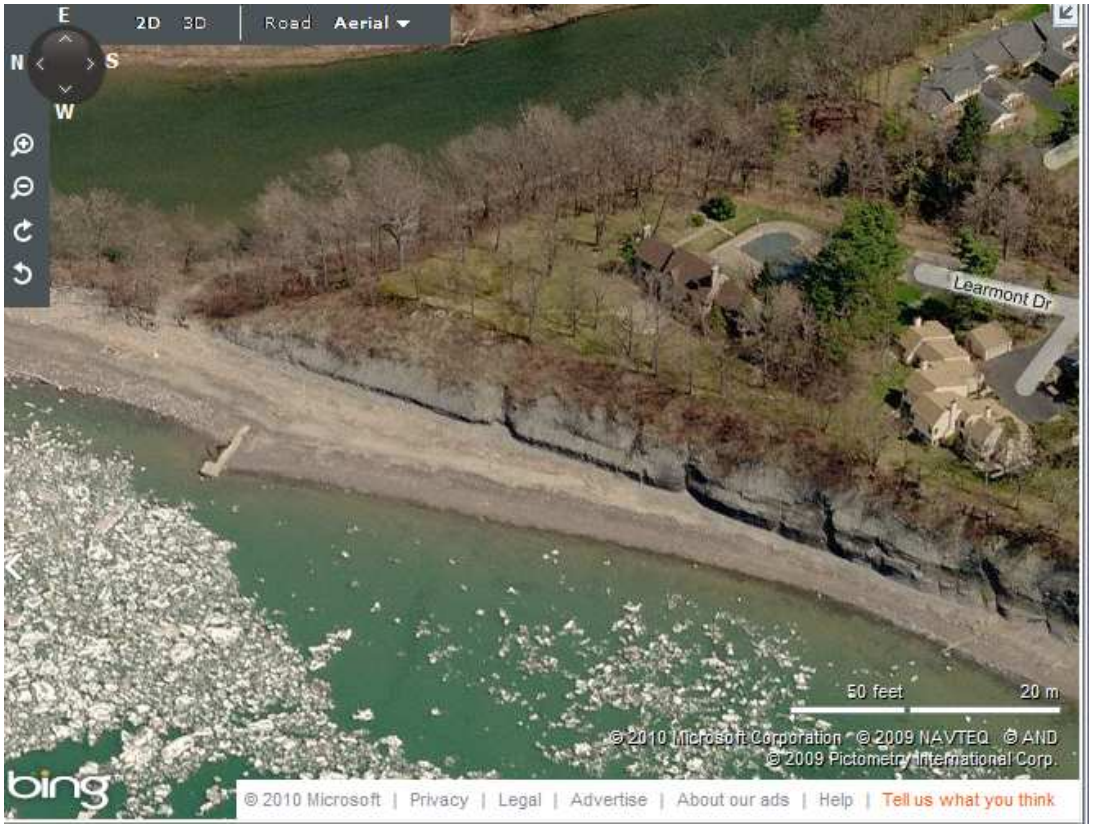
Charles Rosenburg, 6797 Tonawanda Creek Road, Lockport NY 14094: (716) 434-9403.

Glen Gelinas, 1480 Ridge Road, West Seneca, NY 14218: (716) 825-7760.

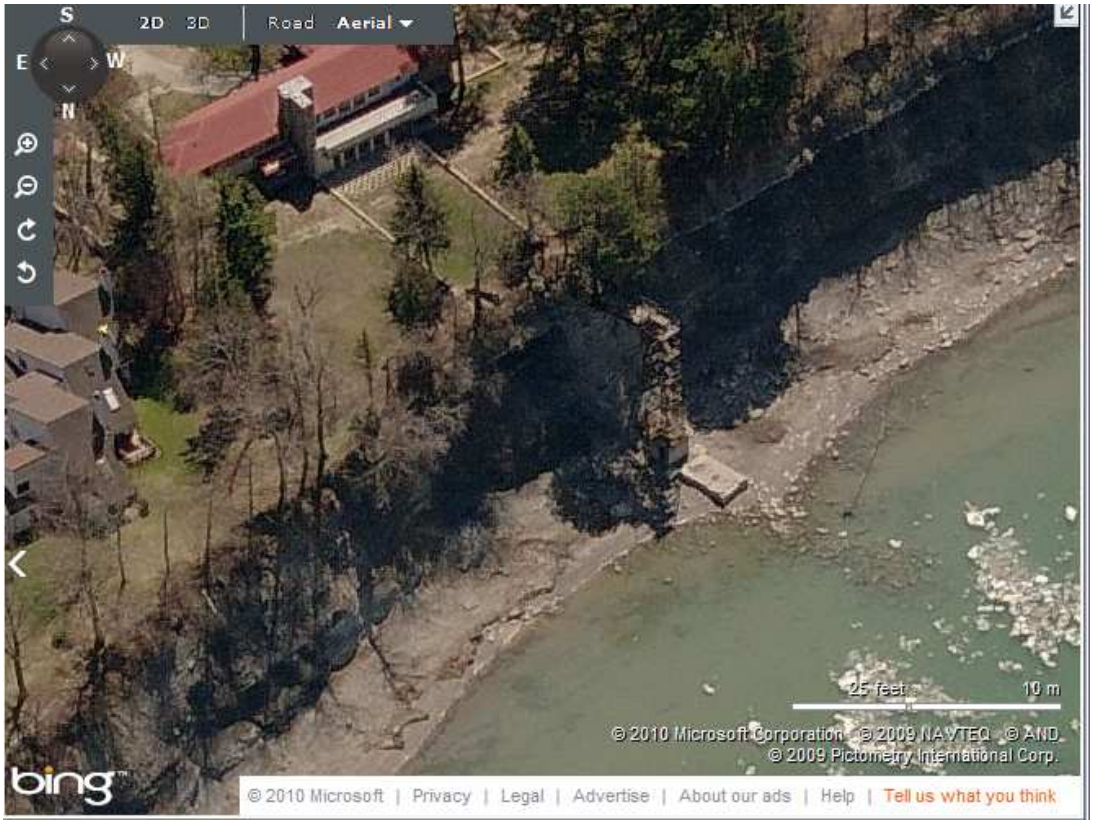

N↑
Lake Erie
Top of DUNE

Aerial Photographs of the Evans Shoreline

Shoreline Features in Sub – Area 1:

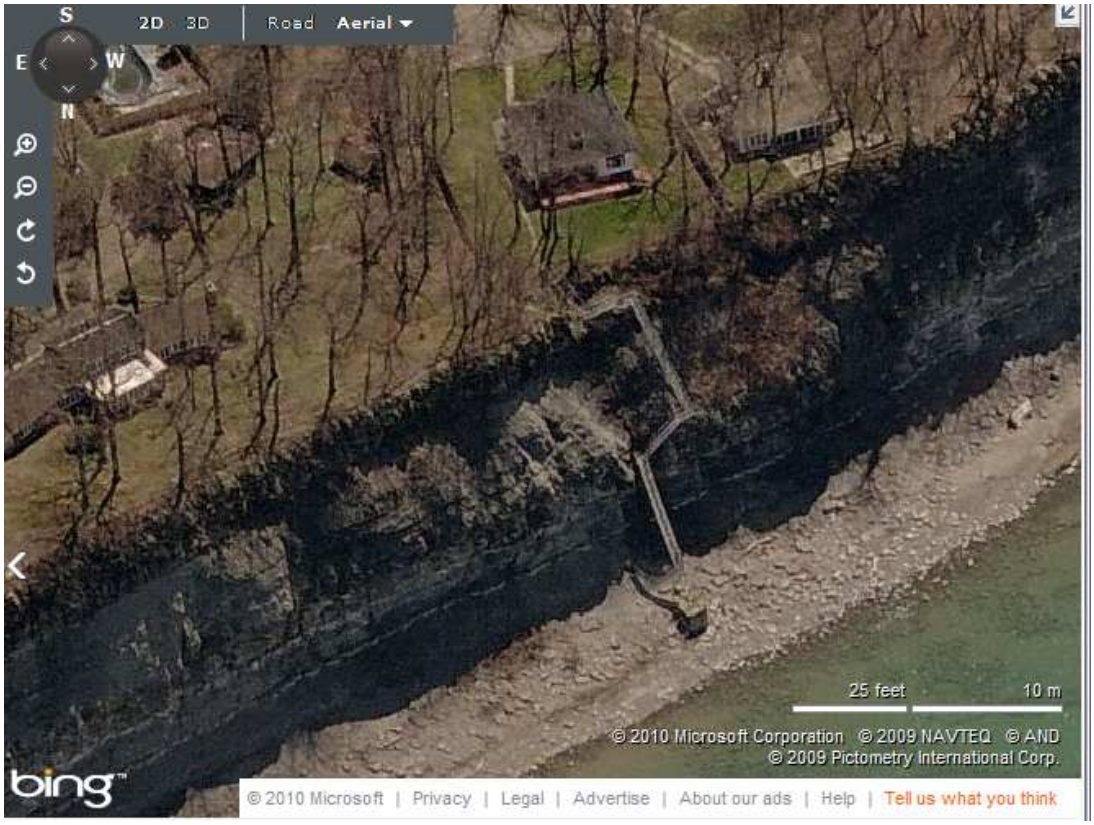


Below Bluffs at Eighteen Mile Creek

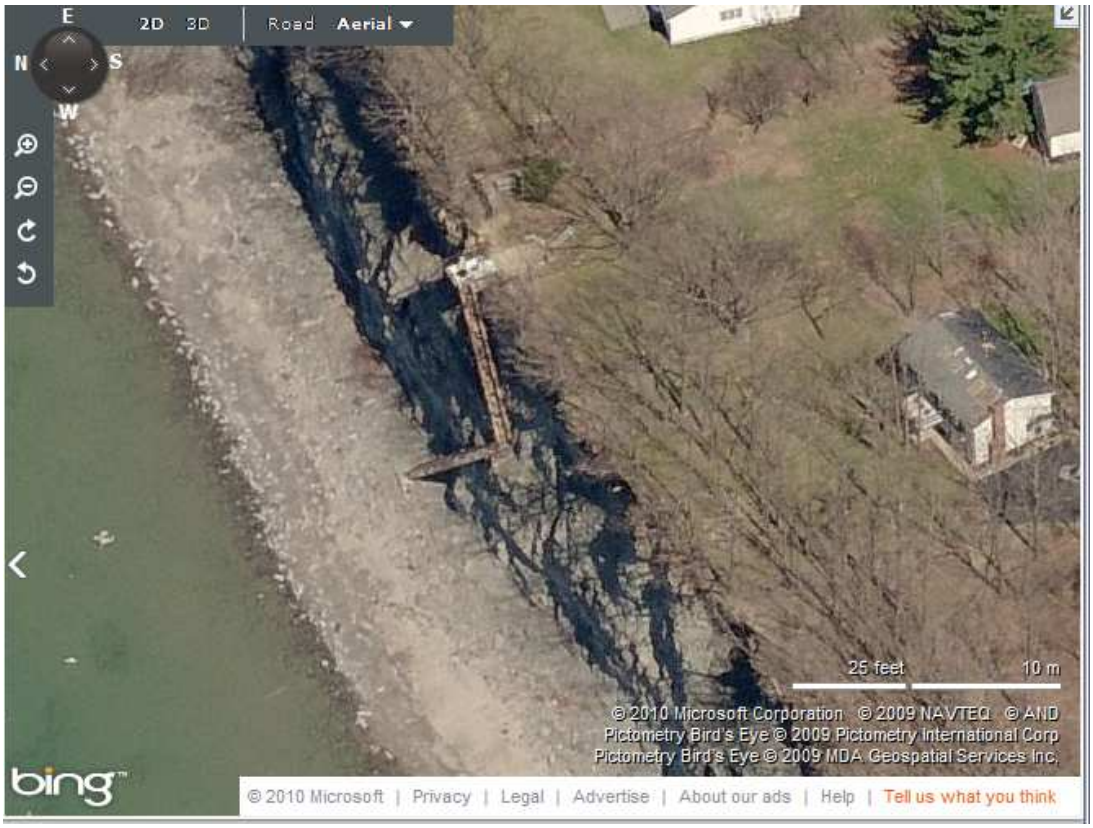


Graycliff, with remnants of stairway to beach

Shoreline Features in Sub – Area 1:

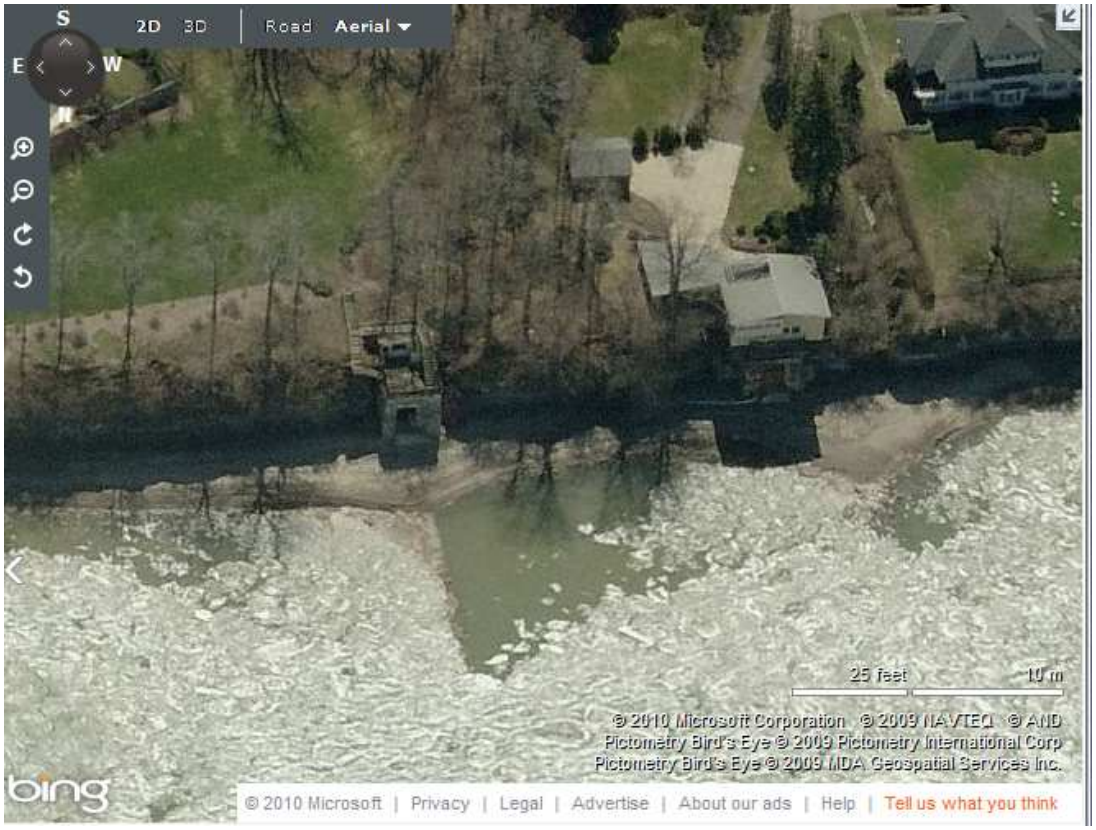


Private property south of Hamilton Drive with stairway to beach

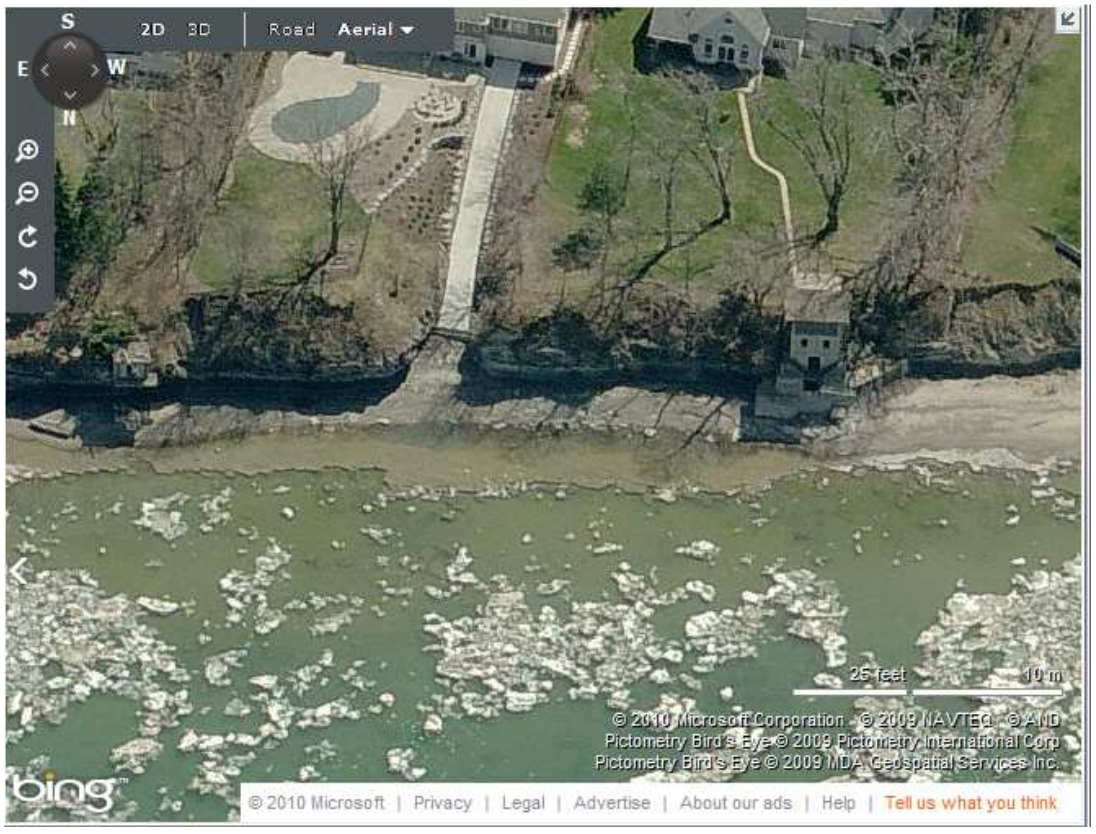


Deteriorated stairway access on private land, seaward of Nettle Creek Drive

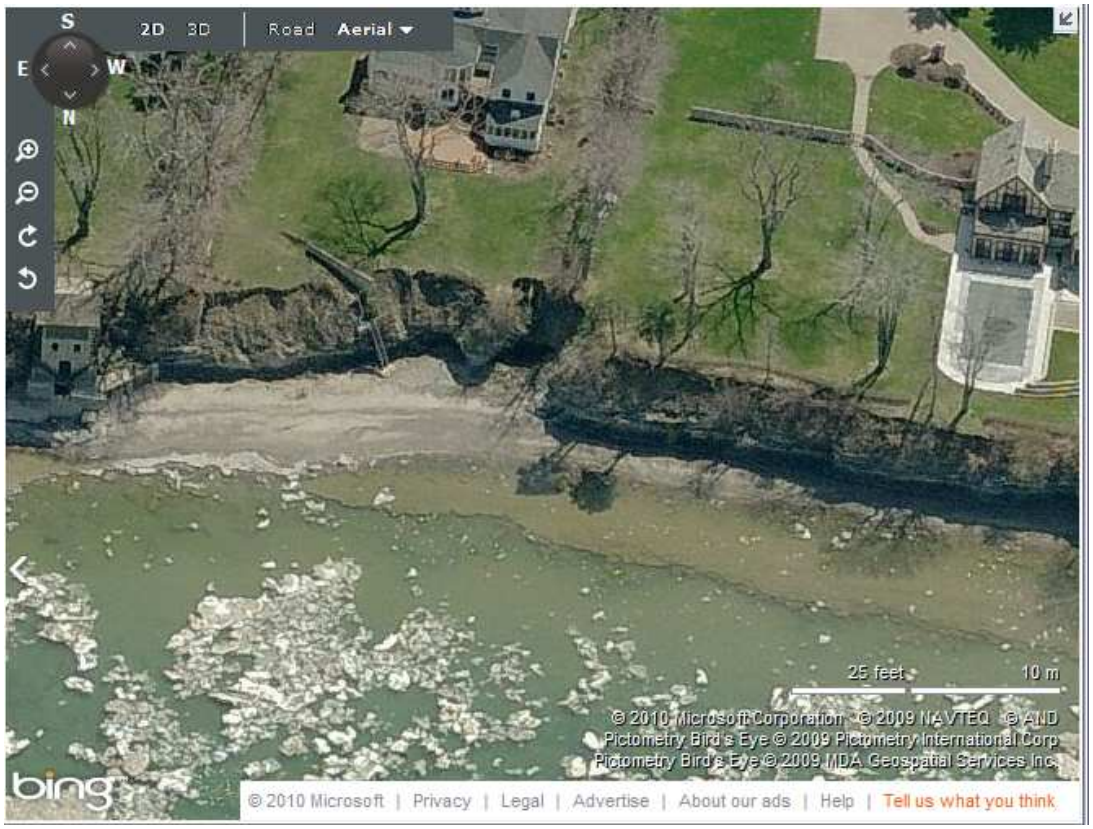
Shoreline Features in Sub – Area 1:



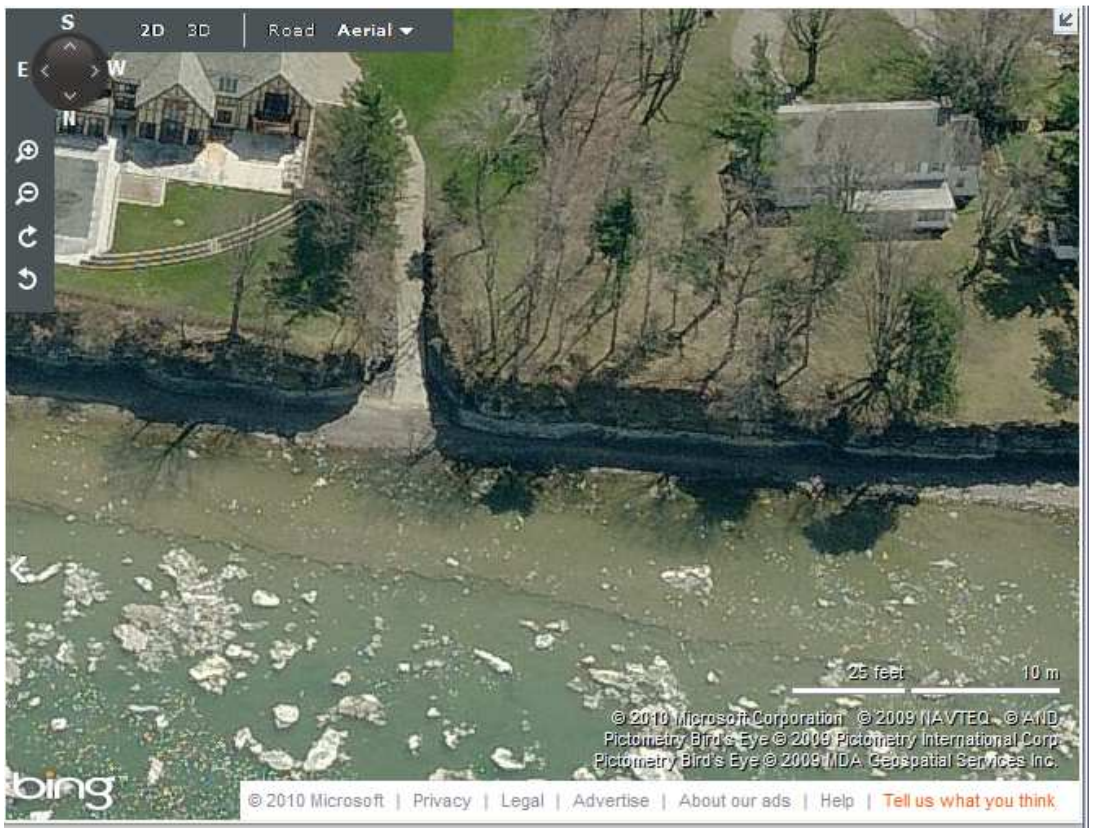
Properties seaward of Bell Heights Road /Kimberly Lane



Shoreline Features in Sub – Area 1:

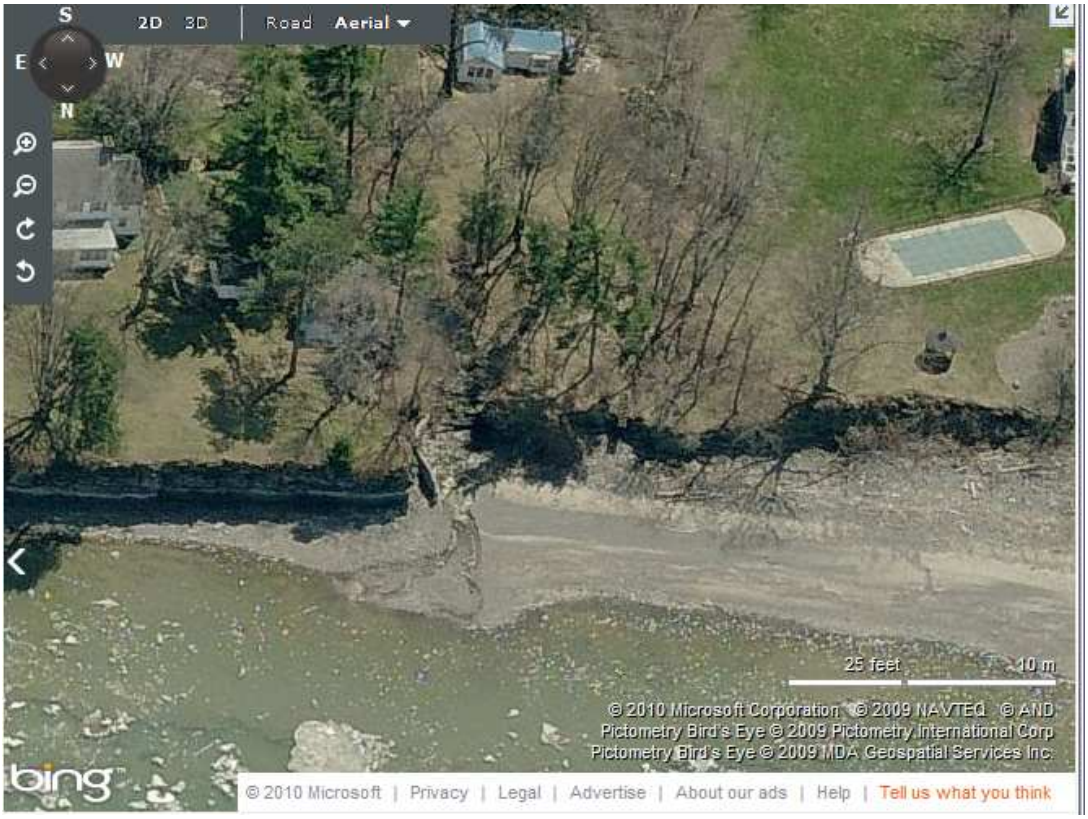


Shoreline properties located between Bell Heights Road and Kimberly Drive

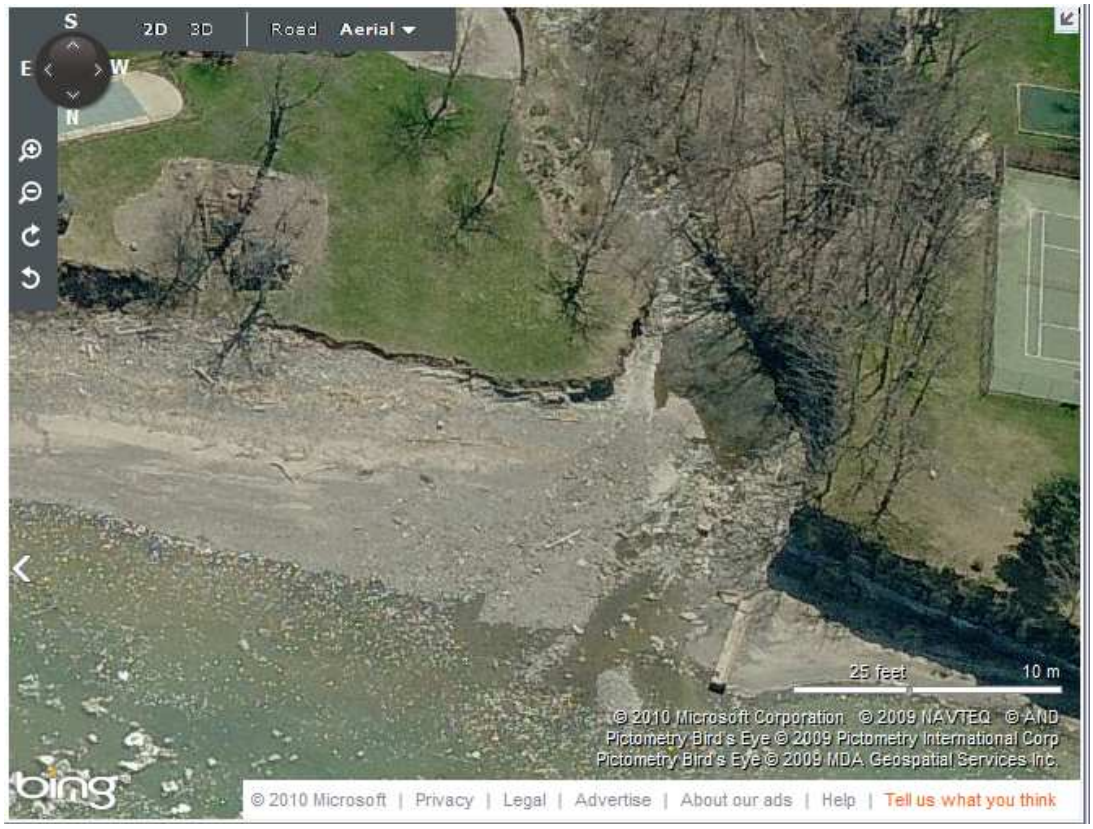


Shoreline property situated north of Kimberly Drive

Shoreline Features in Sub – Area 1:

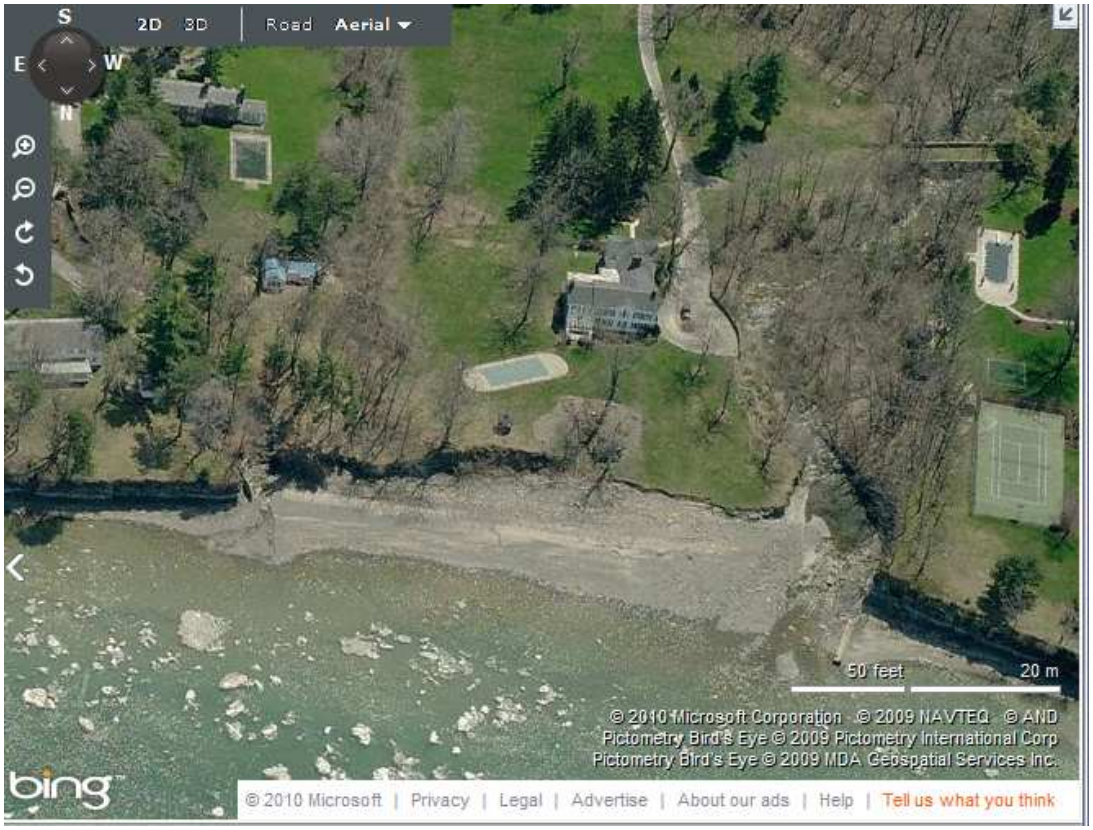


Mouth of Reisch Creek

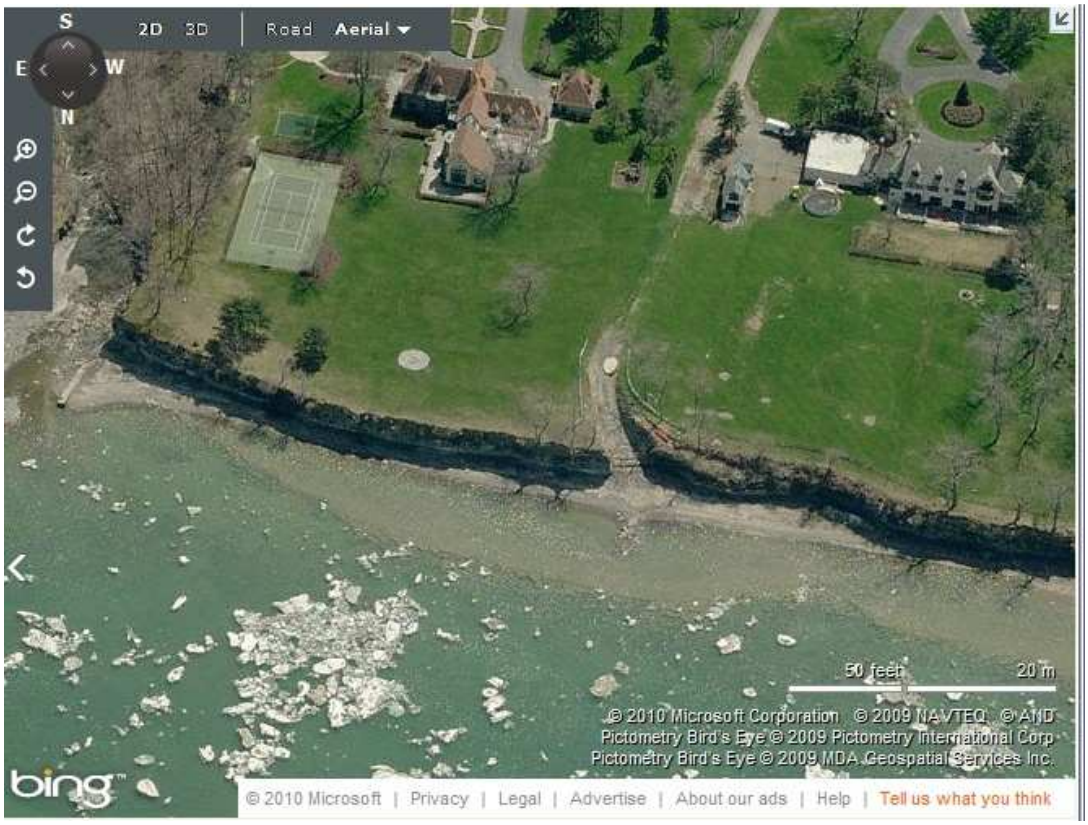


Mouth of Pike Creek

Shoreline Features in Sub – Area 1:



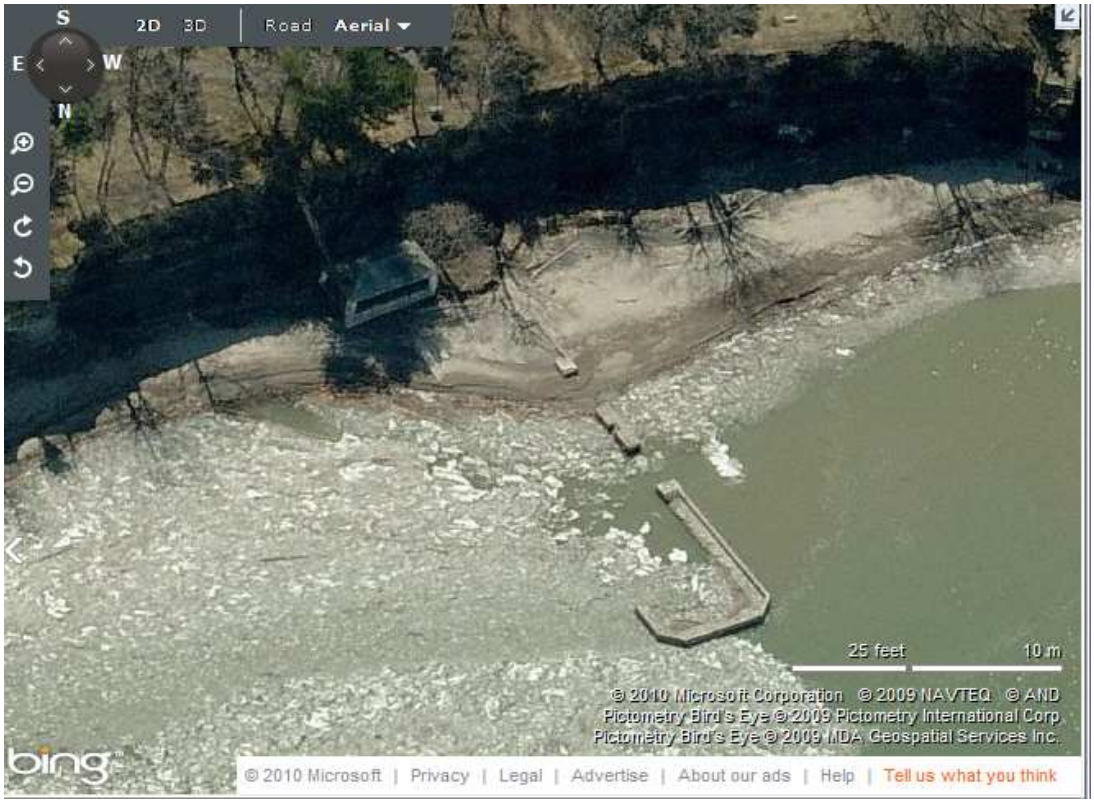
Mouths of Reisch and Pike Creeks



Just north of Pike Creek mouth (near Sweetland Road)

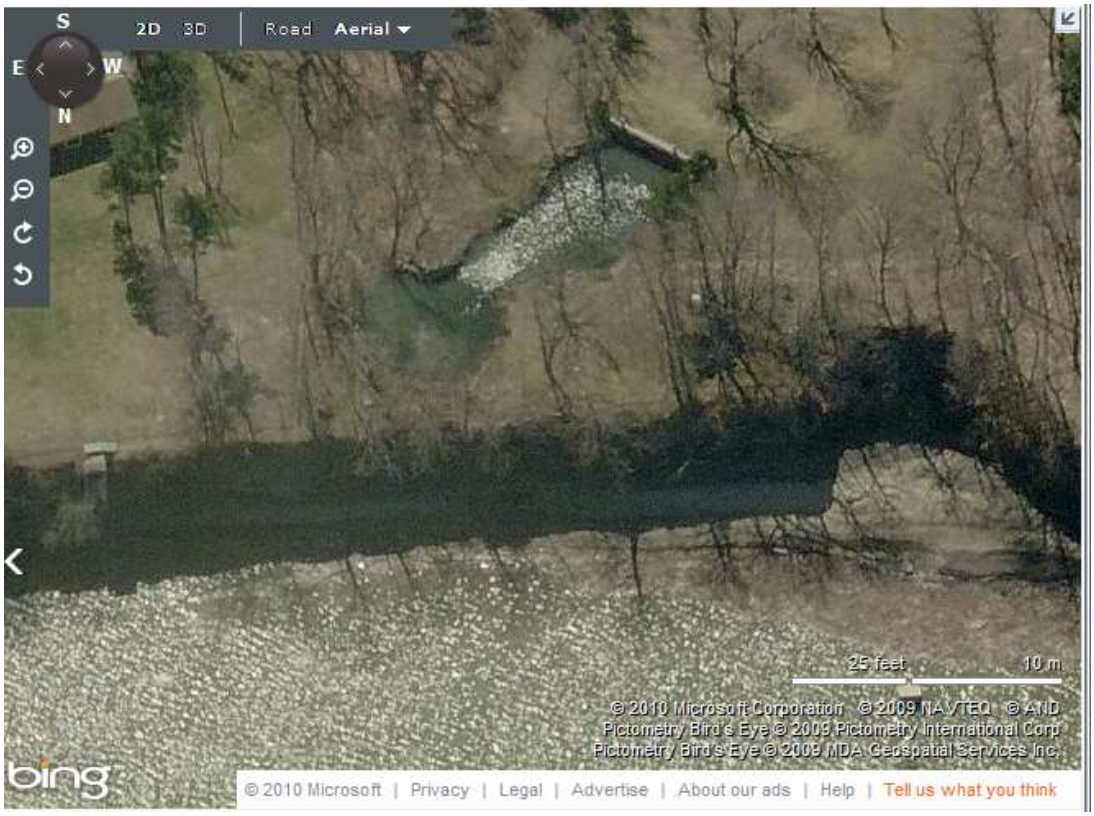
Shoreline Features in Sub – Area 1:

Columban Center - North of intersection of Sweetland and OLS Rd.

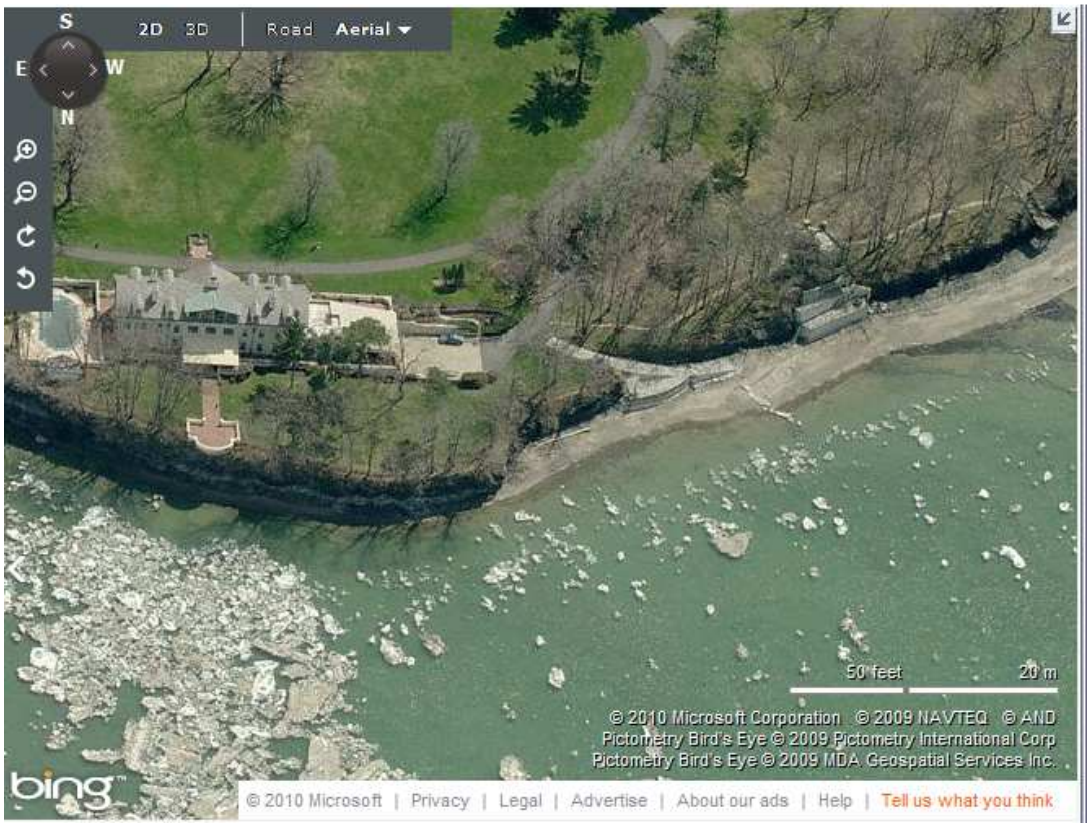


Directly north of Woodcliff Drive

Shoreline Features in Sub – Area 1:

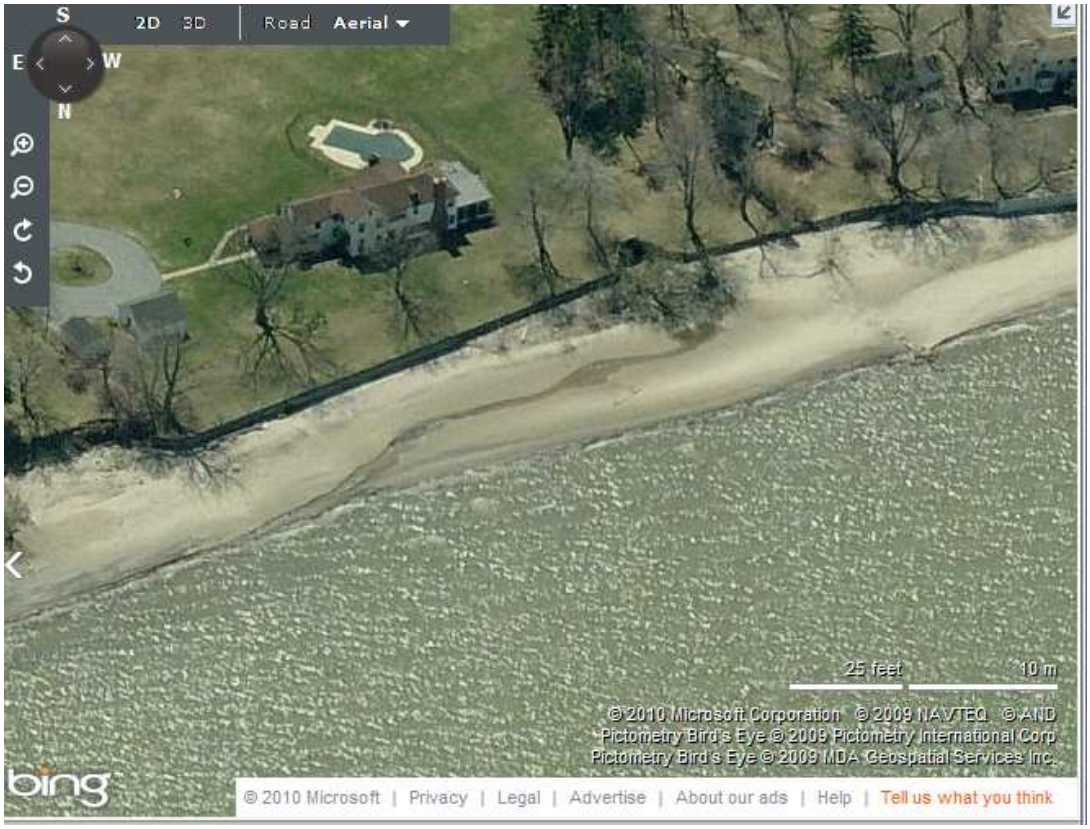


Seller's estate (?) – immediately south of historic Michael property

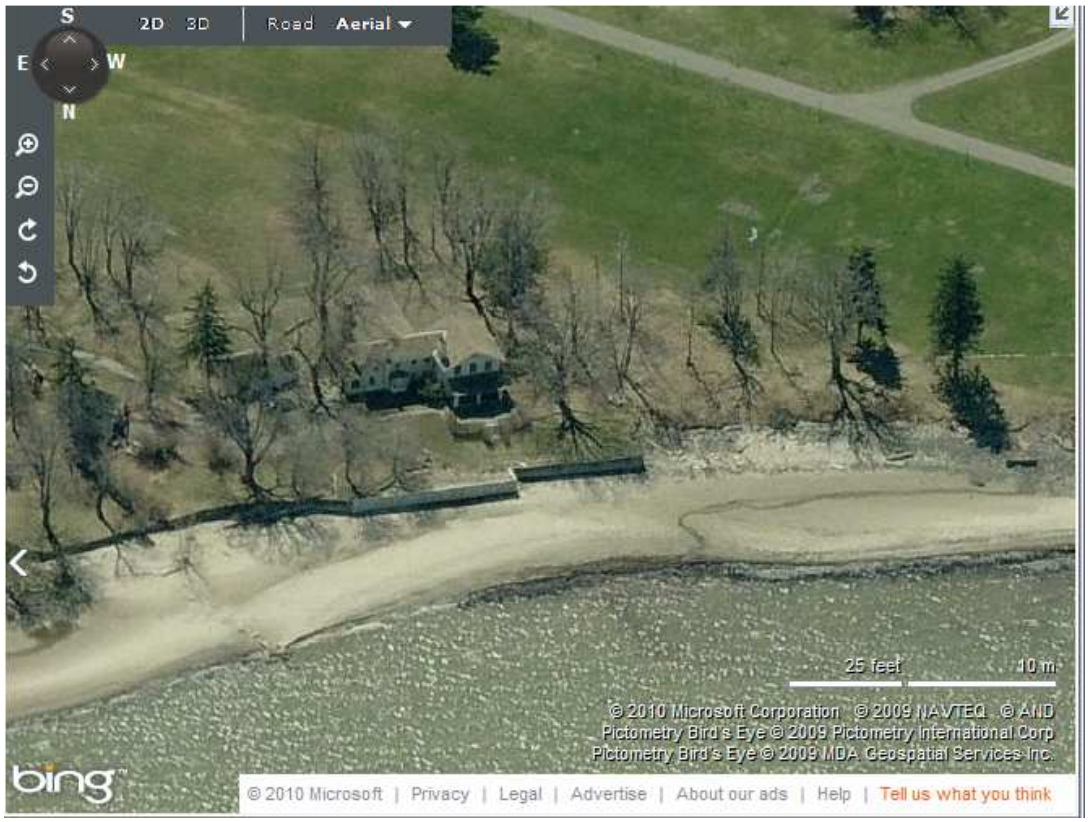


Historic Michael property (north of Sturgeon Pt)

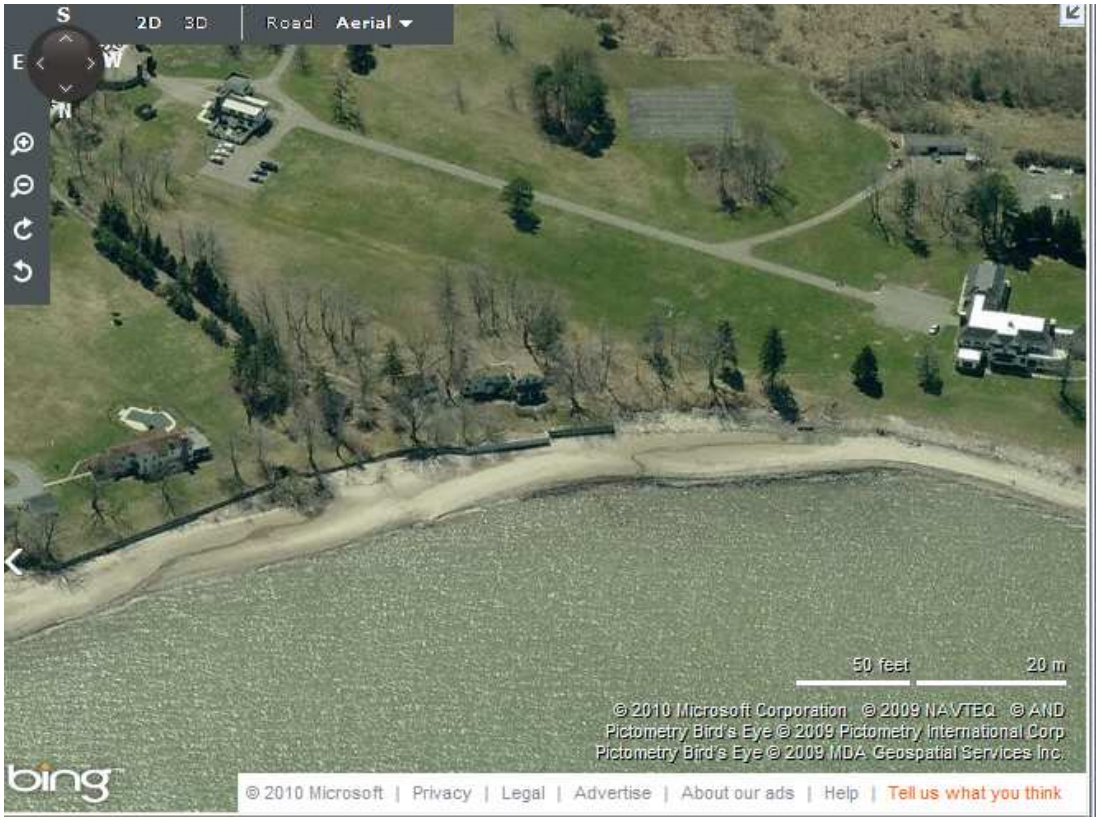
Shoreline Features in Sub – Area 1:



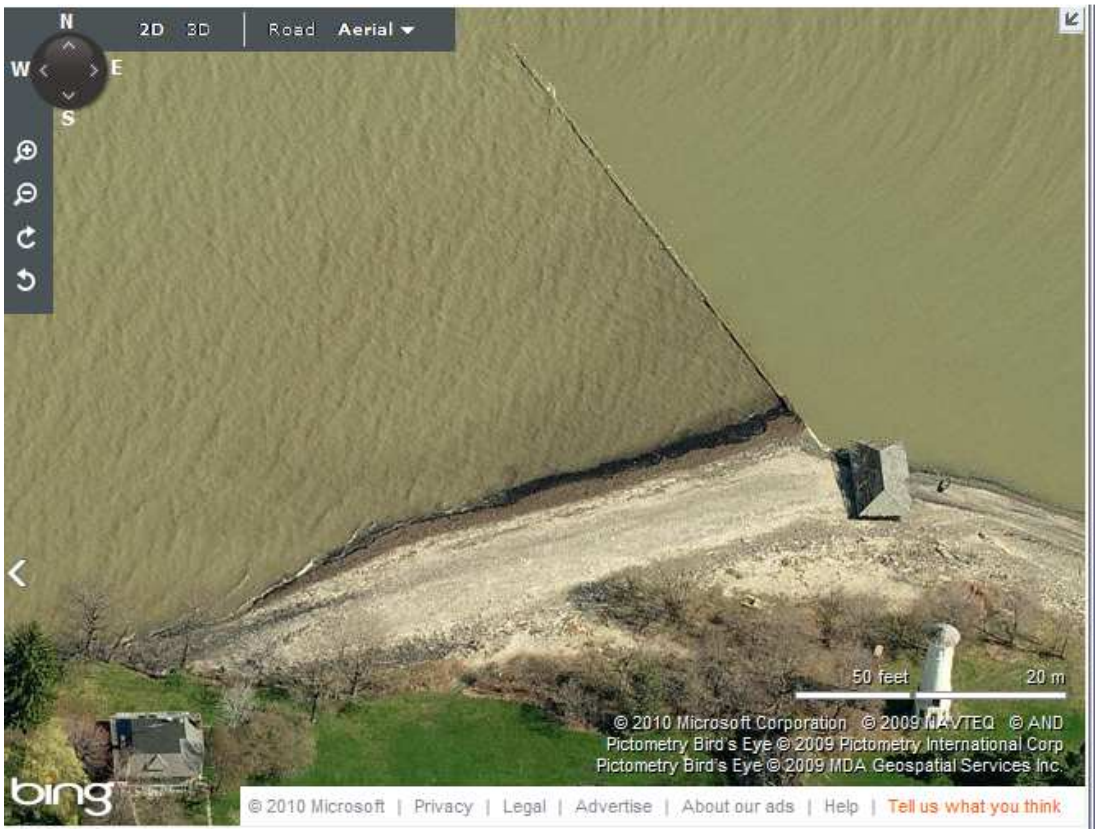
Seawalls along property immediately north of the Claddagh Commission



Shoreline Features in Sub – Area 1:

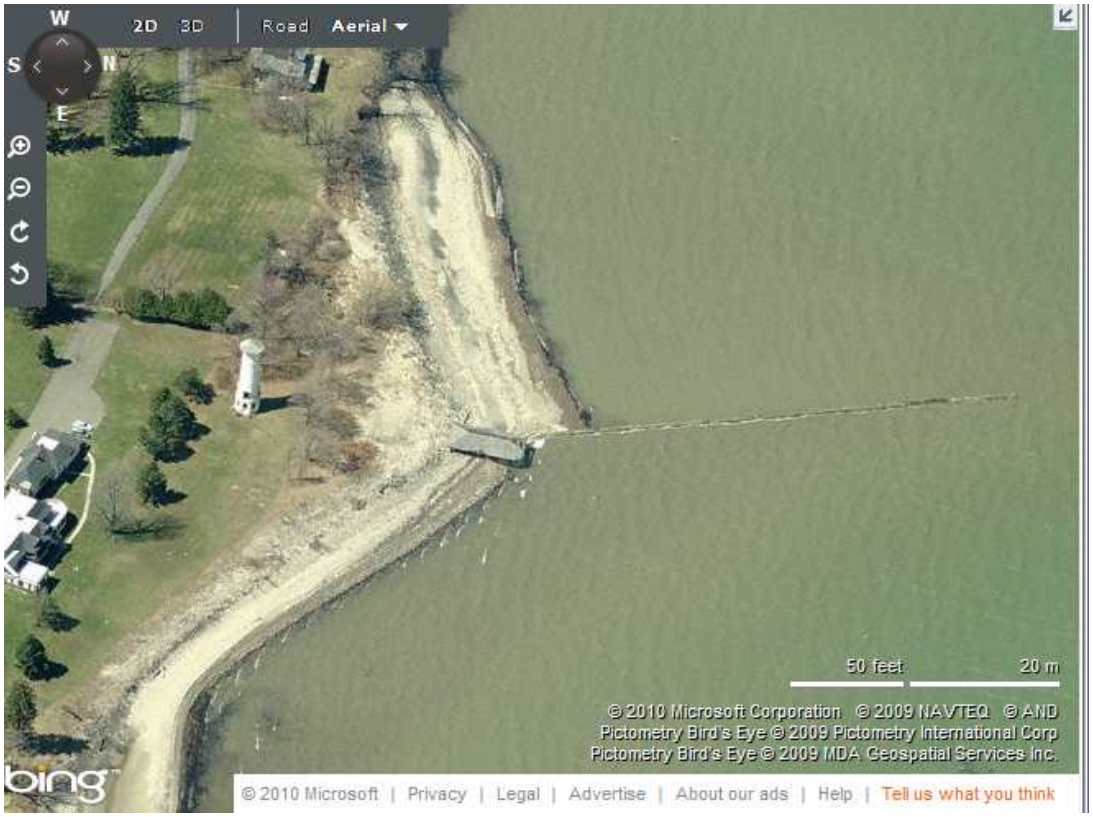


Wider view of seawalls immediately north of Claddagh Commission (at right of picture)

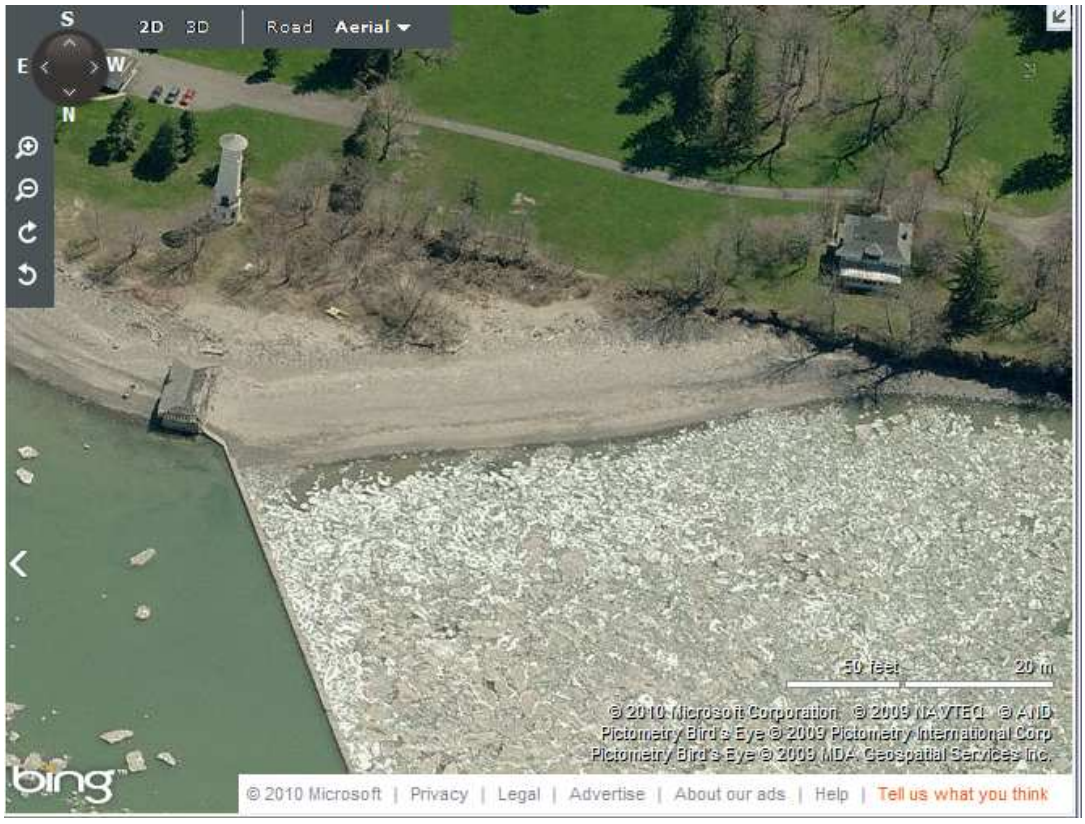


Claddagh jetty

Shoreline Features in Sub – Area 1:

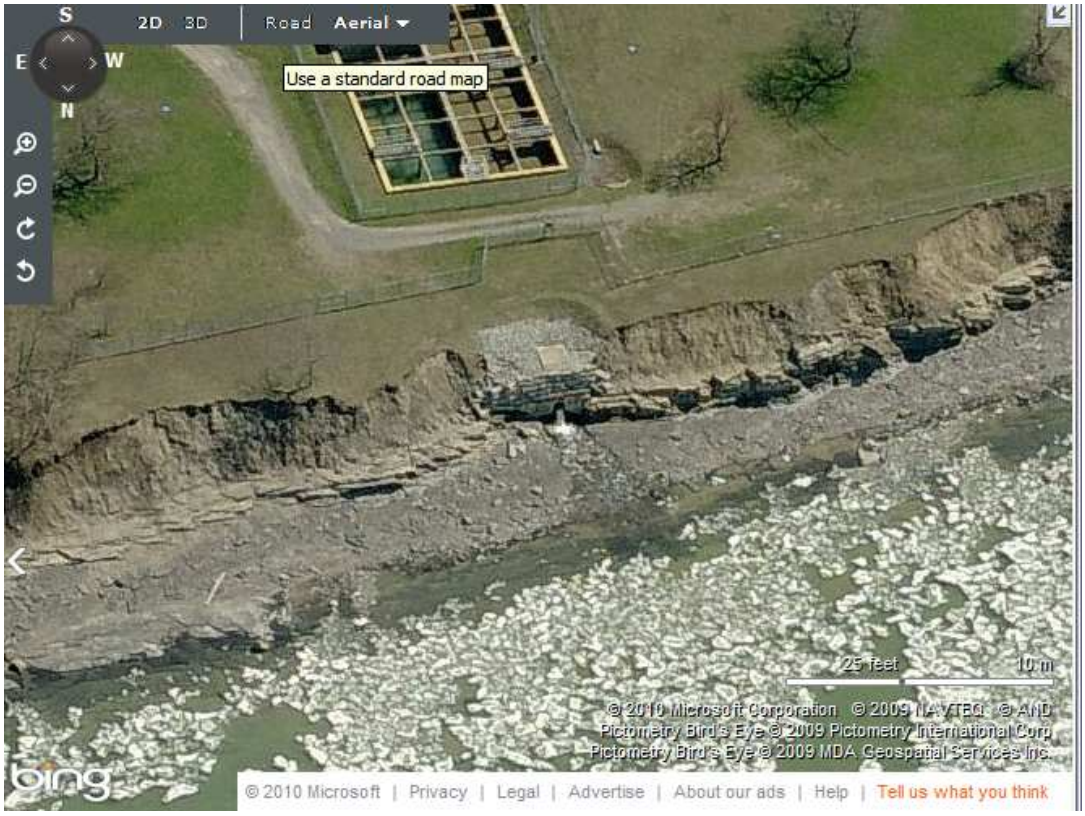


Claddagh Jetty

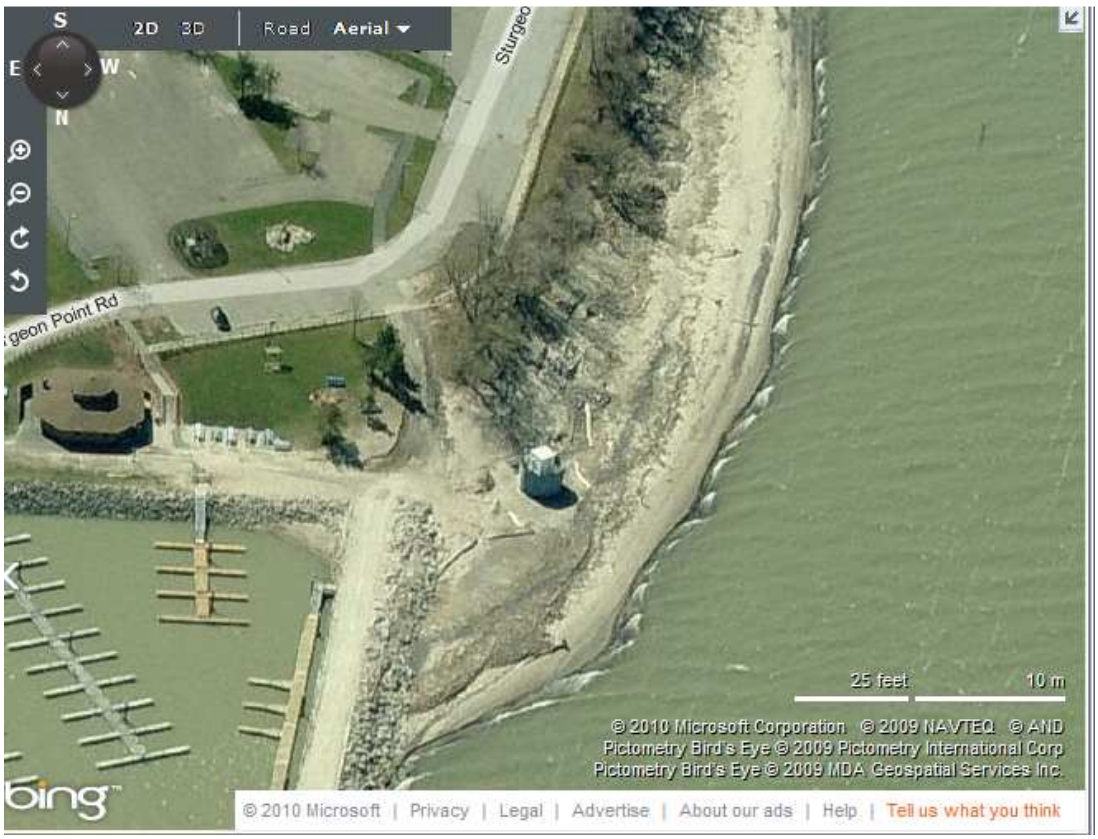


Claddagh jetty

Shoreline Features in Sub – Area 1:

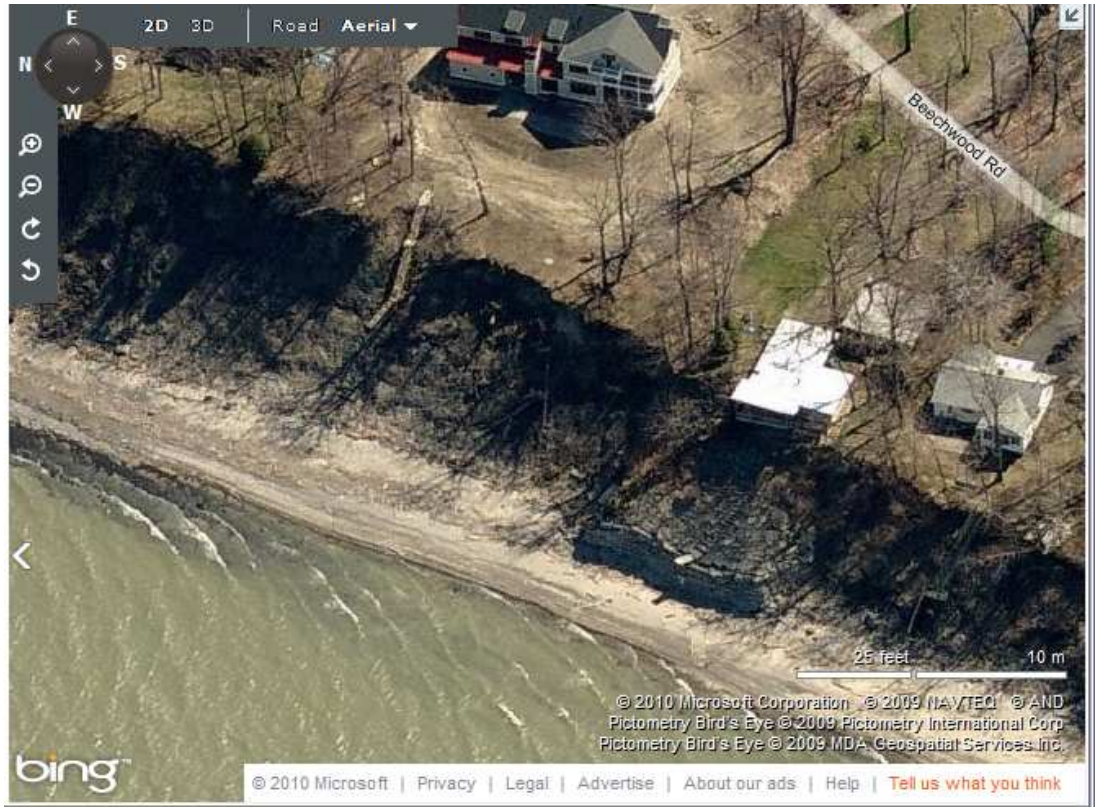


Erie County Water Treatment Plant outfall

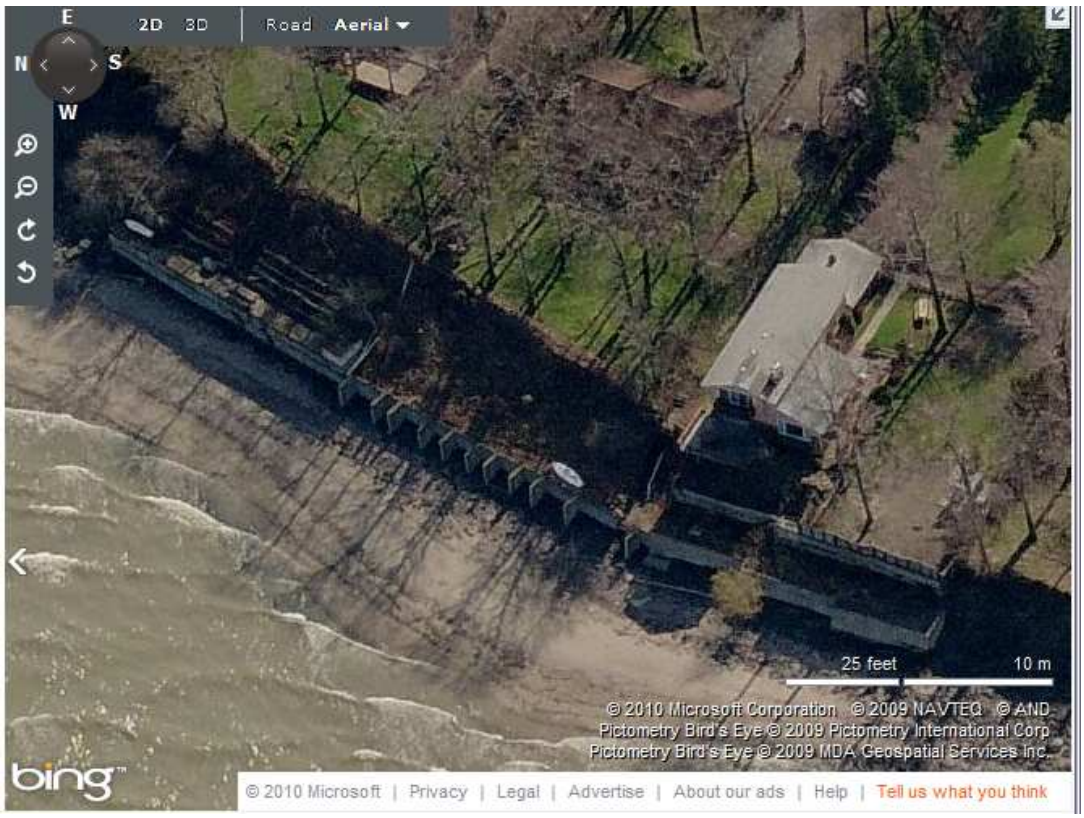


Beach area to the south of Sturgeon Point Marina, at the southern end of Sub-Area 1

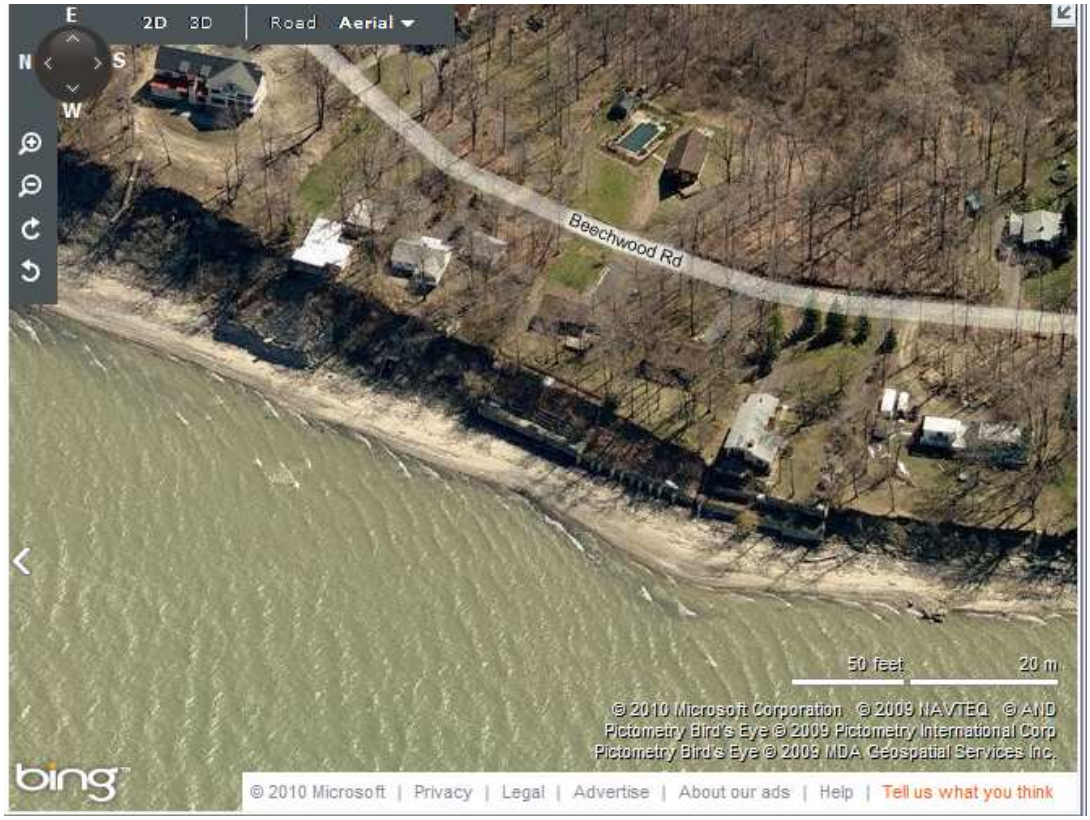
Shoreline Features in Sub – Area 2:



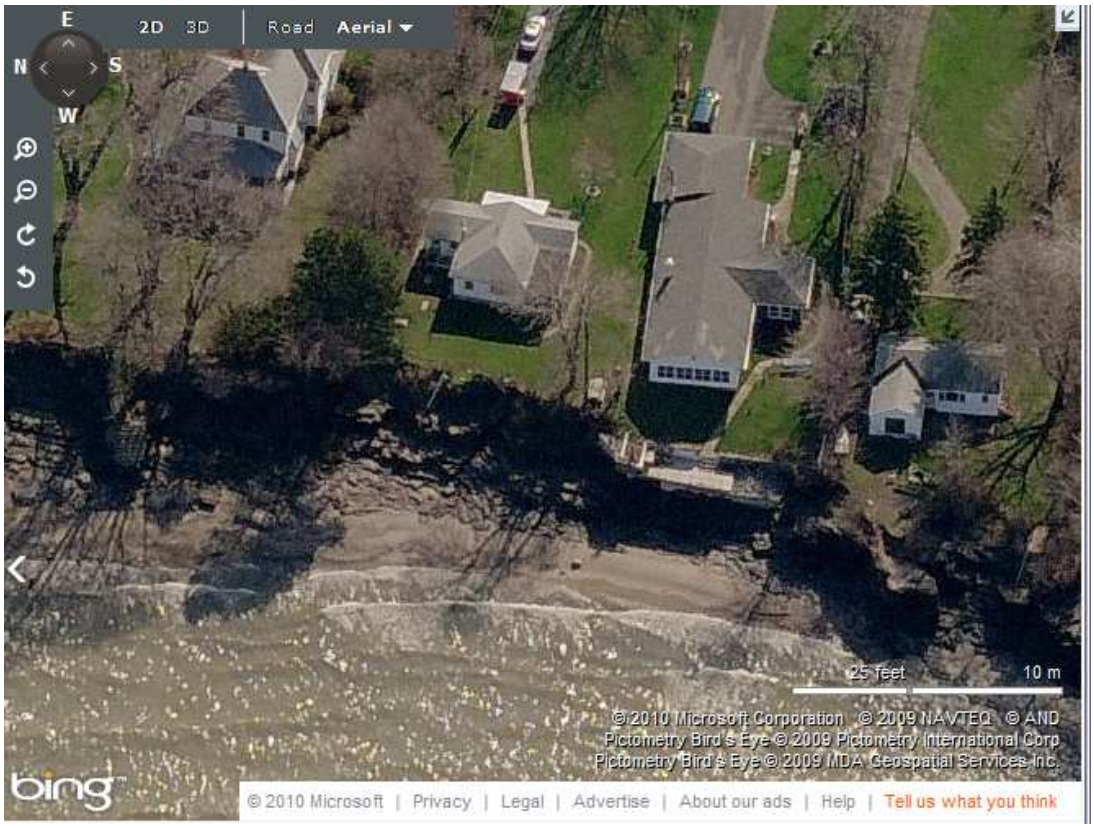
Shoreline along Beechwood Road, south of Sturgeon Point, with stairs and seawalls



Shoreline Features in Sub – Area 2:

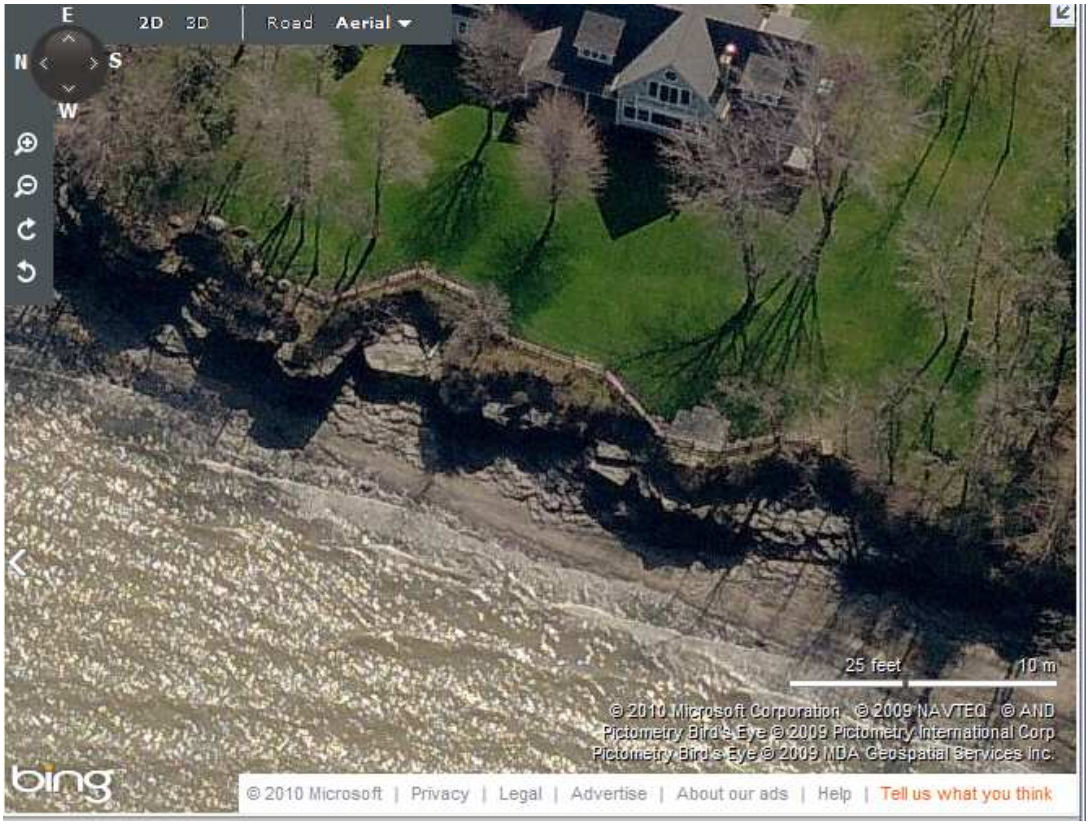


Beechwood Road shoreline

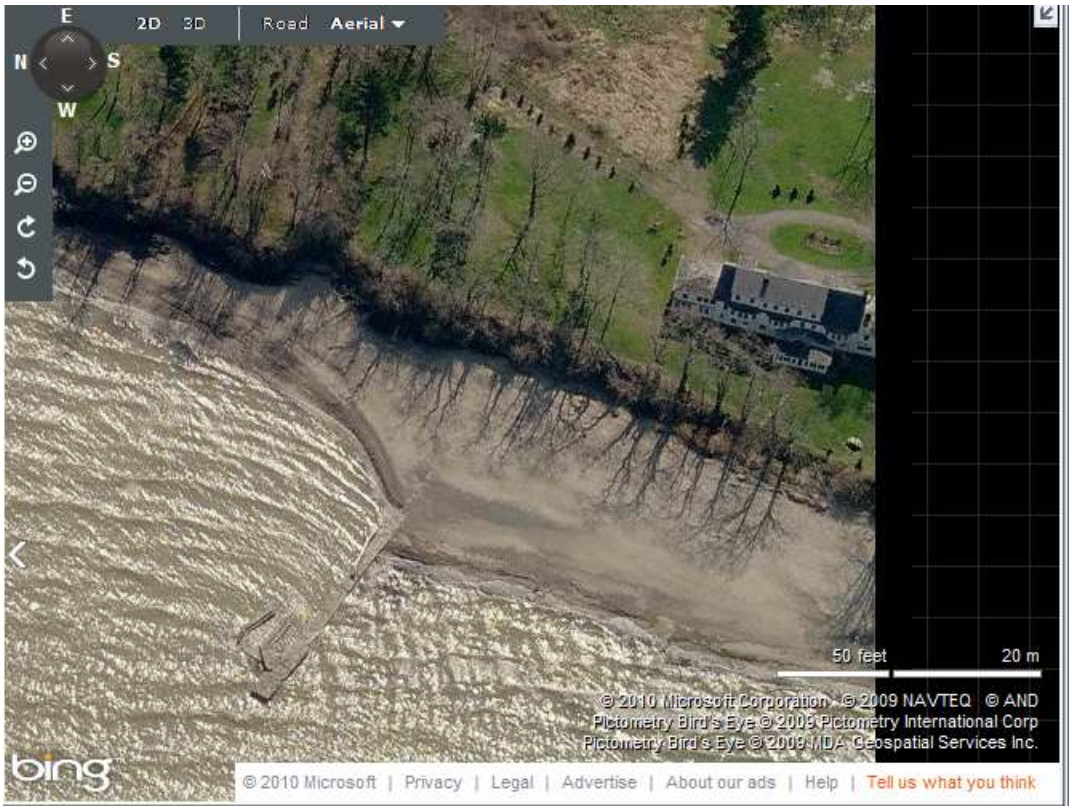


Shoreline along Beechwood Road at Larkin Road

Shoreline Features in Sub – Area 2:

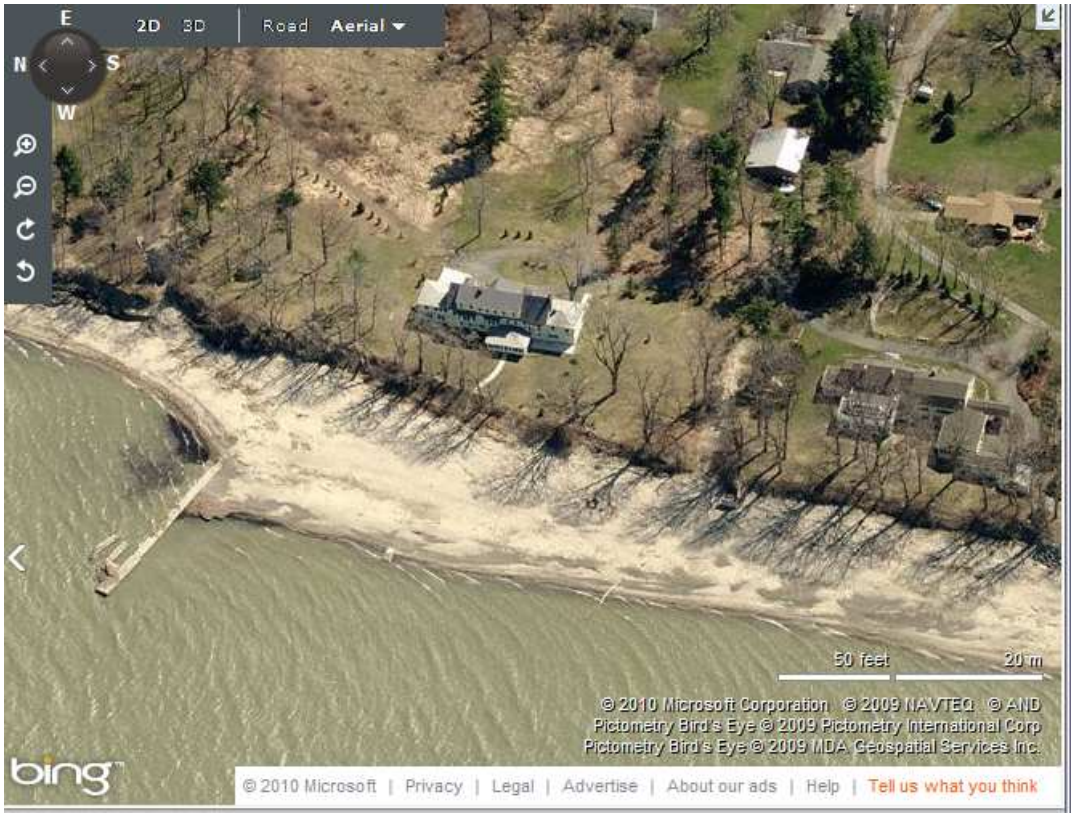


South of Larkin Road

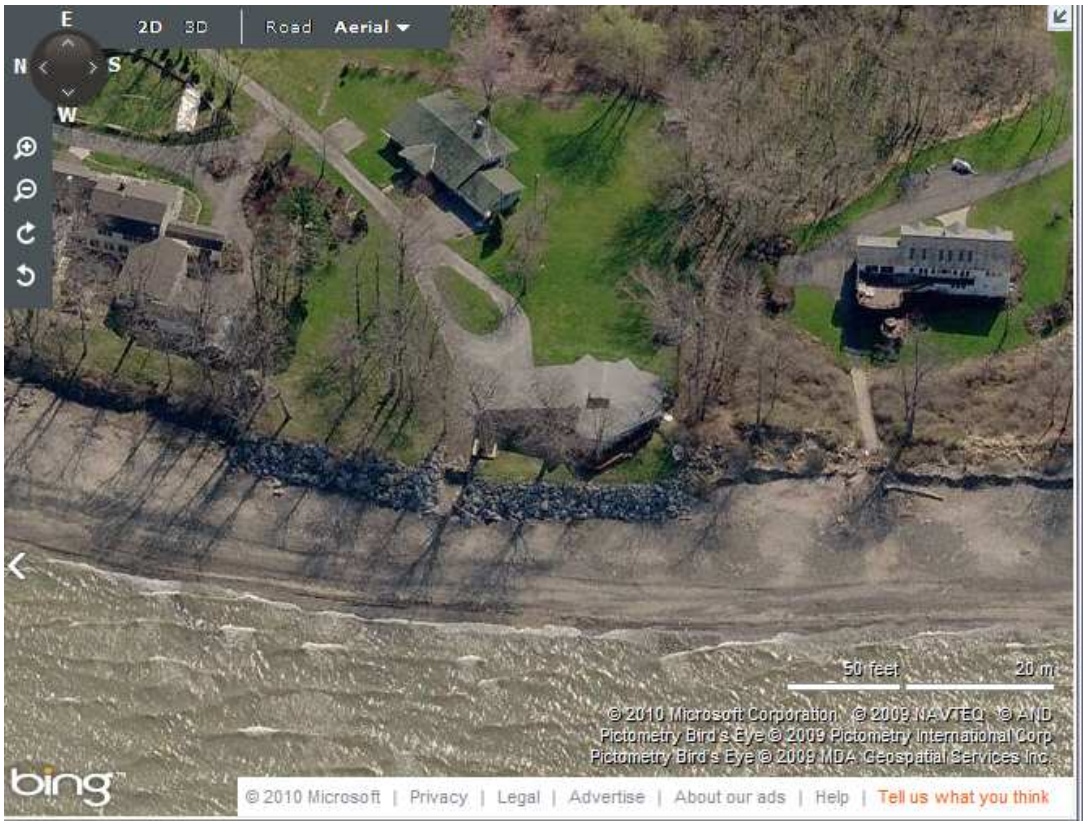


Private dock or dock remnants, south of Larkin Road

Shoreline Features in Sub – Area 2:

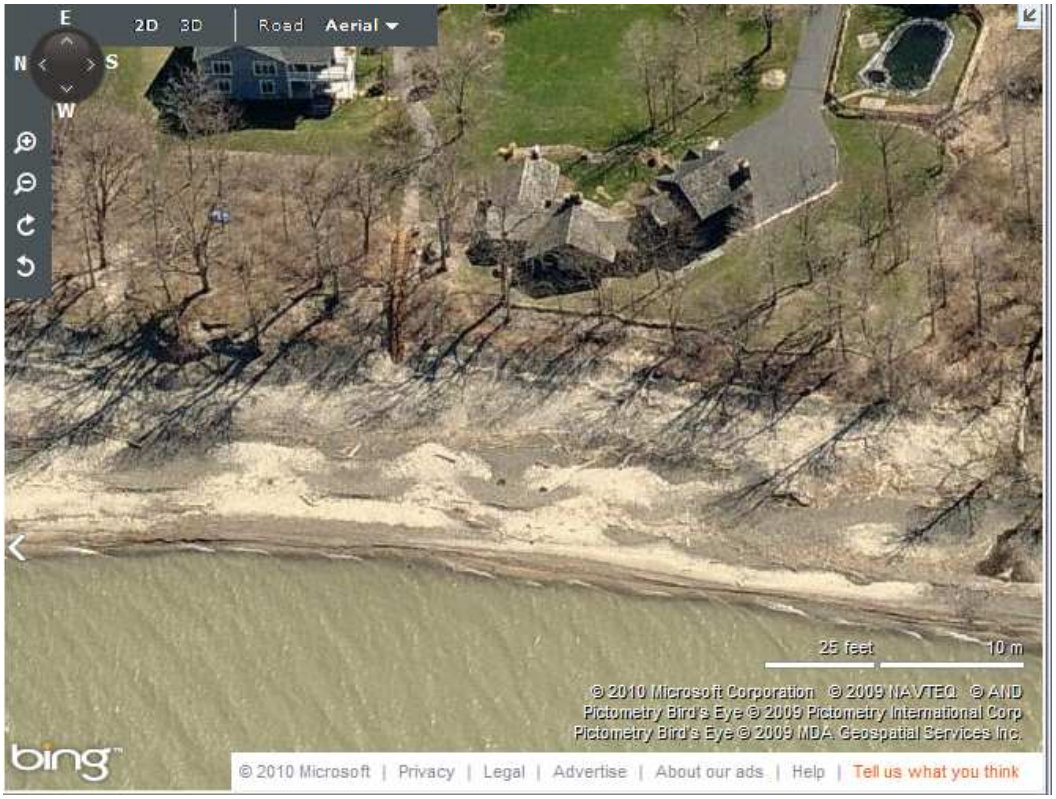


Wider view of shoreline, south of Larkin Road

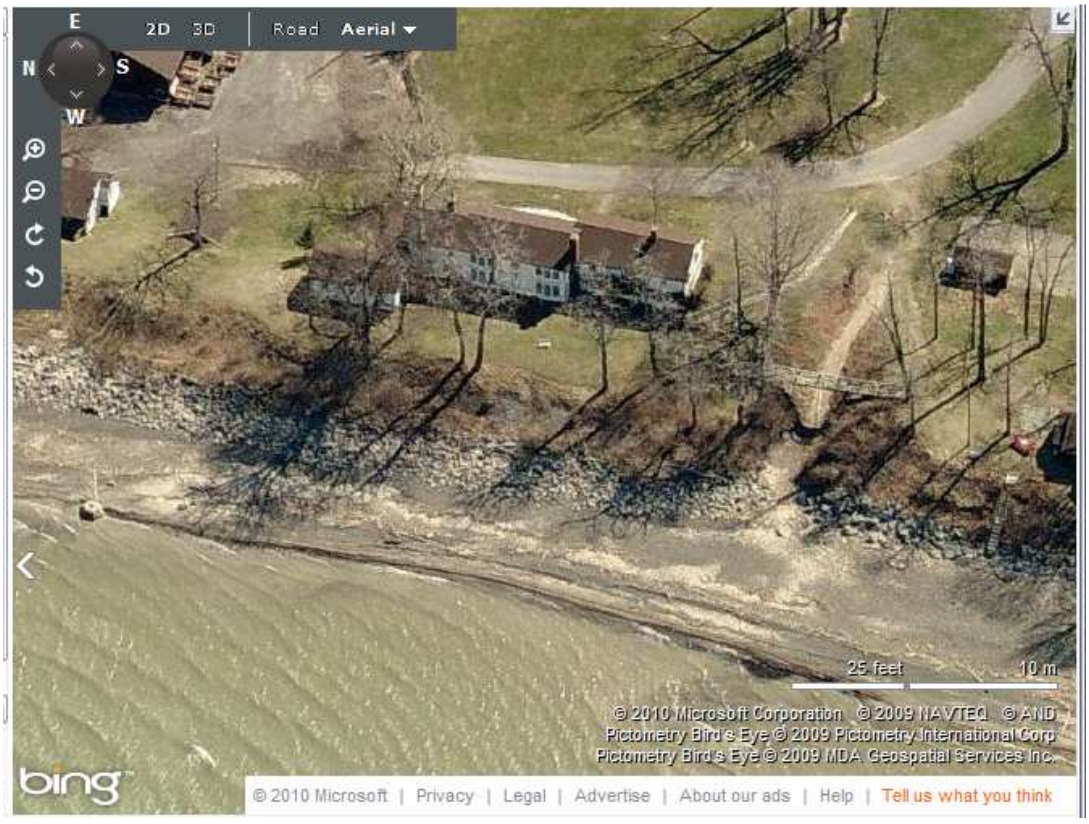


South of Larkin Road, approaching Windover Farms

Shoreline Features in Sub – Area 2:

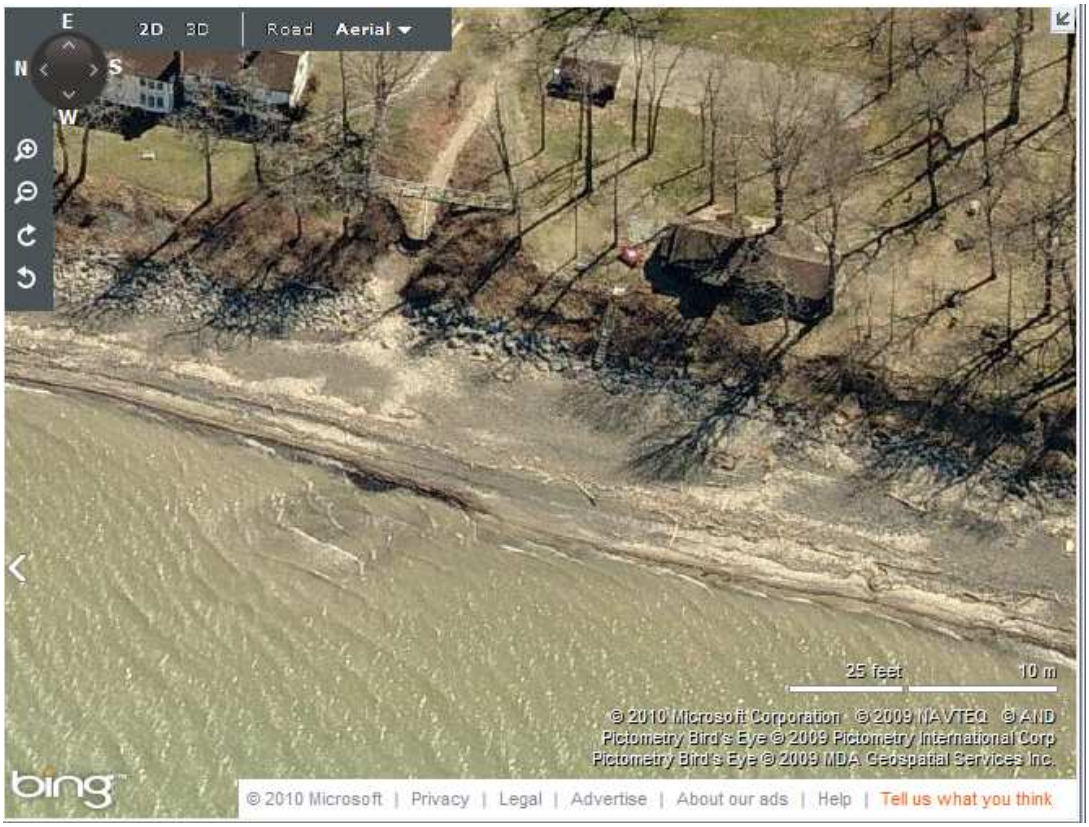


Terminus of Windover Road

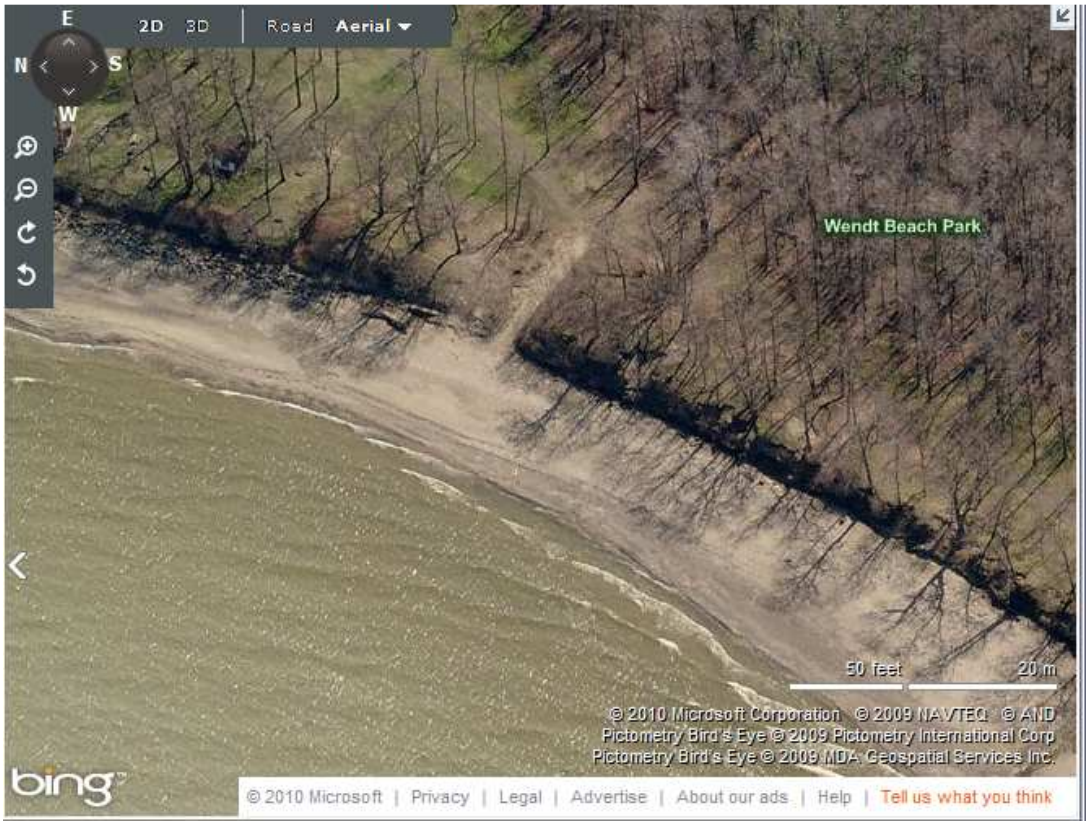


Wendt Beach County Park – showing historic Wendt House

Shoreline Features in Sub – Area 2:

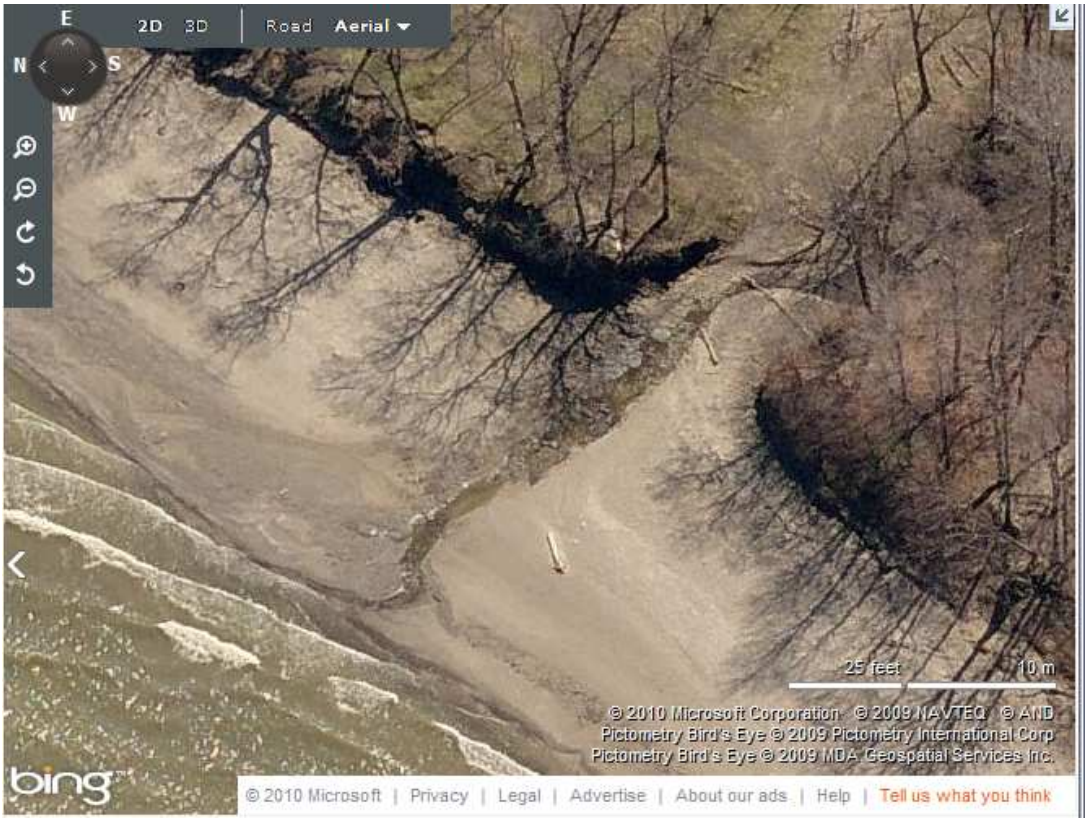


Wendt Beach County Park

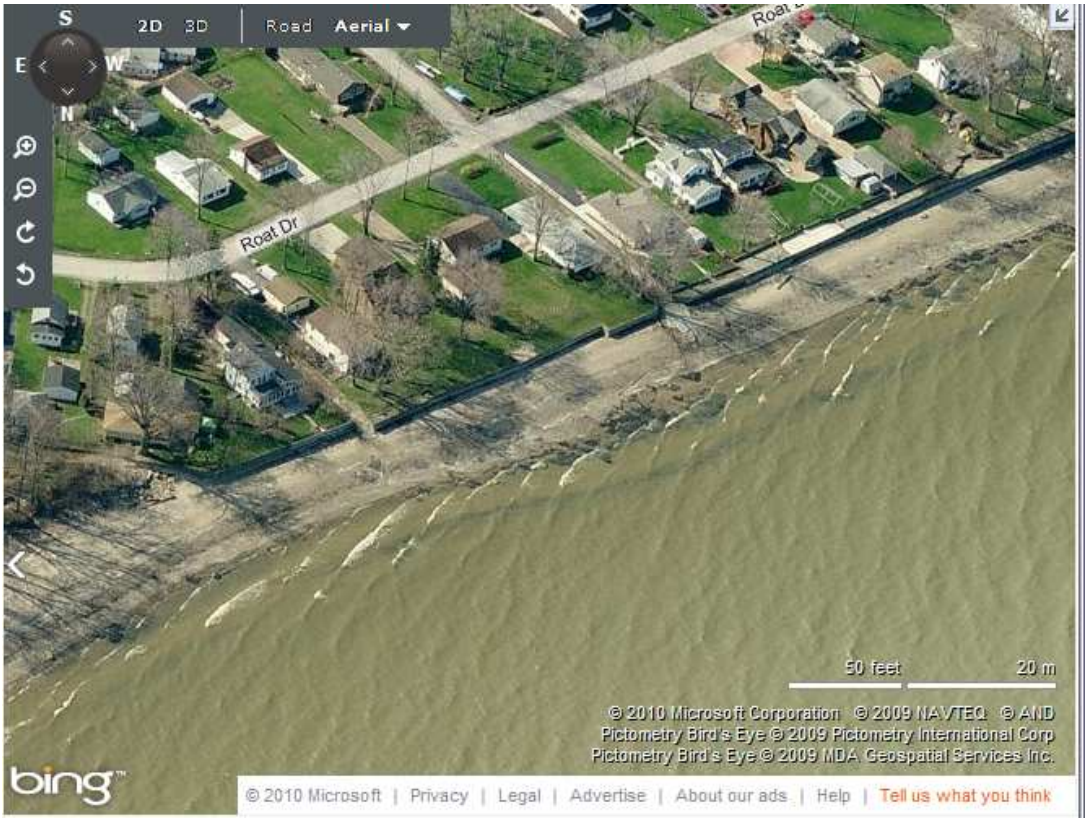


Wendt Beach County Park

Shoreline Features in Sub – Area 2:

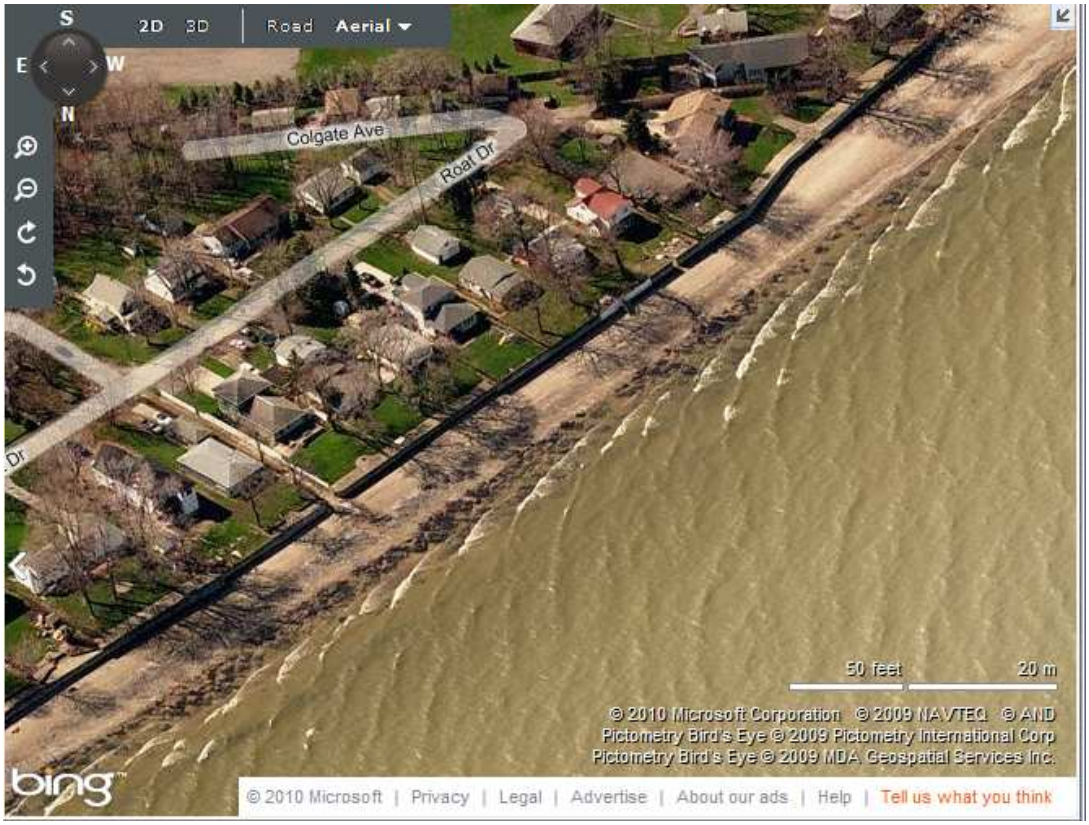


Mouth of tributary stream that flows through Wendt Beach Park

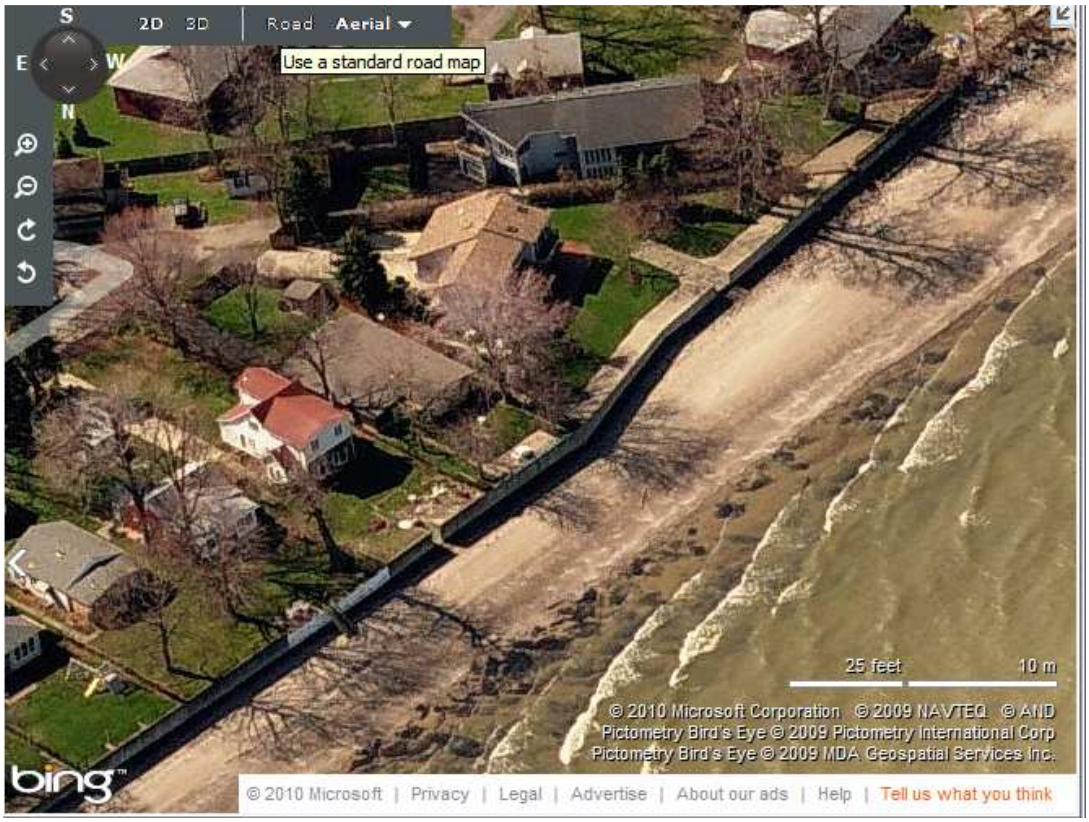


Roat Acres residential area, south of Wendt Beach County Park

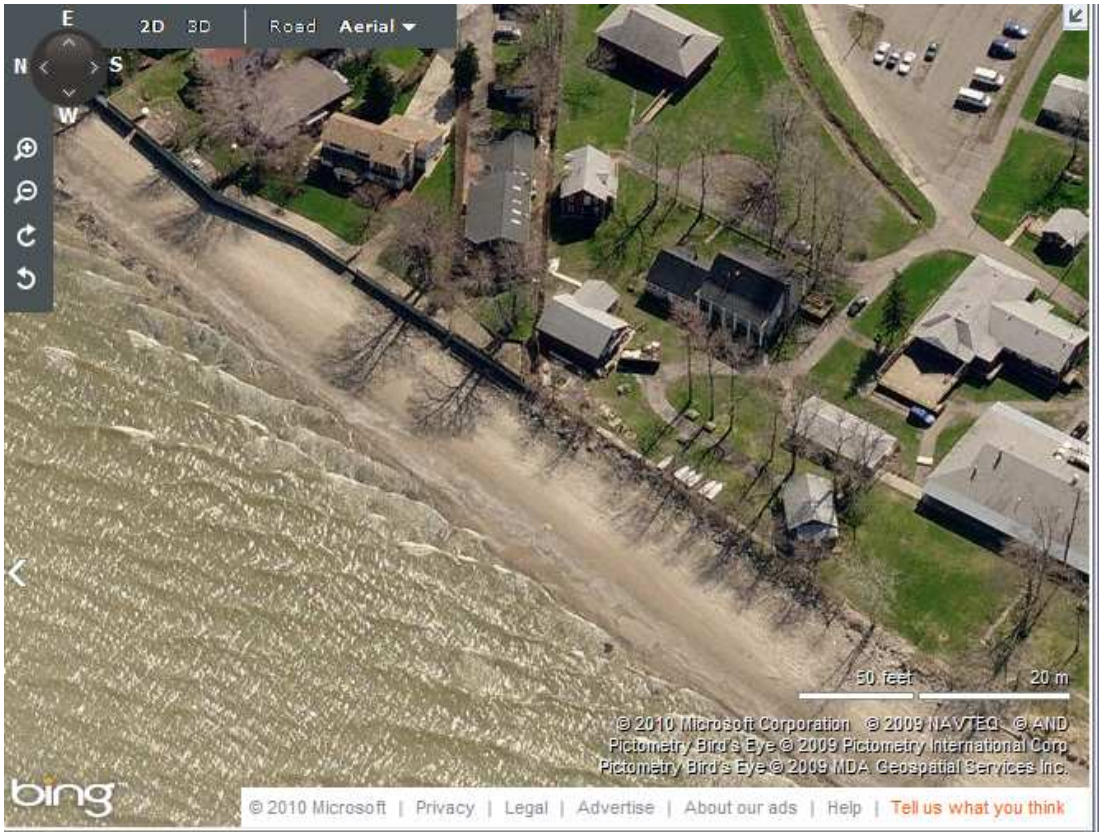
Shoreline Features in Sub – Area 2:



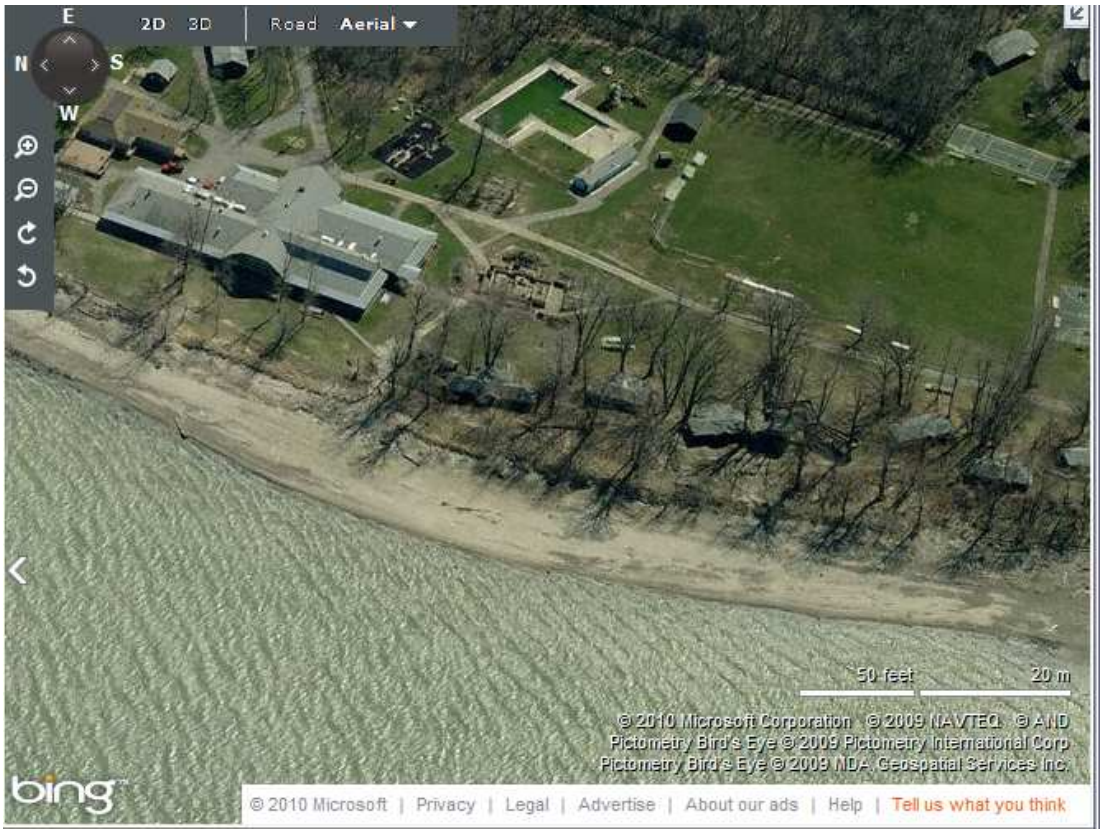
Shoreline views of seawalls in Roat Acres community



Shoreline Features in Sub – Area 2:

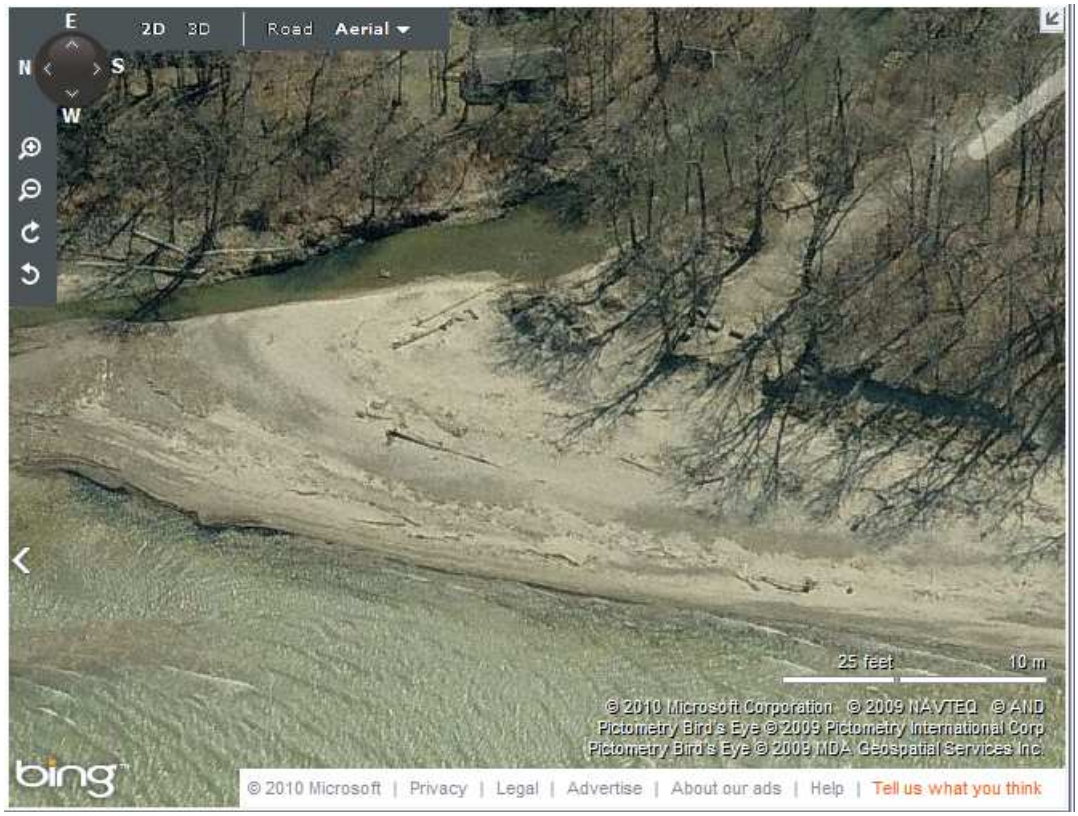


Shoreline views of Cradle Beach Camp, south of Roat Acres

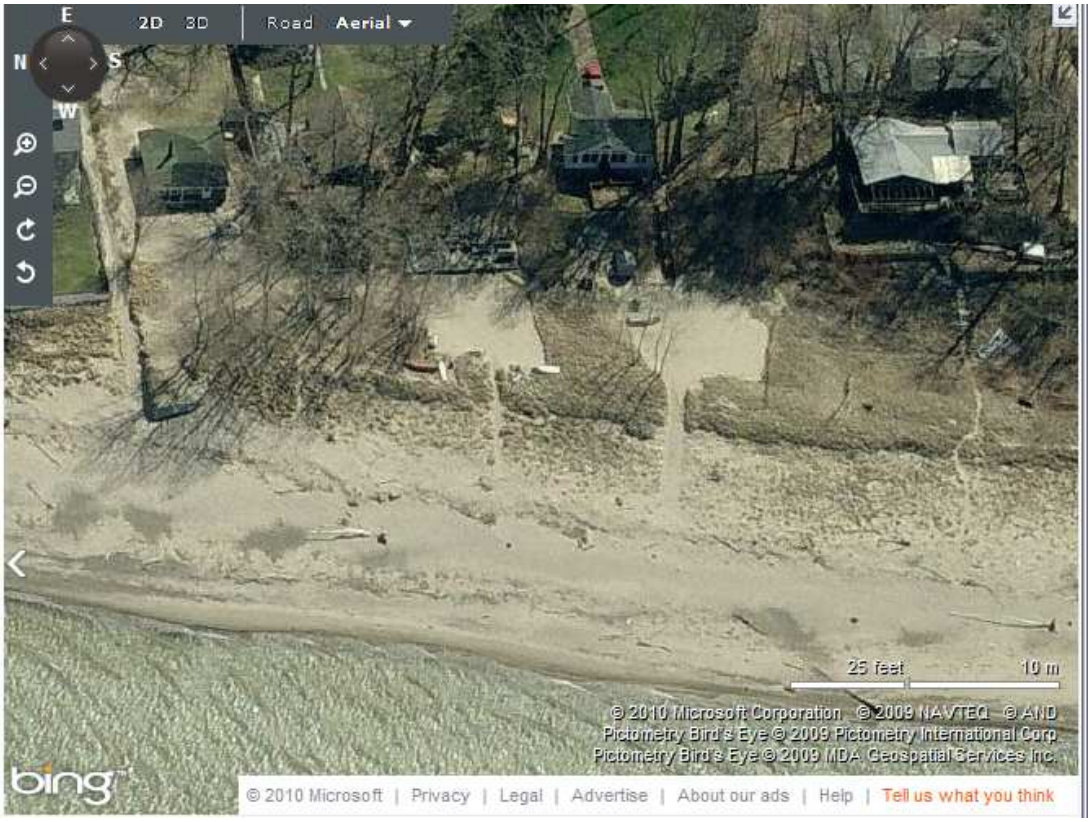


Shoreline Features in Sub – Area 2:

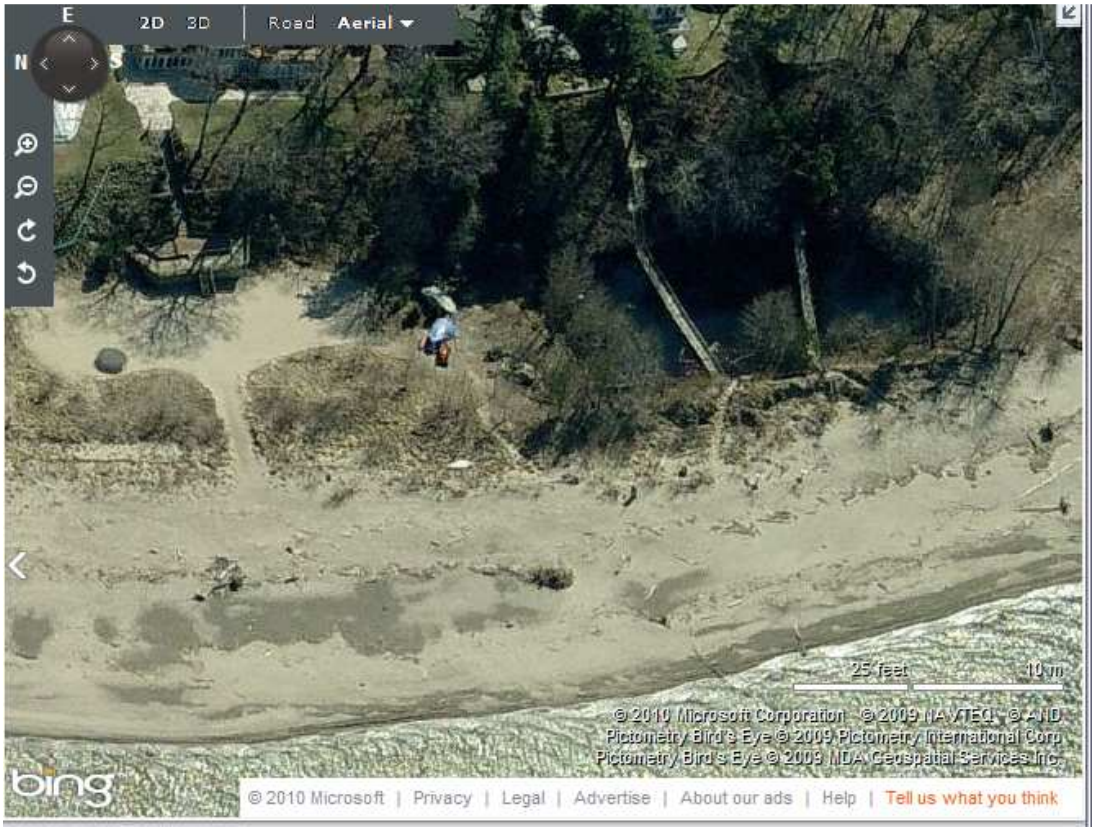
Views of the mouth of Little Sister Creek at the terminus of Wendt Road



Shoreline Features in Sub – Area 2:



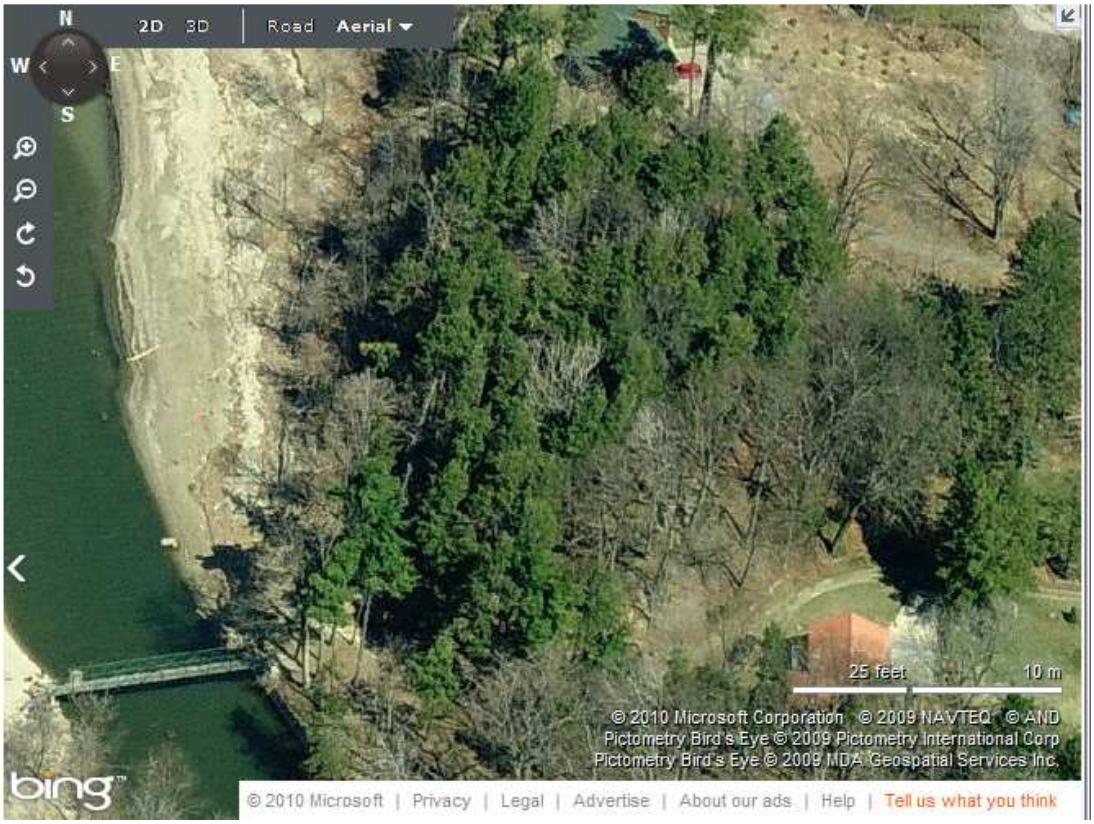
Shoreline view, immediately south of Wendt Road terminus



Pineridge community, along Hillside Drive(where homes were built atop the primary dune)

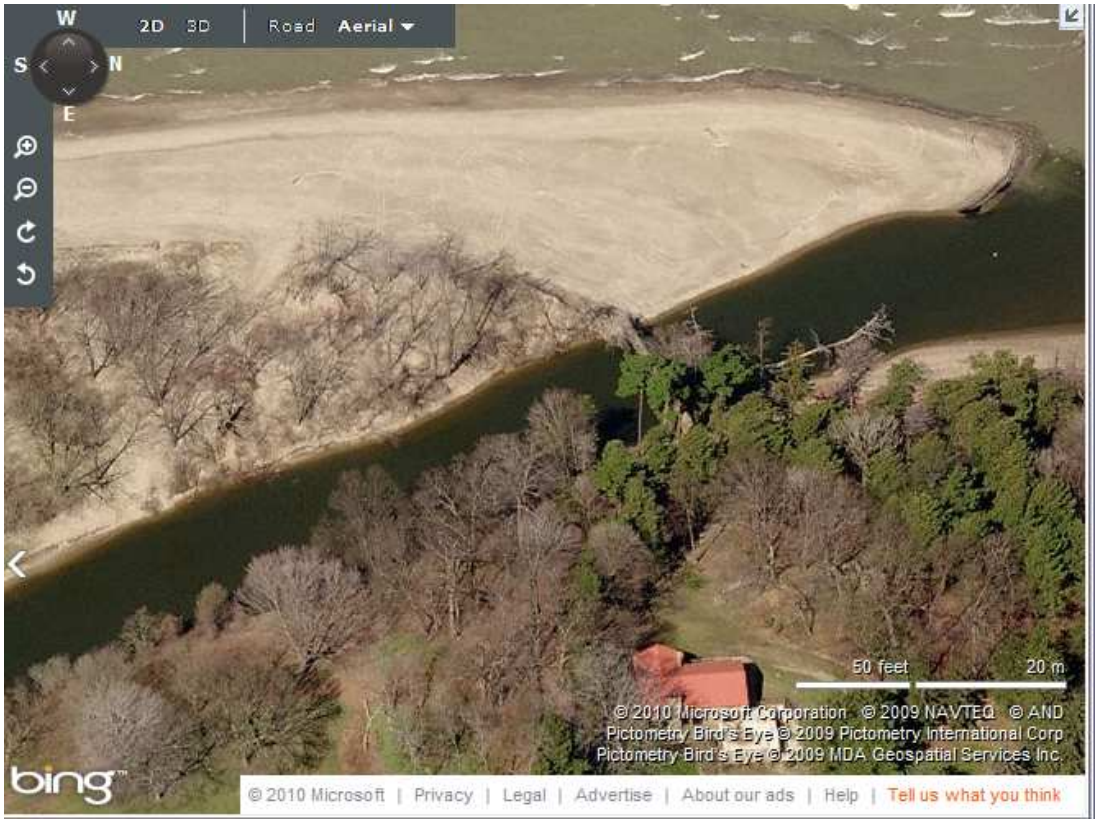
Shoreline Features in Sub – Area 2:

Mouth of Big Sister Creek, showing the historic Pine Lodge and vegetated dune

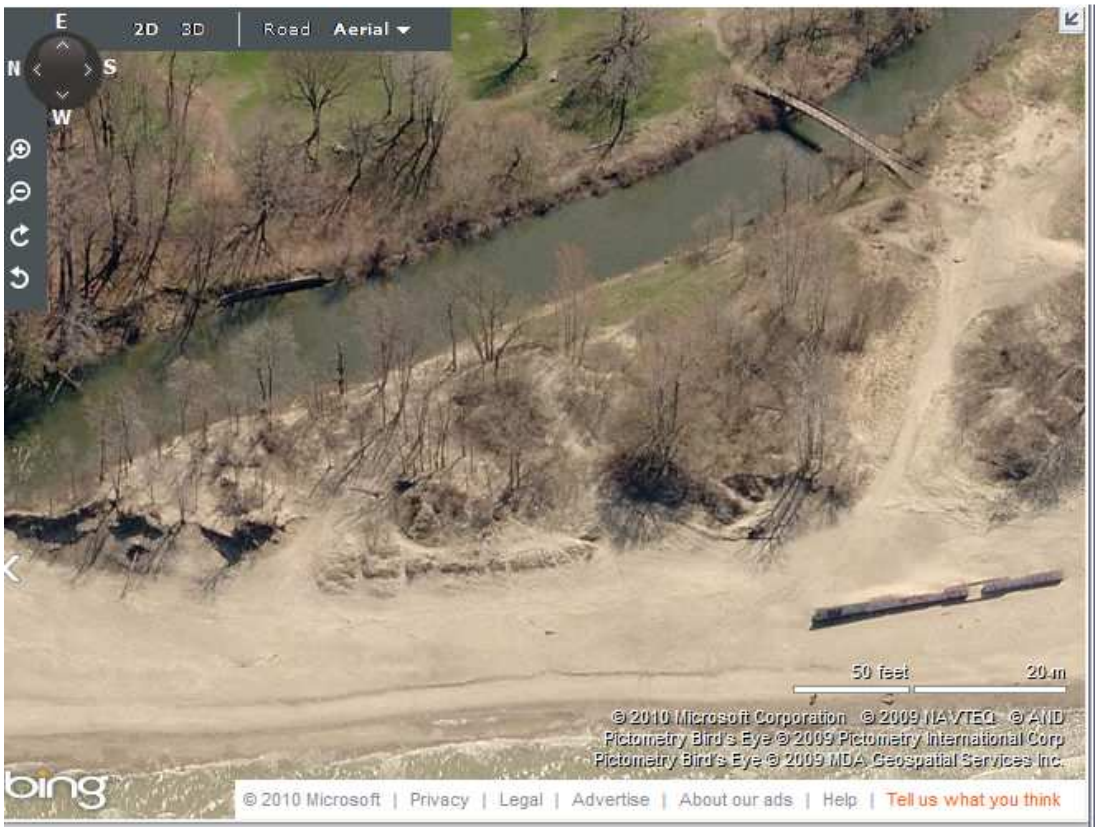


Another view of the Pine Lodge and Hemlock-forested dune north of Bennett Beach

Shoreline Features in Sub – Area 2:

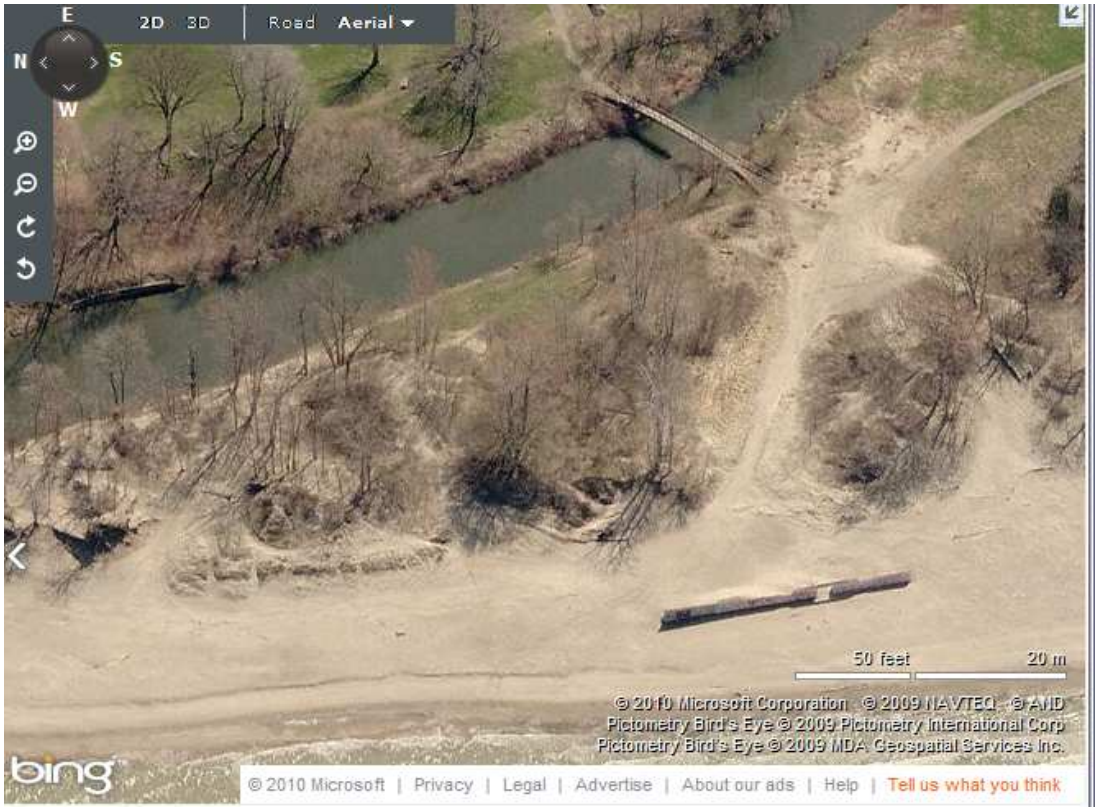


Mouth of Big Sister at Bennett Beach, showing sand bar/peninsula

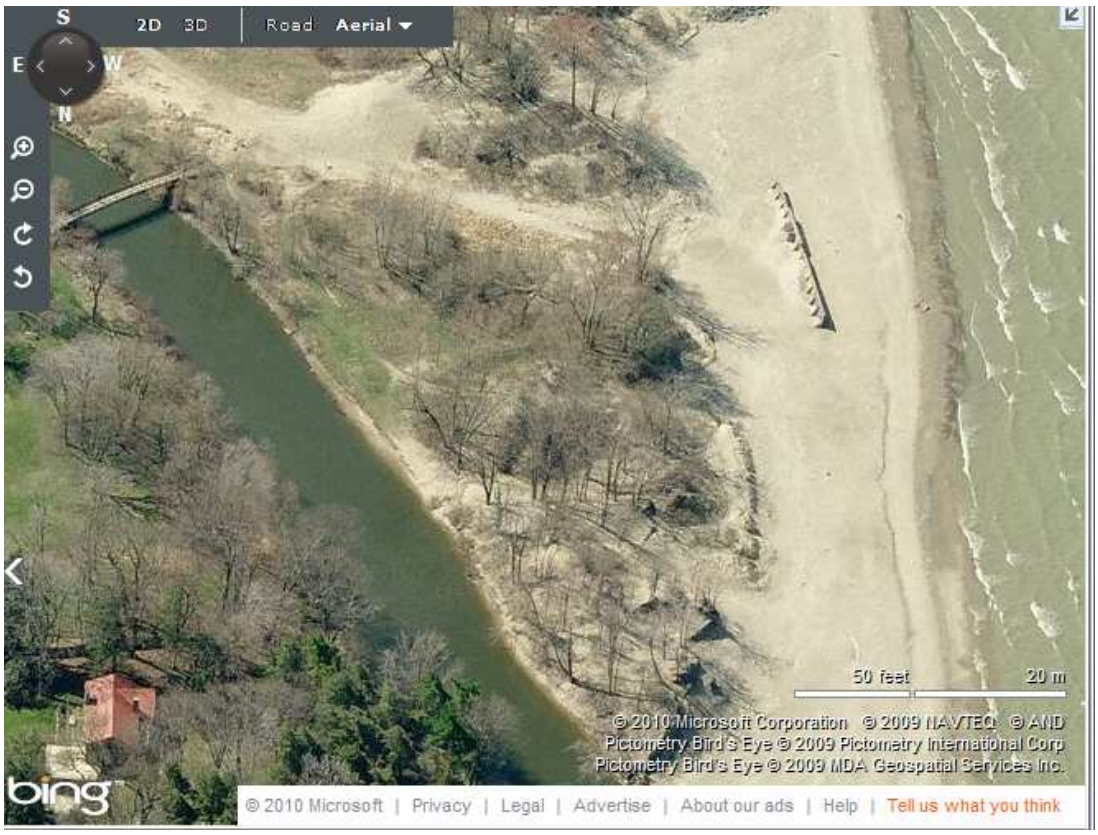


Bennett Beach, showing the bridge crossing and dunes

Shoreline Features in Sub – Area 2:



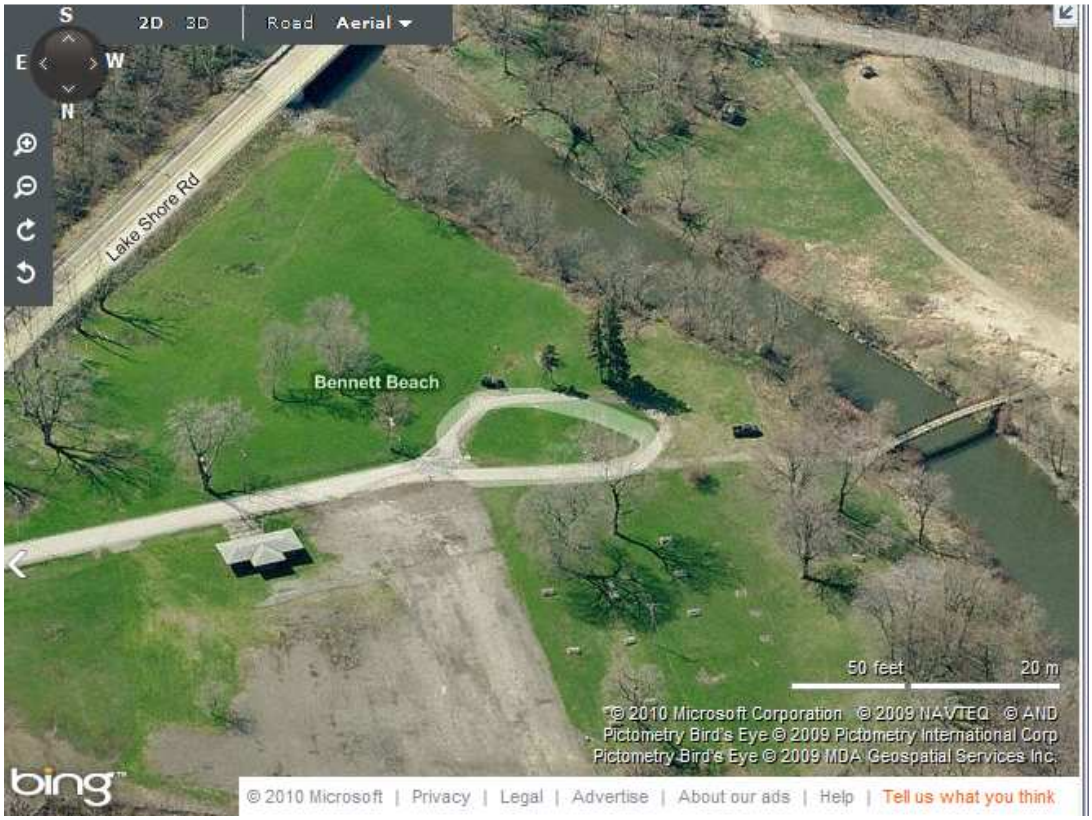
Bennett Beach dunes, showing abandoned concrete foundation on beach



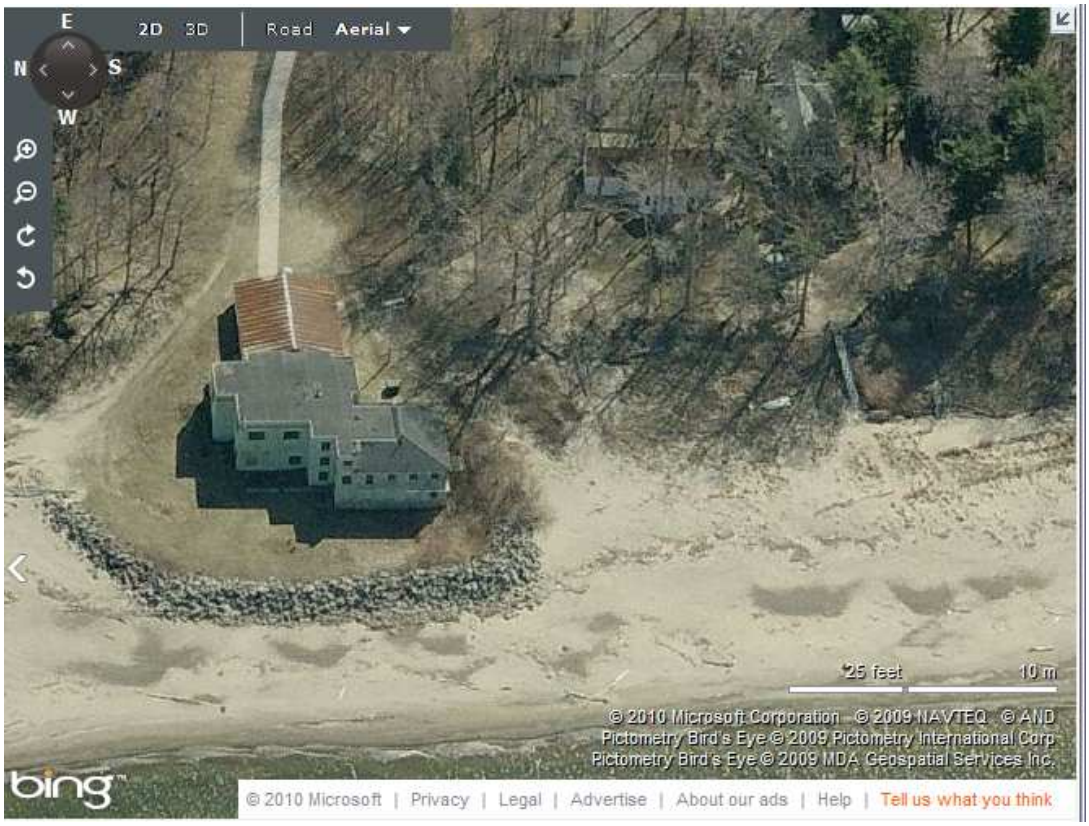
Another view of Big Sister Creek and Bennett Beach

Shoreline Features in Sub – Area 2:

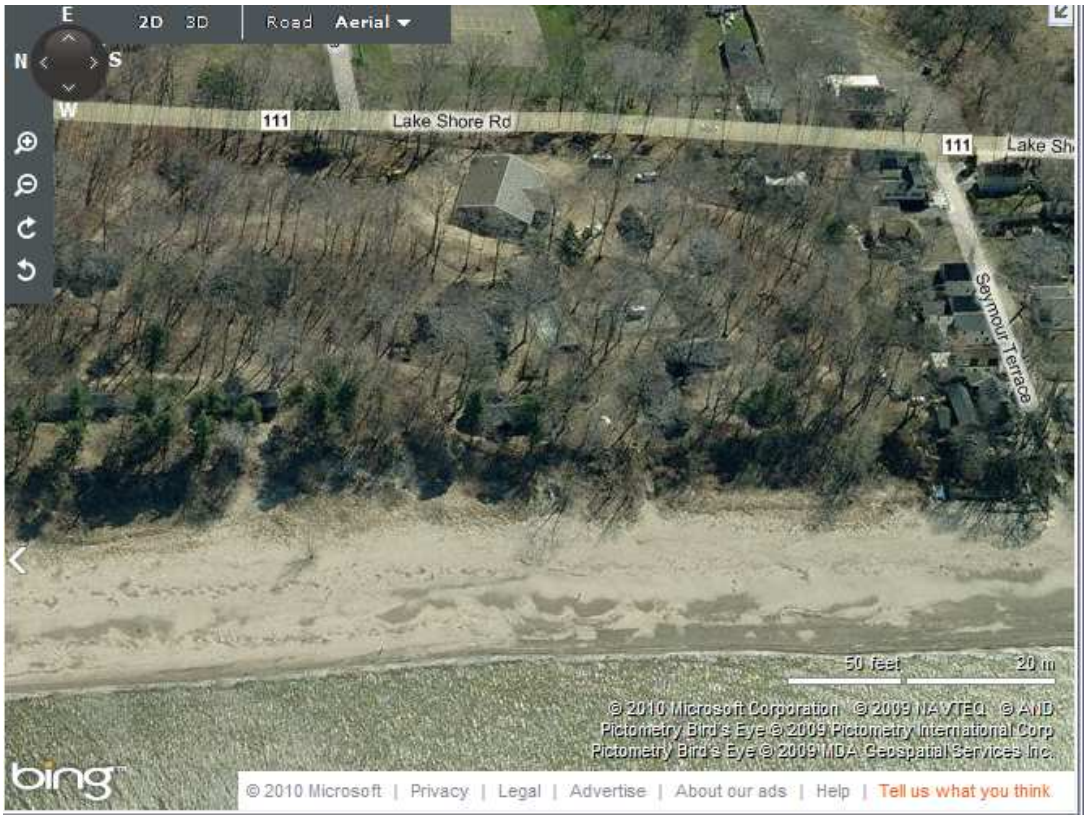
Interior views of Bennett Beach County Park



Shoreline Features in Sub – Area 2:

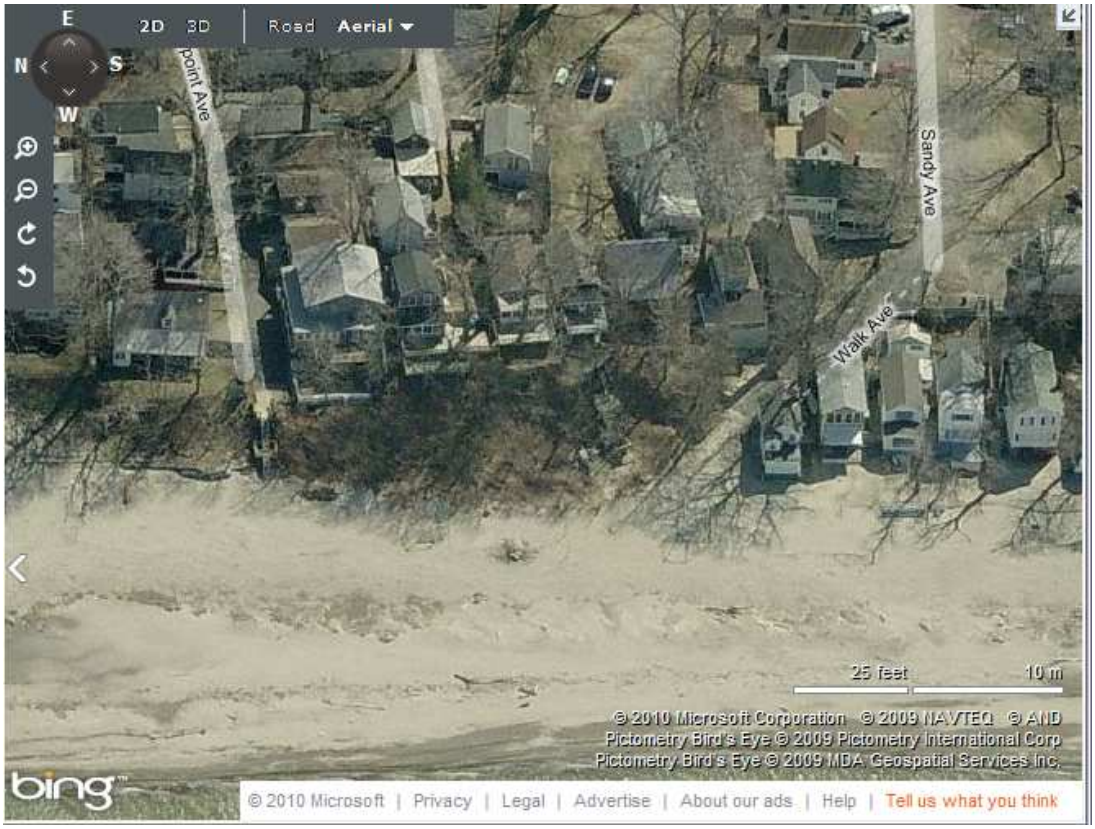


View of the abandoned Angola Water Treatment plant, just south of Bennett Beach

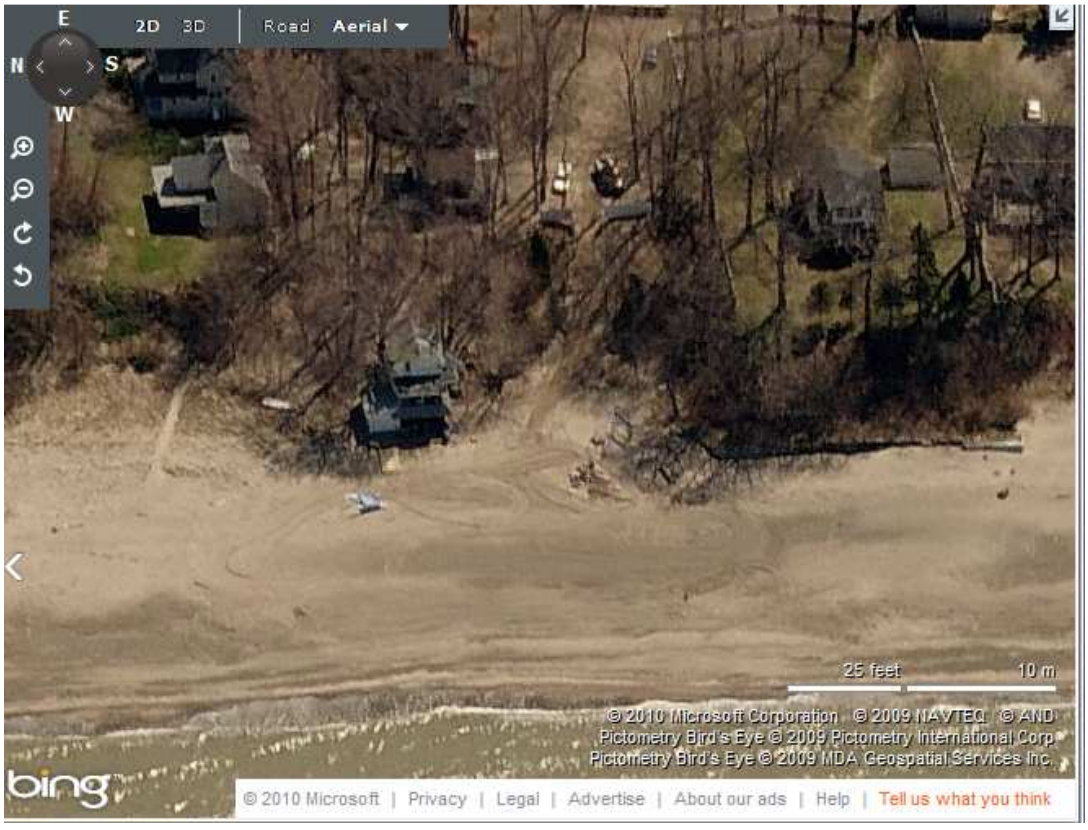


Shoreline view of St. Vincent de Paul Camp

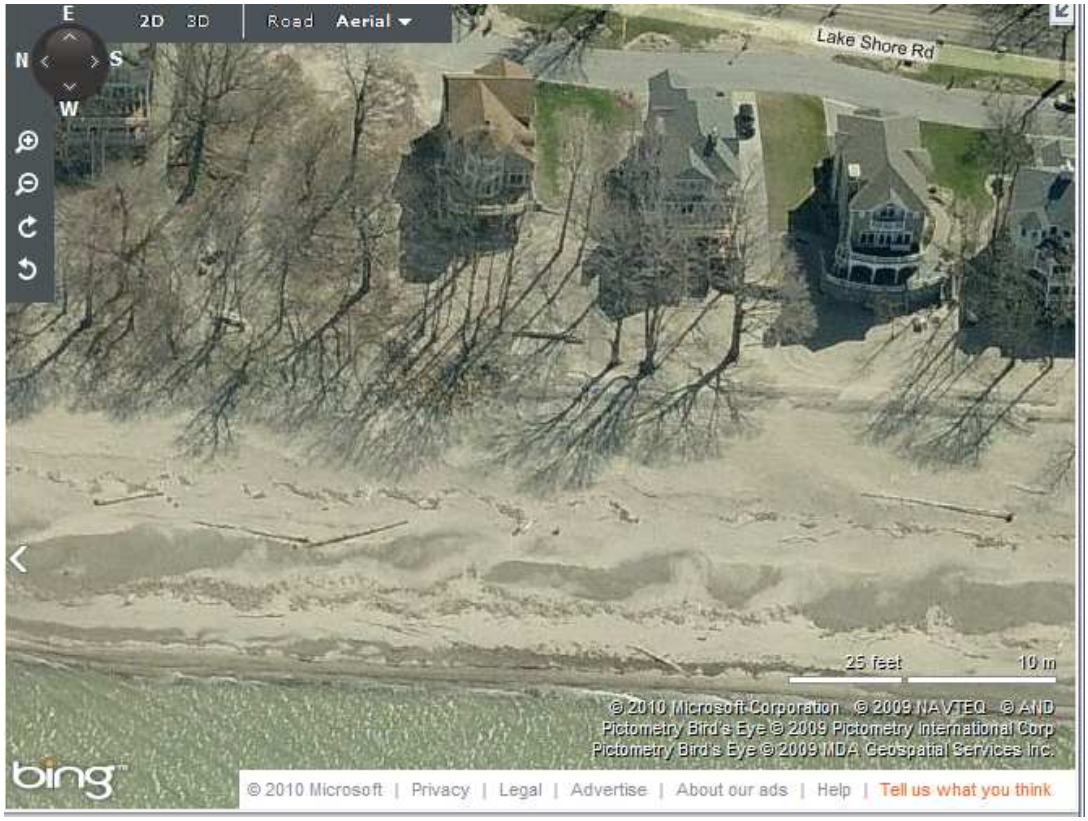
Shoreline Features in Sub – Area 2:



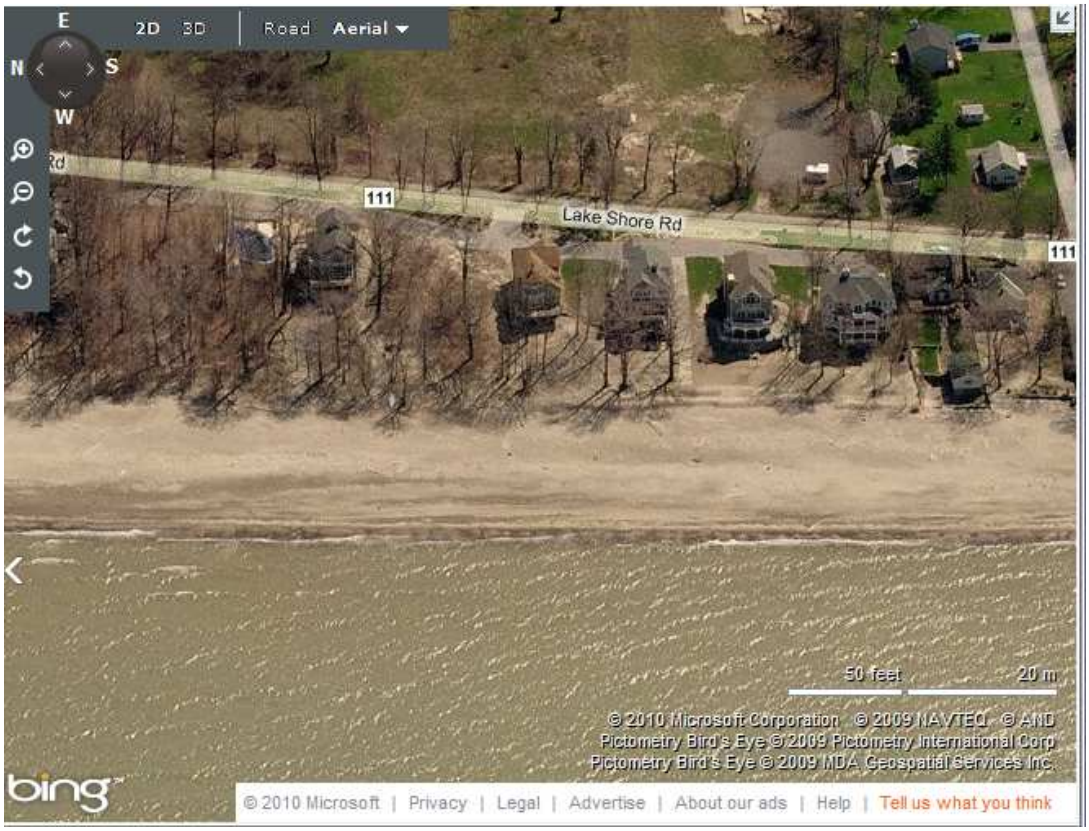
Shoreline views of the Lake Bay Grove community – Angola on the Lake



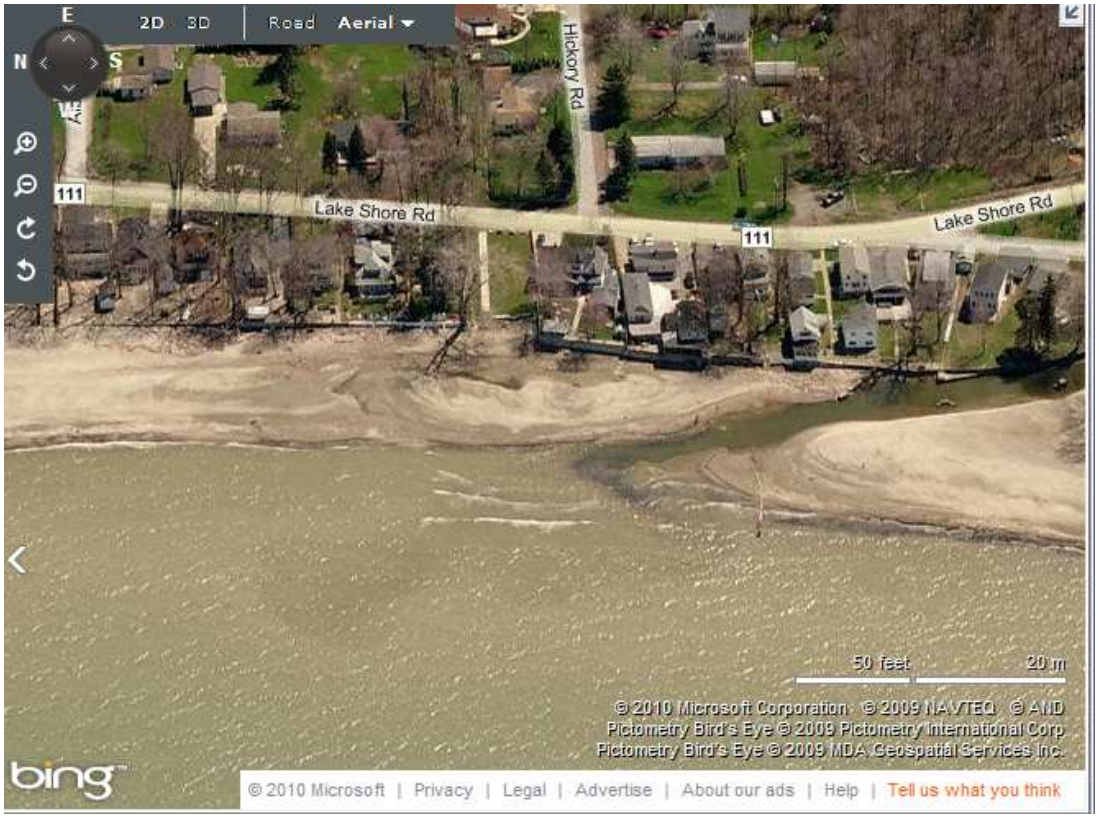
Shoreline Features in Sub – Area 2:



Views of the Grandview Bay Beach Club residential community



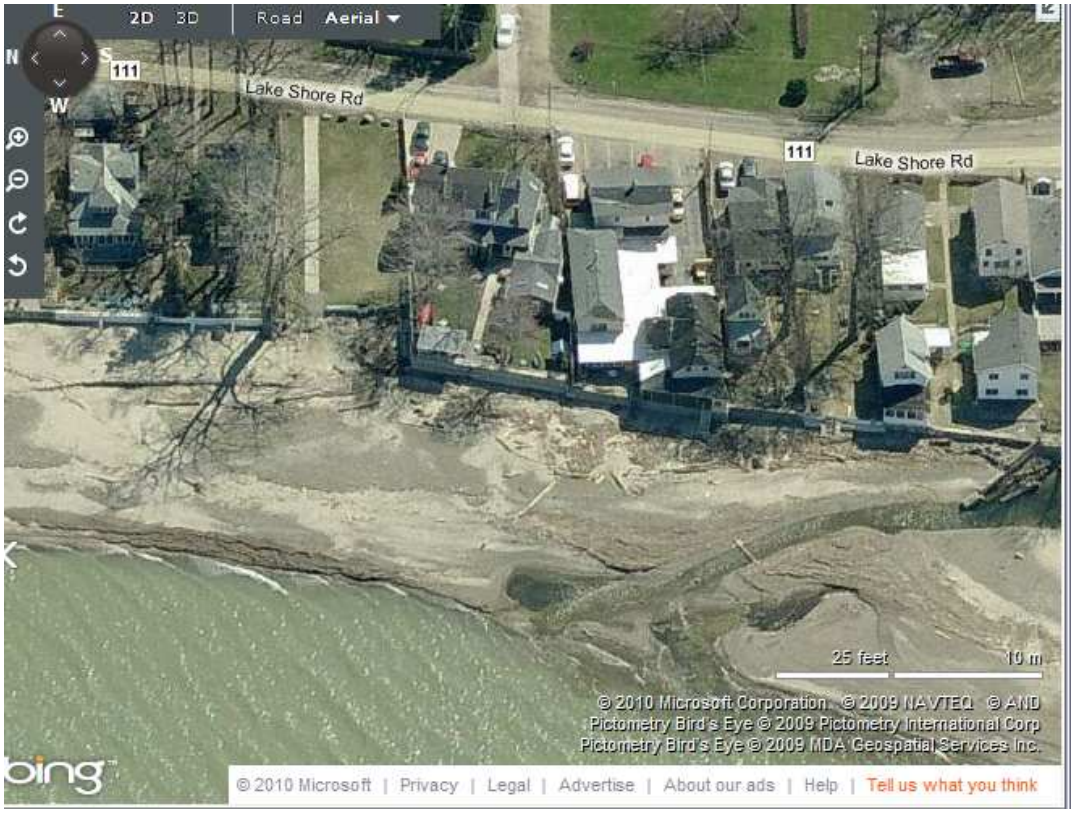
Shoreline Features in Sub – Area 2:



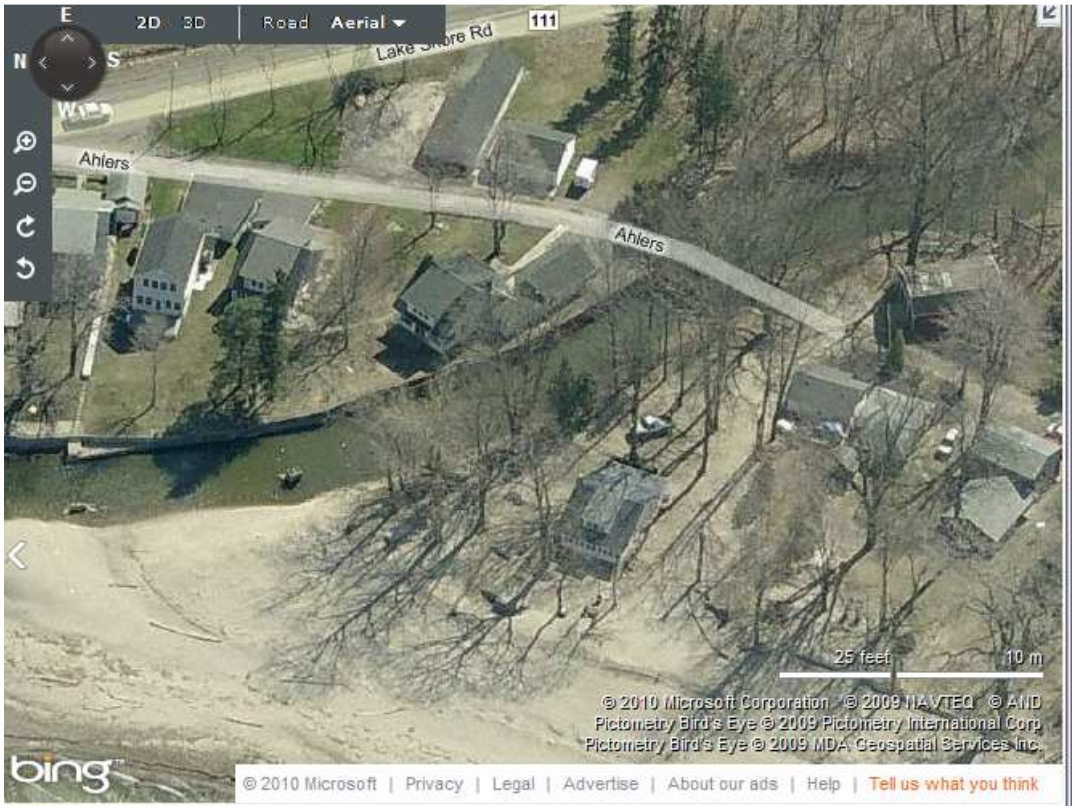
Lake Bay Grove at Hickory Road, with Purvis Landing at center of view

Mouth of Delaware Creek, just south of Purvis Landing

Shoreline Features in Sub – Area 2:

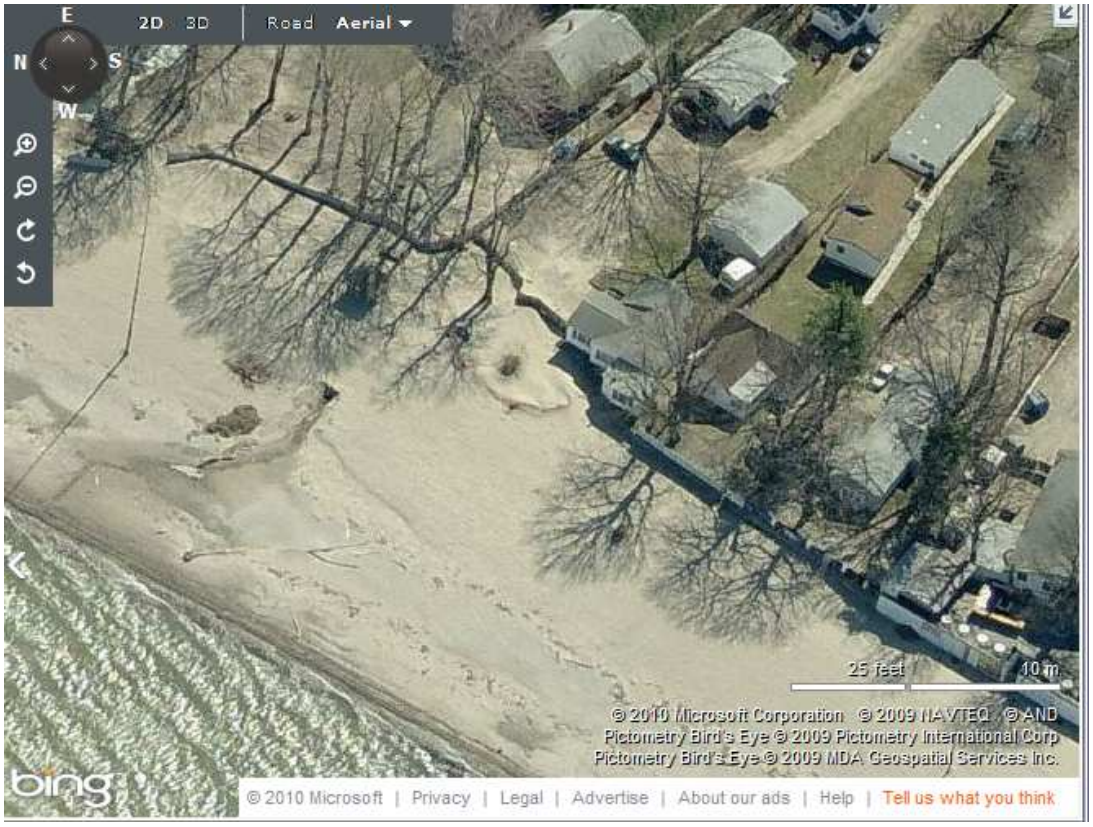


Purvis Landing at Delaware Creek mouth

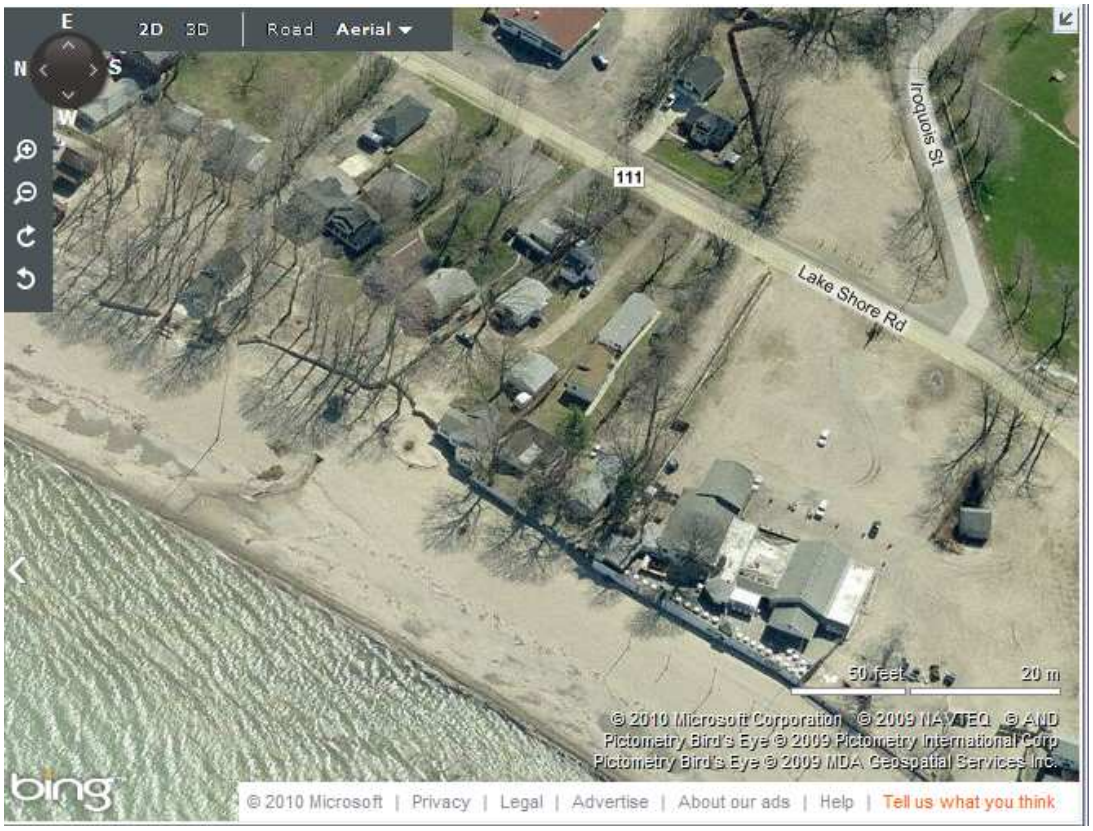


Delaware Creek / Angola on the Lake – at the southern end of Sub-Area 2

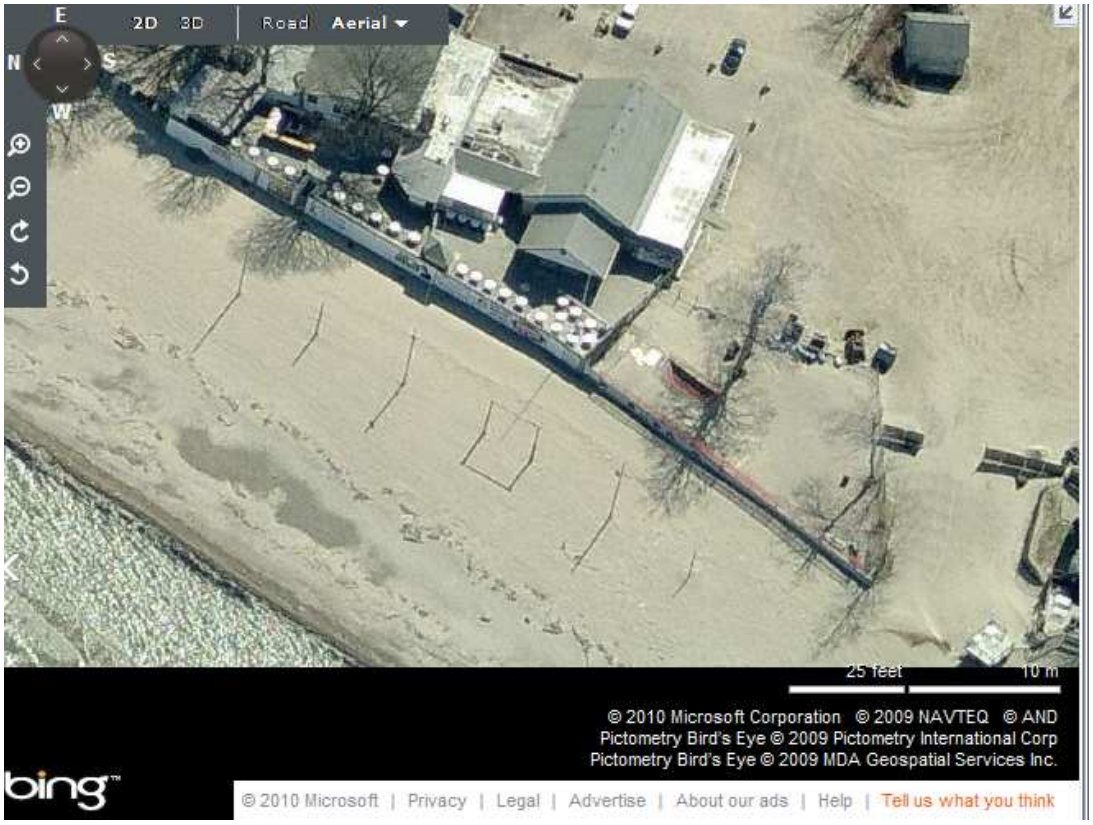
Shoreline Features in Sub – Area 3:



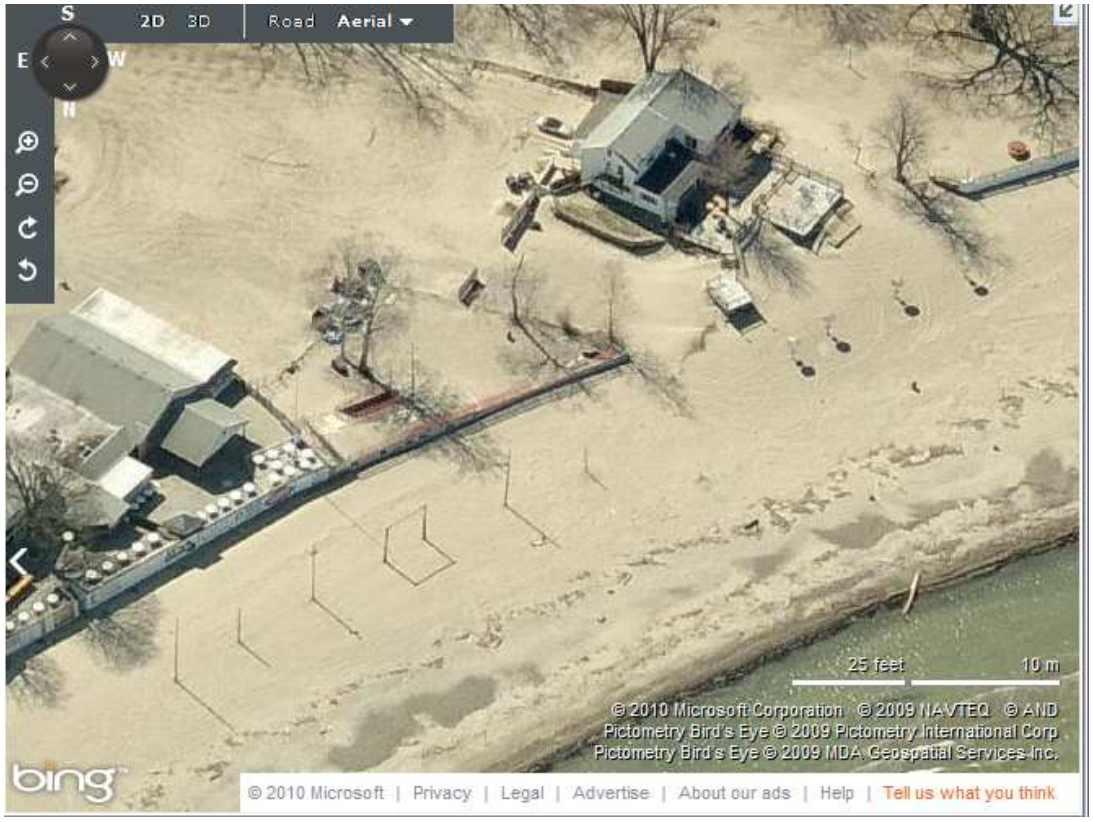
Seawalls along the Evans Beach shore and Mickey Rats/Captain Kidd's Beach Clubs



Shoreline Features in Sub – Area 3:

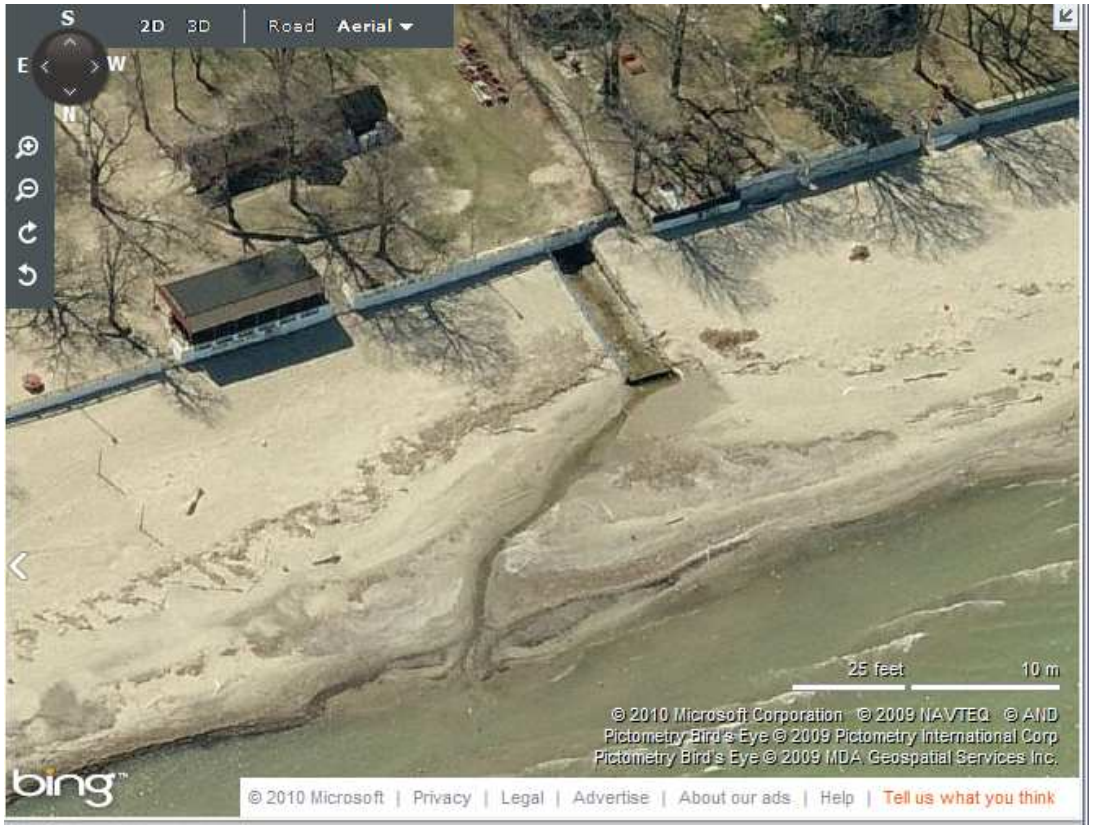


Mickey Rats / Captain Kidd's Beach Club, immediately north of Evans Town Beach

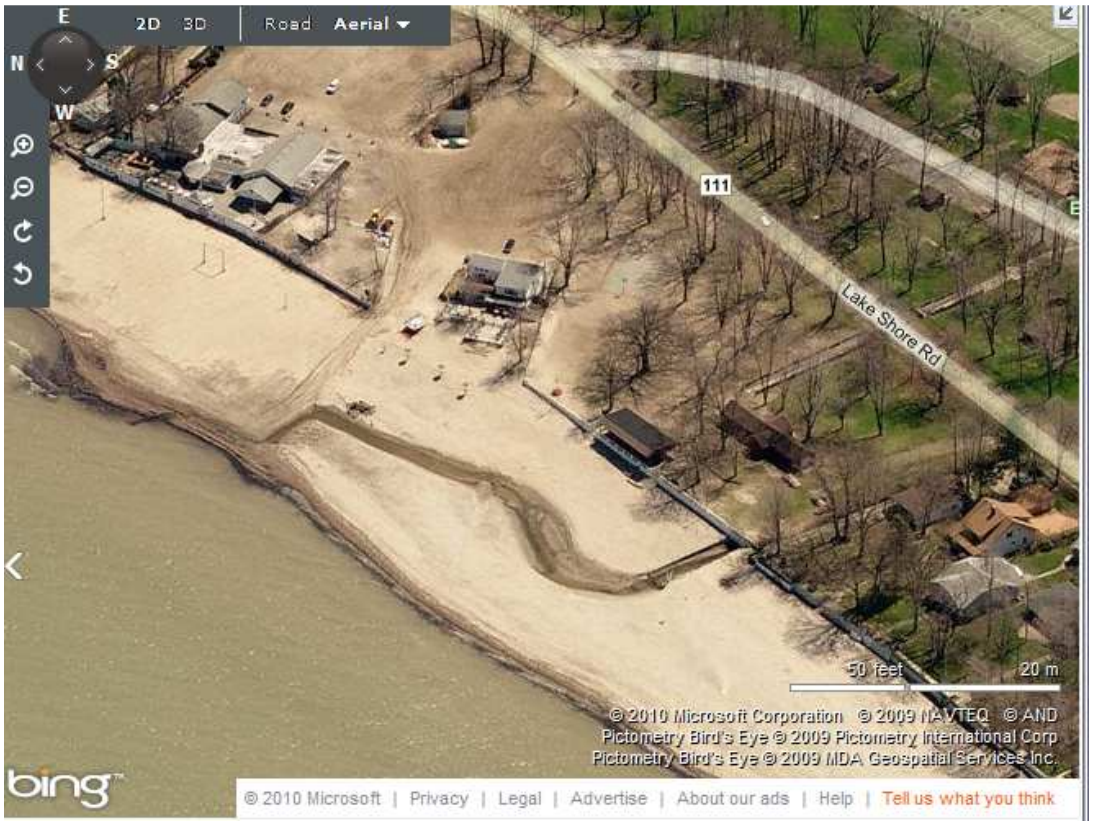


South Shore Beach Club (near center of view)

Shoreline Features in Sub – Area 3:

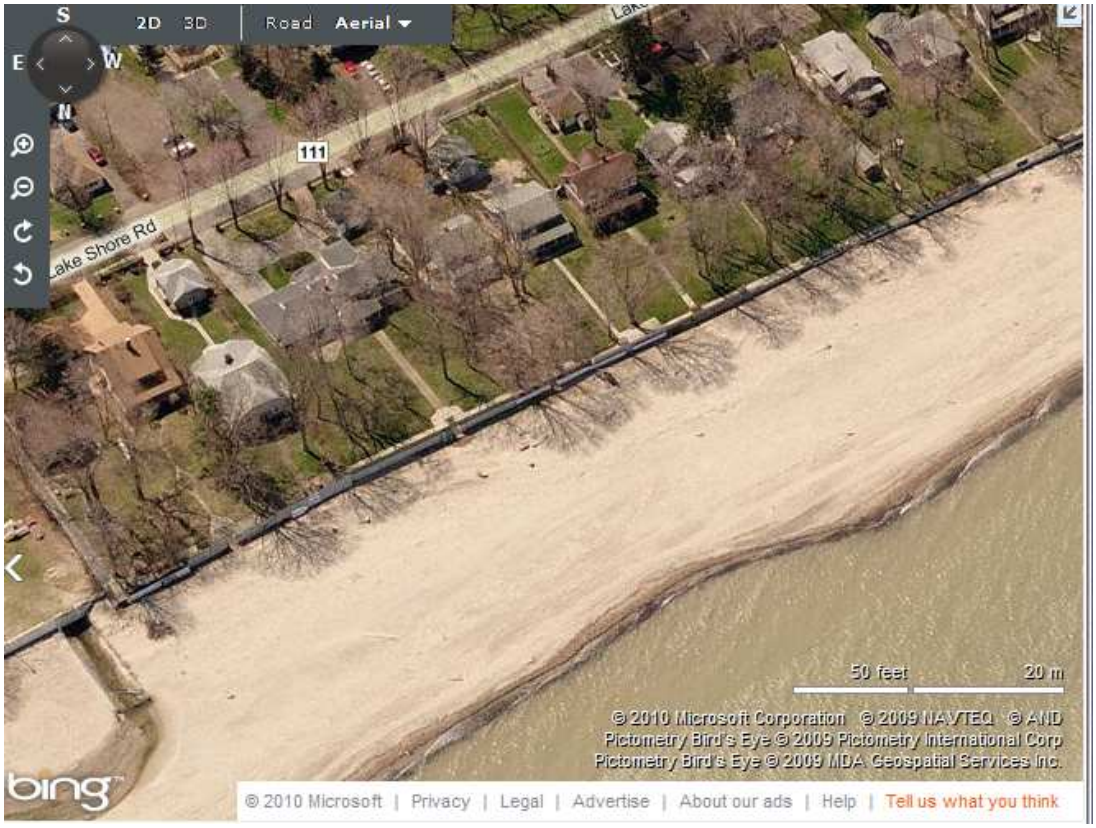


Shoreline of Evans Town Beach, showing outfall for Fern Brook

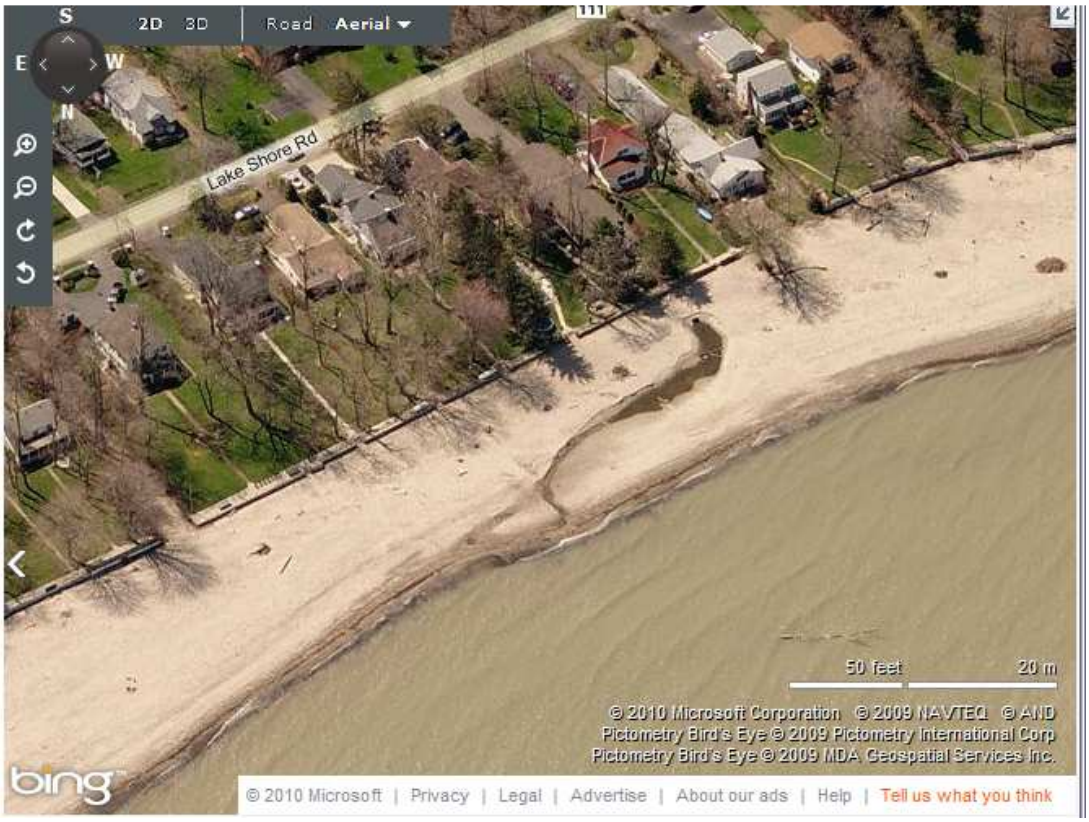


Evans Town Beach, showing roadway underpass that links beach and interior park areas

Shoreline Features in Sub – Area 3:

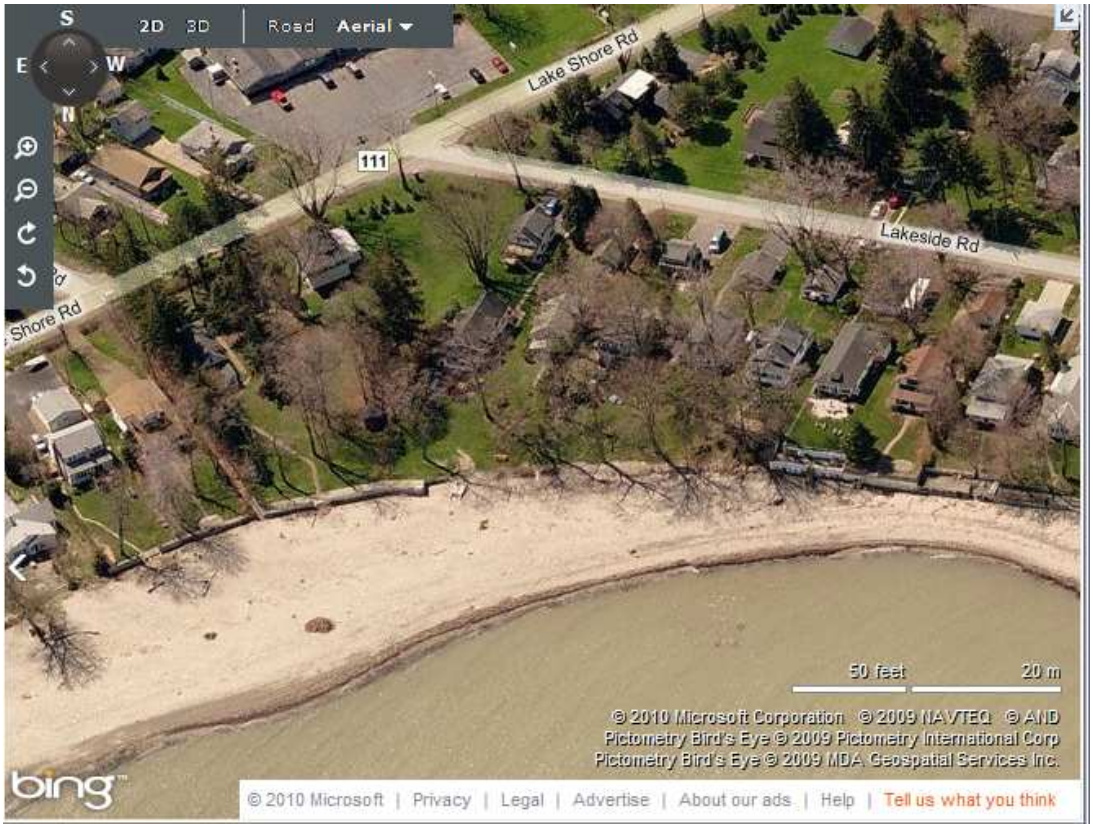


View of shoreline and seawalls, immediately north of Evans Town Beach

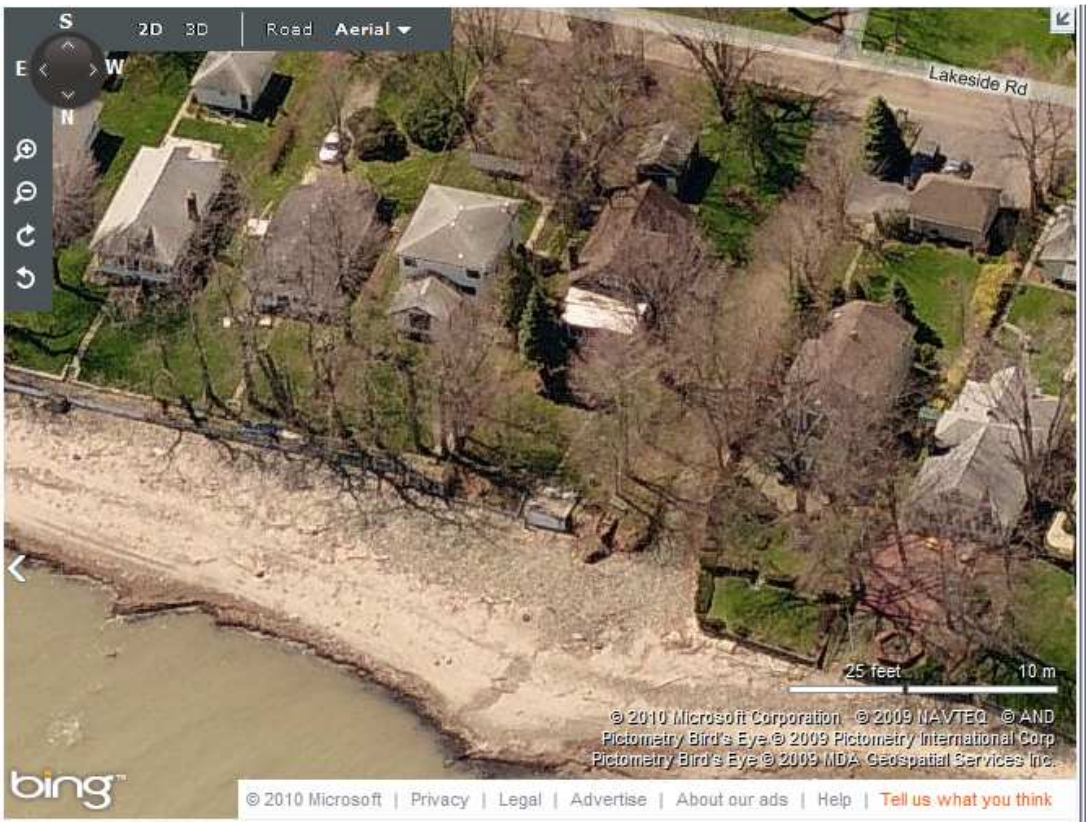


View of the shoreline of Evans Beach area, near Waterman Road

Shoreline Features in Sub – Area 3:

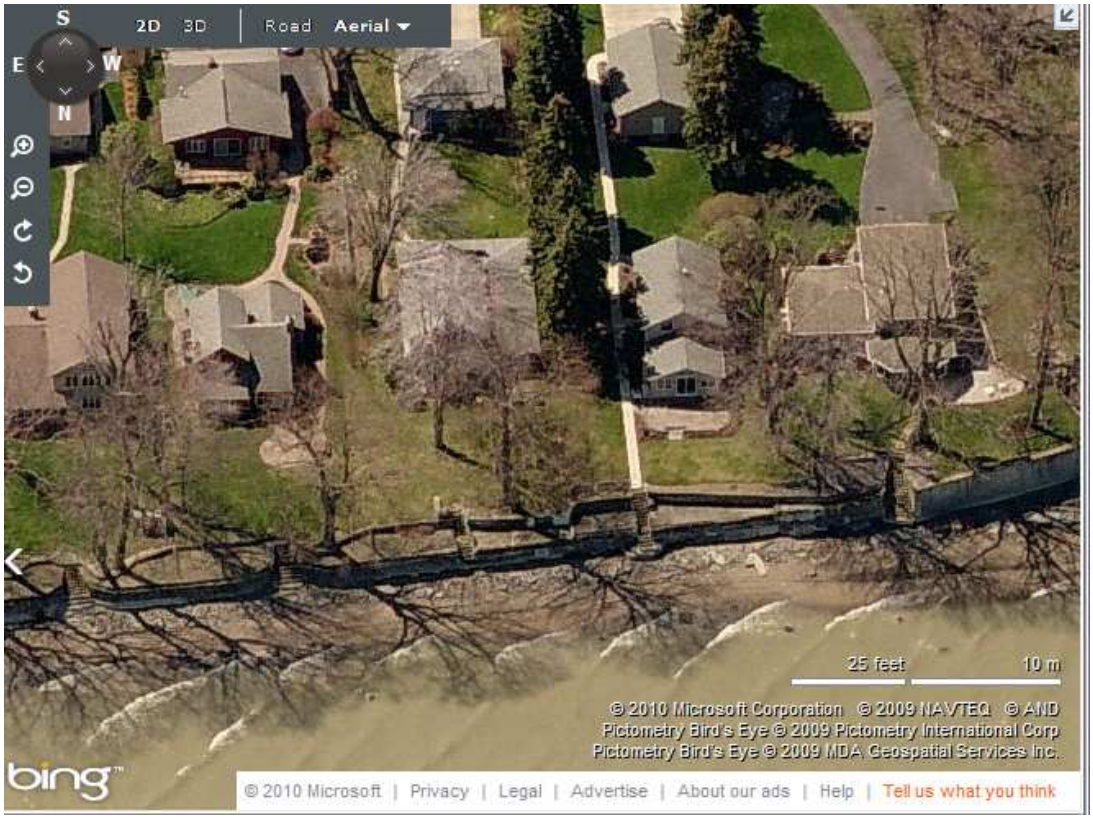


Entrance to Grandview Bay community (north side)

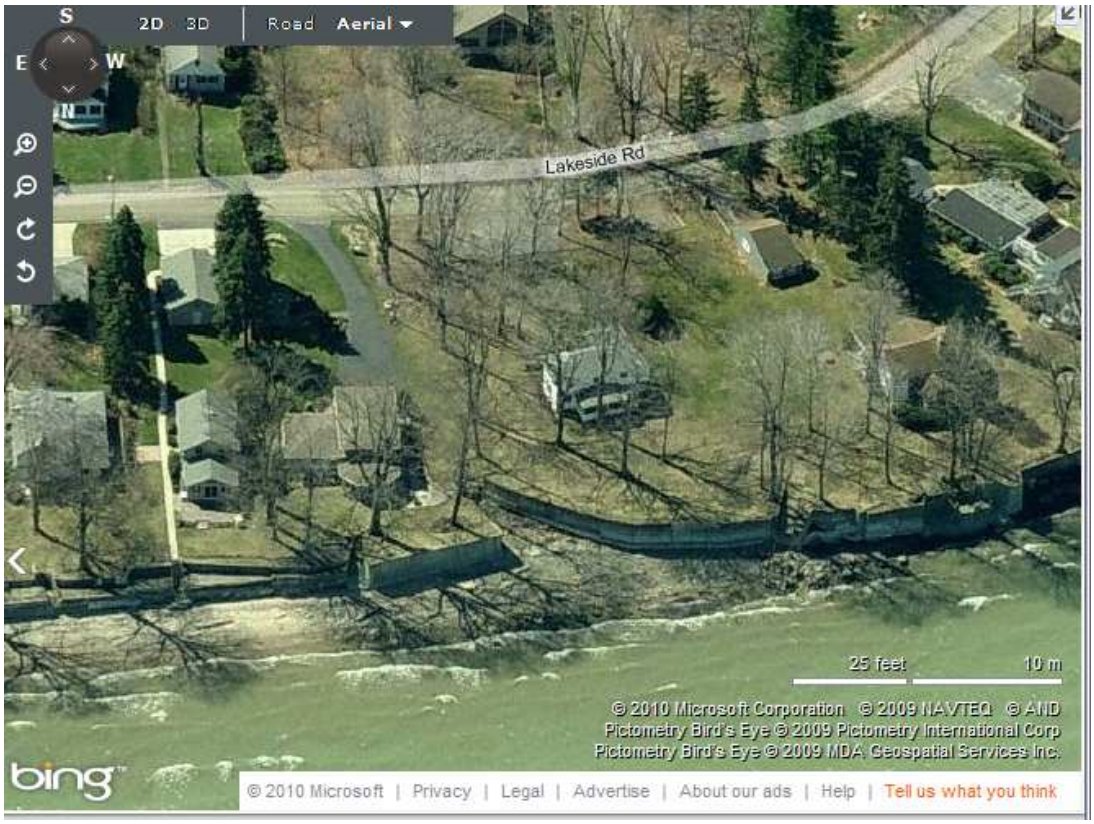


Grandview Bay community (north side), showing public access pathway to beach

Shoreline Features in Sub – Area 3:

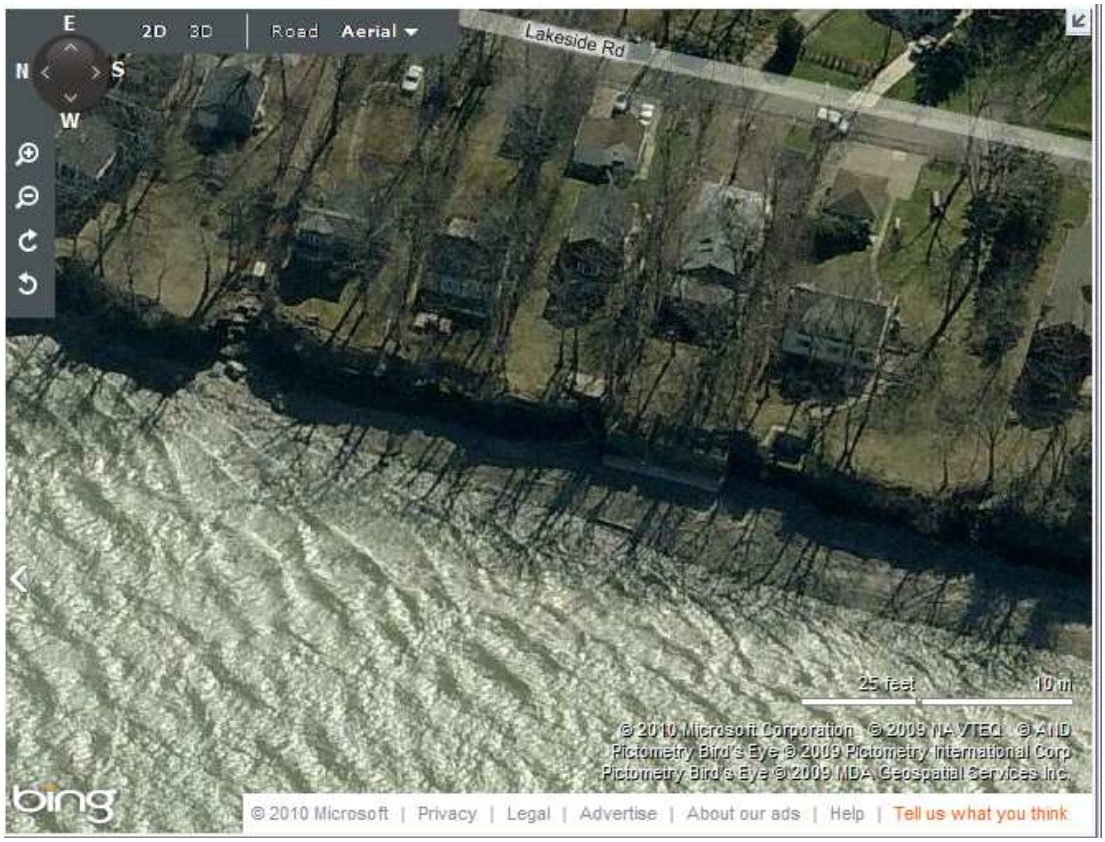


Seawalls with stairway access along the shoreline of Grandview Bay residential community

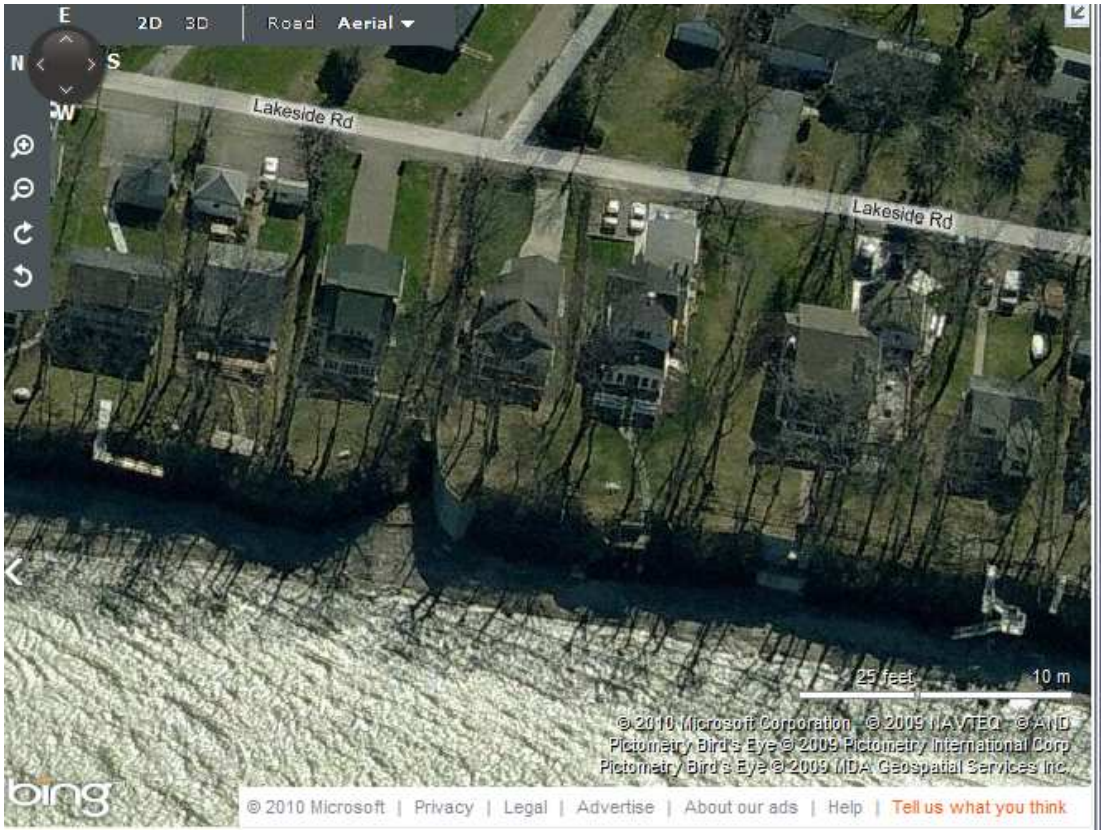


Additional views of seawalls along Grandview Bay

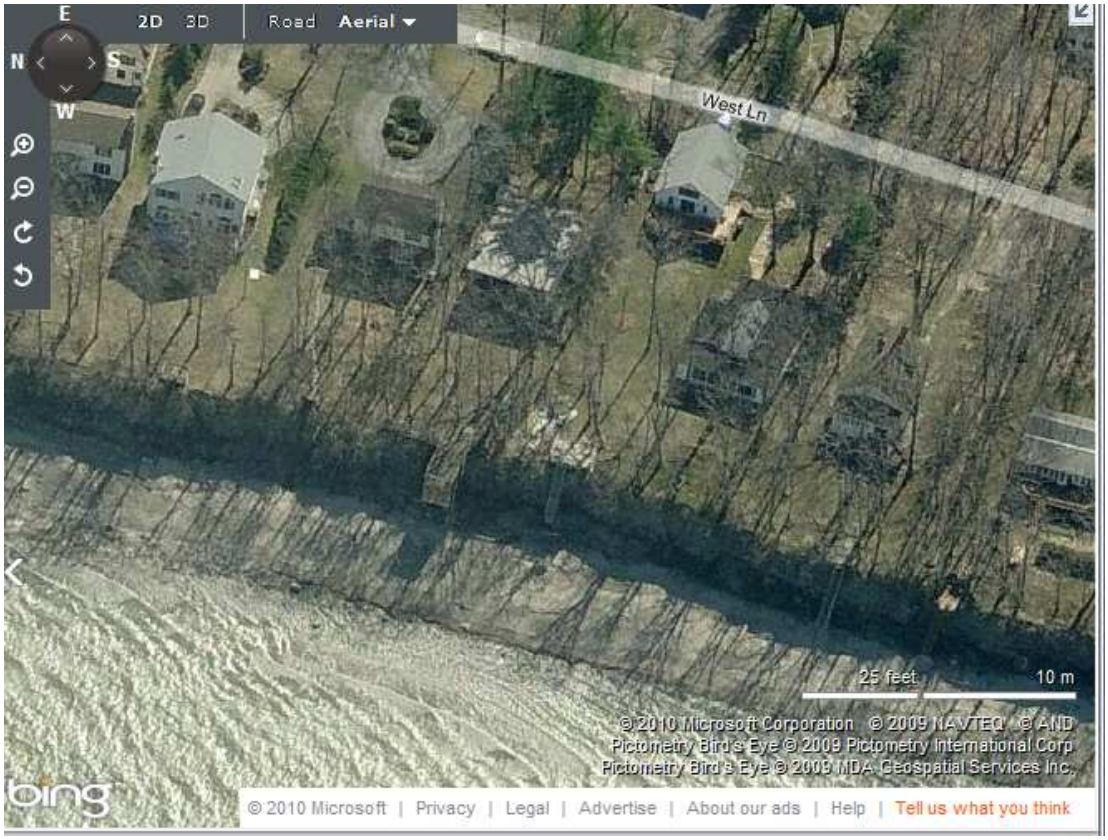
Shoreline Features in Sub – Area 3:



Views of Grandview Bay showing public access pathways to beach



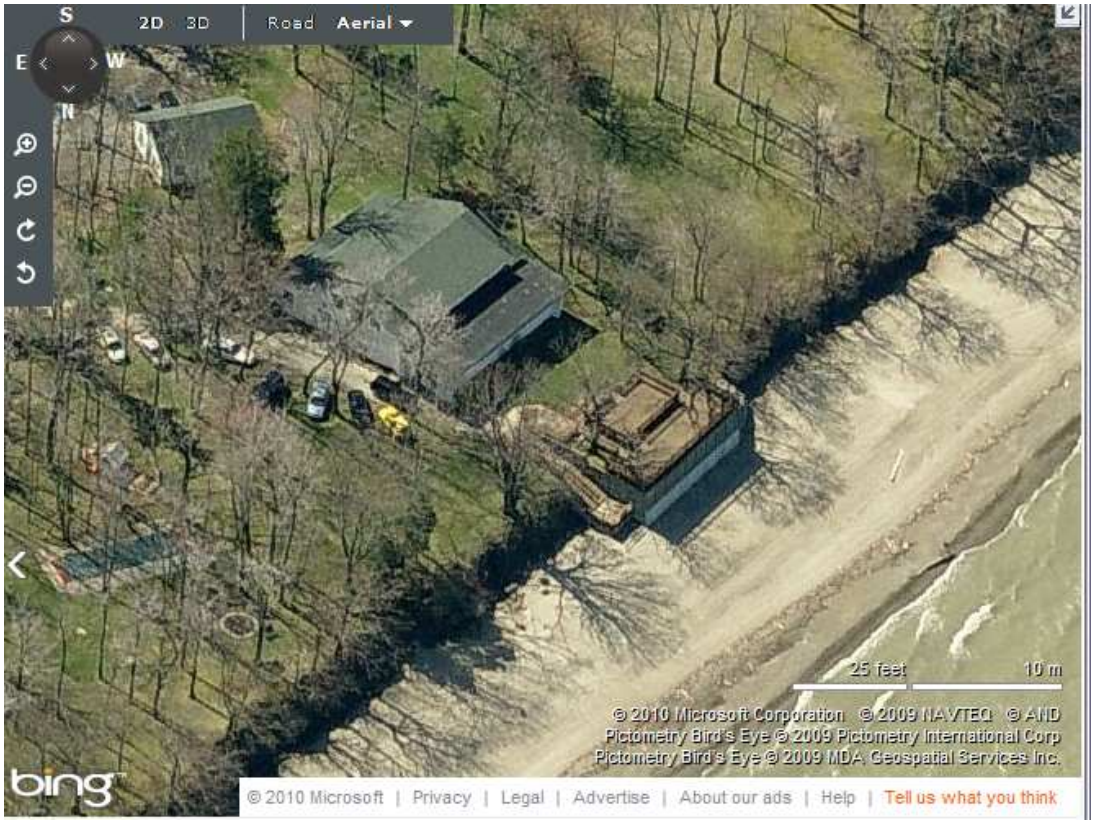
Shoreline Features in Sub – Area 3:



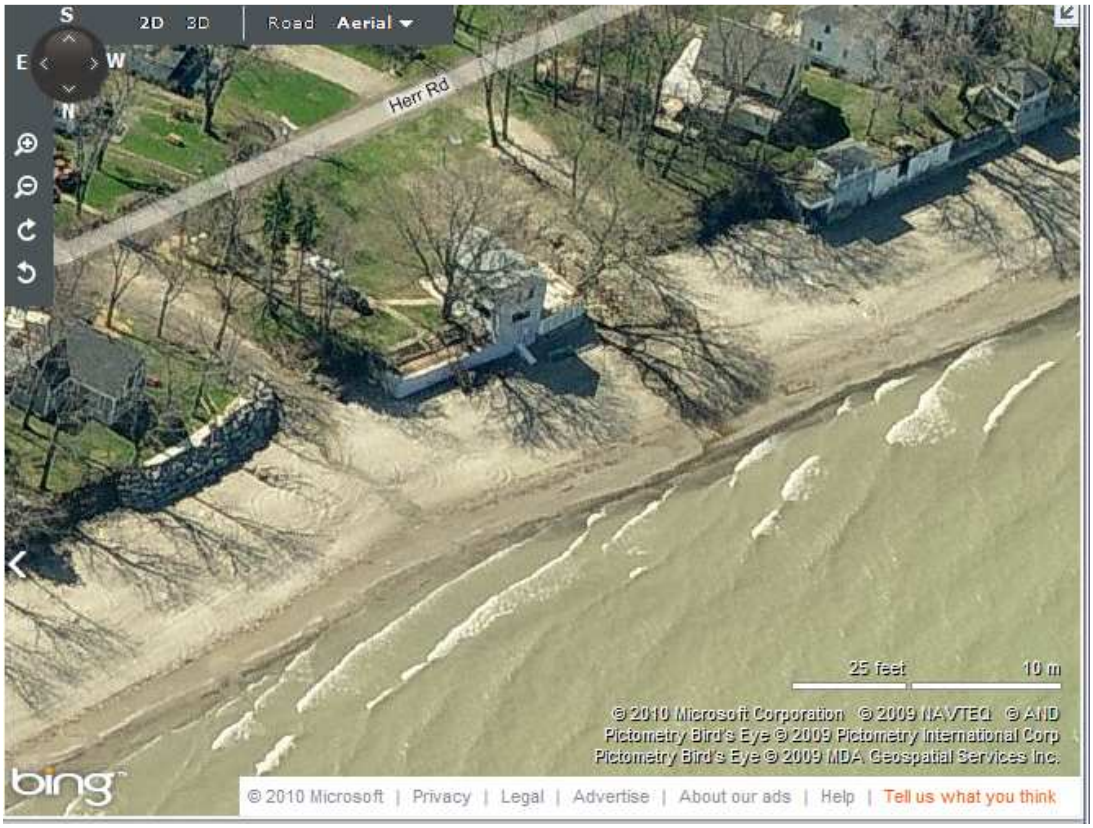
Southern end of Grandview Bay, just north of Camp Pioneer

Views of the Camp Pioneer shoreline

Shoreline Features in Sub – Area 3:

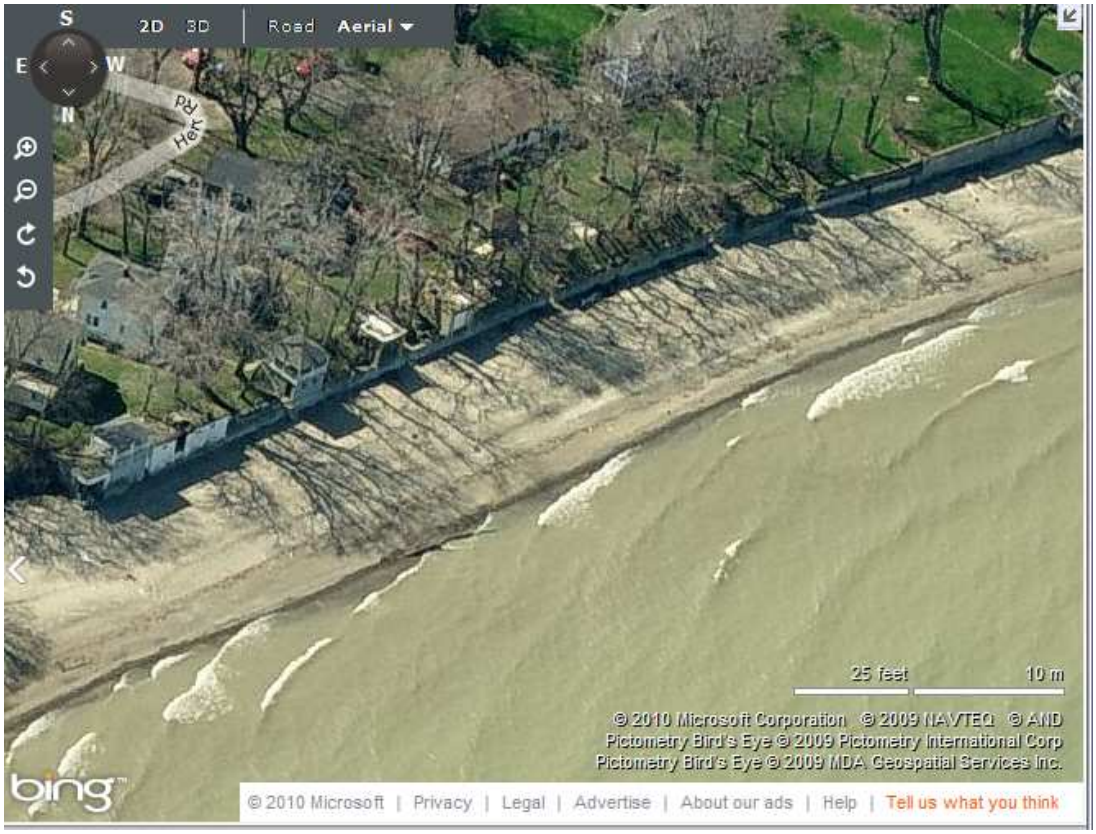


Camp Pioneer shoreline, showing beachside structure with stairway access to beach

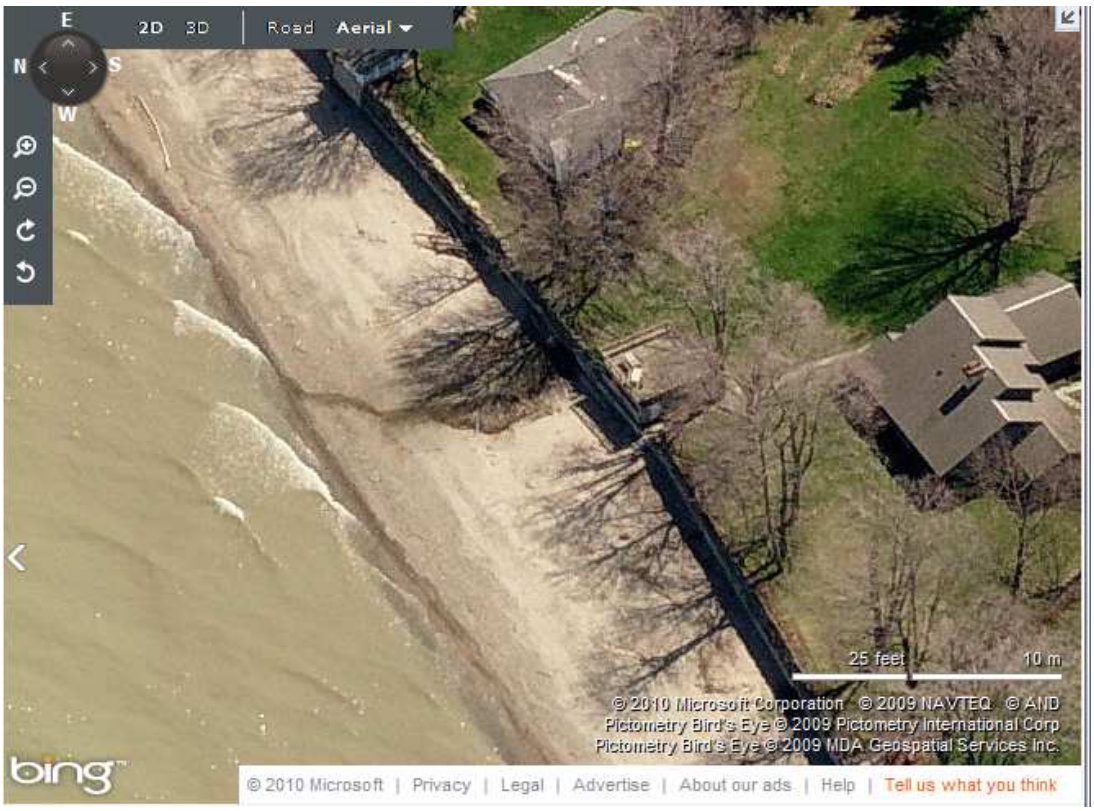


Shoreline view, immediately south of Camp Pioneer

Shoreline Features in Sub – Area 3:

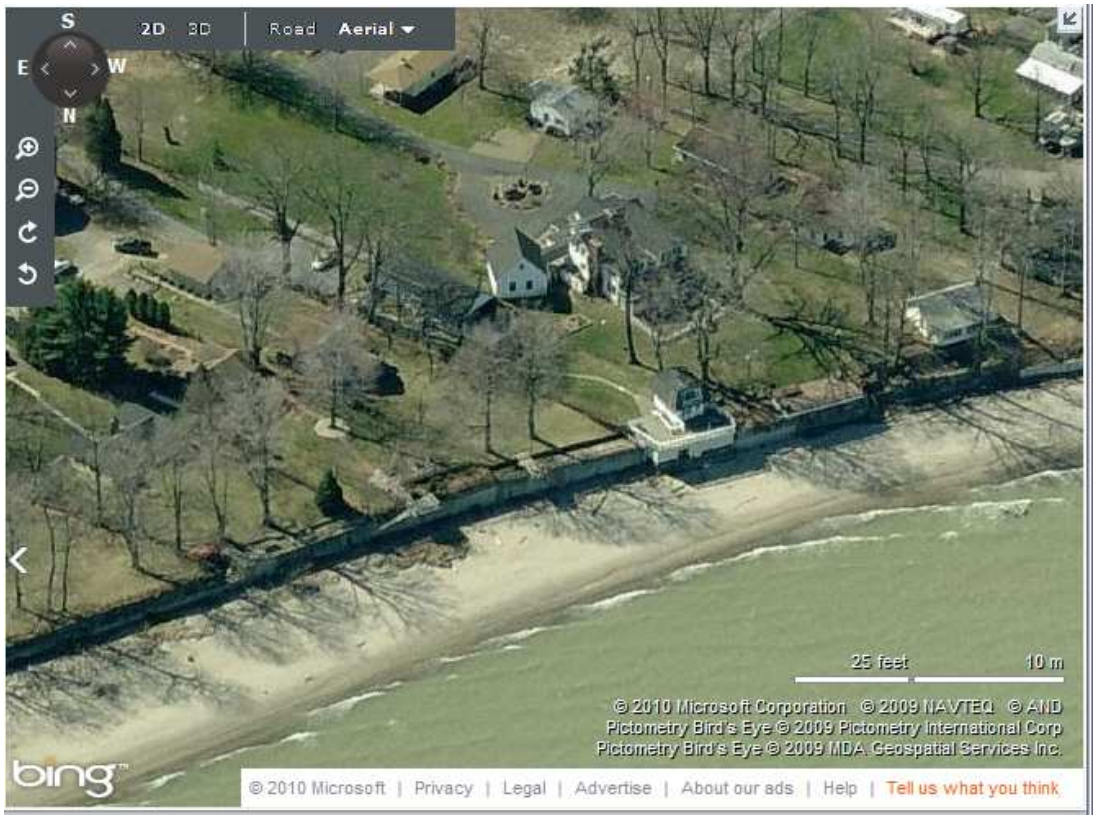


Views of the Sylvan Community Association residential area south of Camp Pioneer



Shoreline view along Eagle Bay area, north of Point Breeze resort

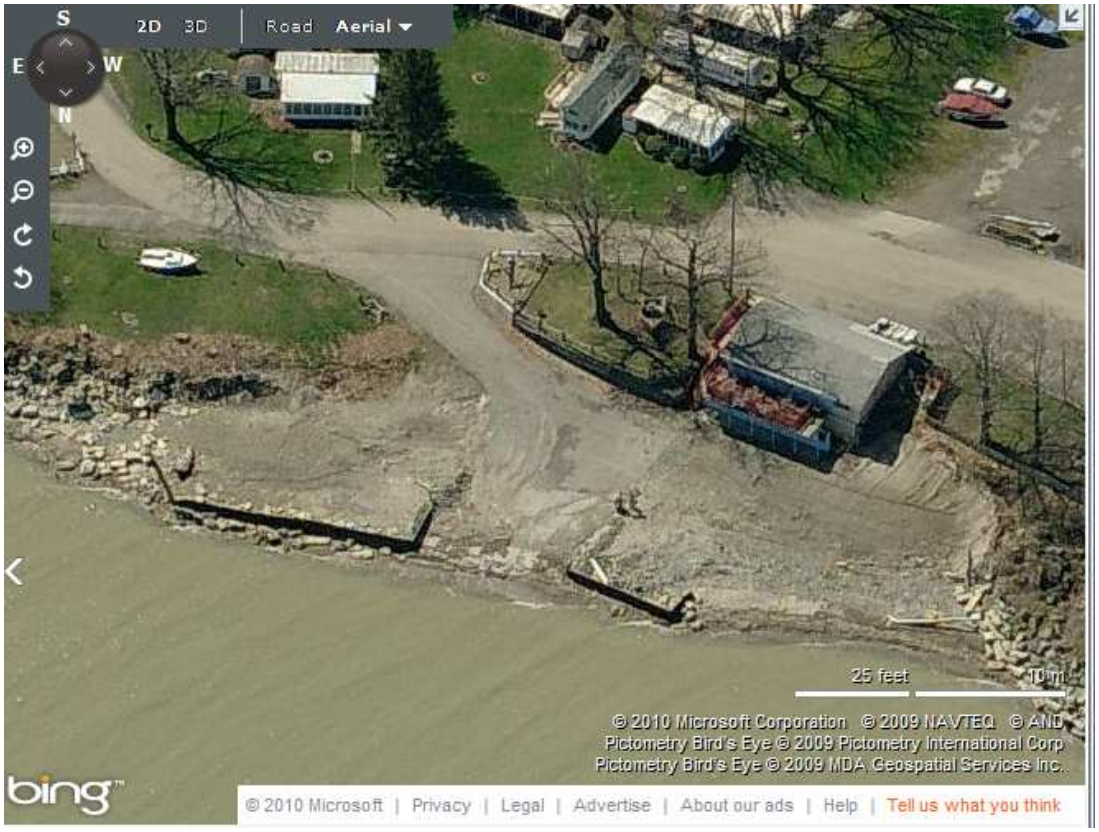
Shoreline Features in Sub – Area 3:



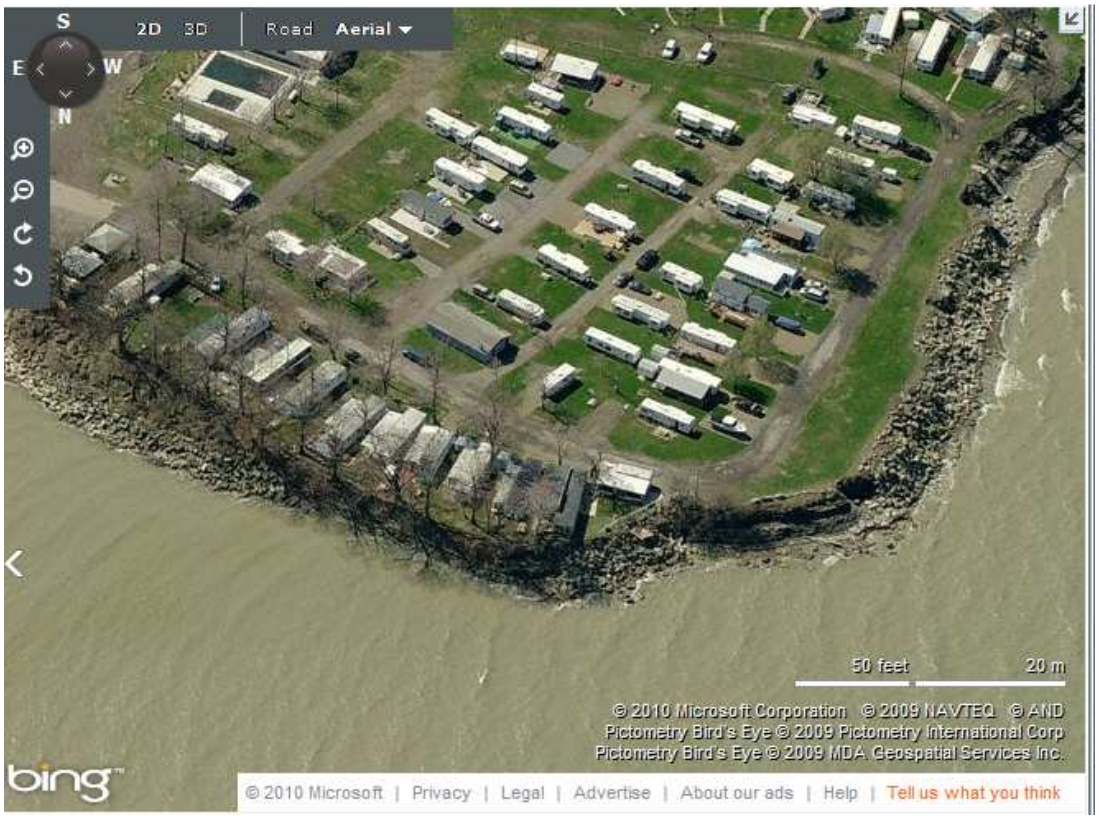
View of Eagle Bay area, seaward of AJ Schmidt Elementary School

Point Breeze RV Resort, showing shoreline and boat launch ramp

Shoreline Features in Sub – Area 3:

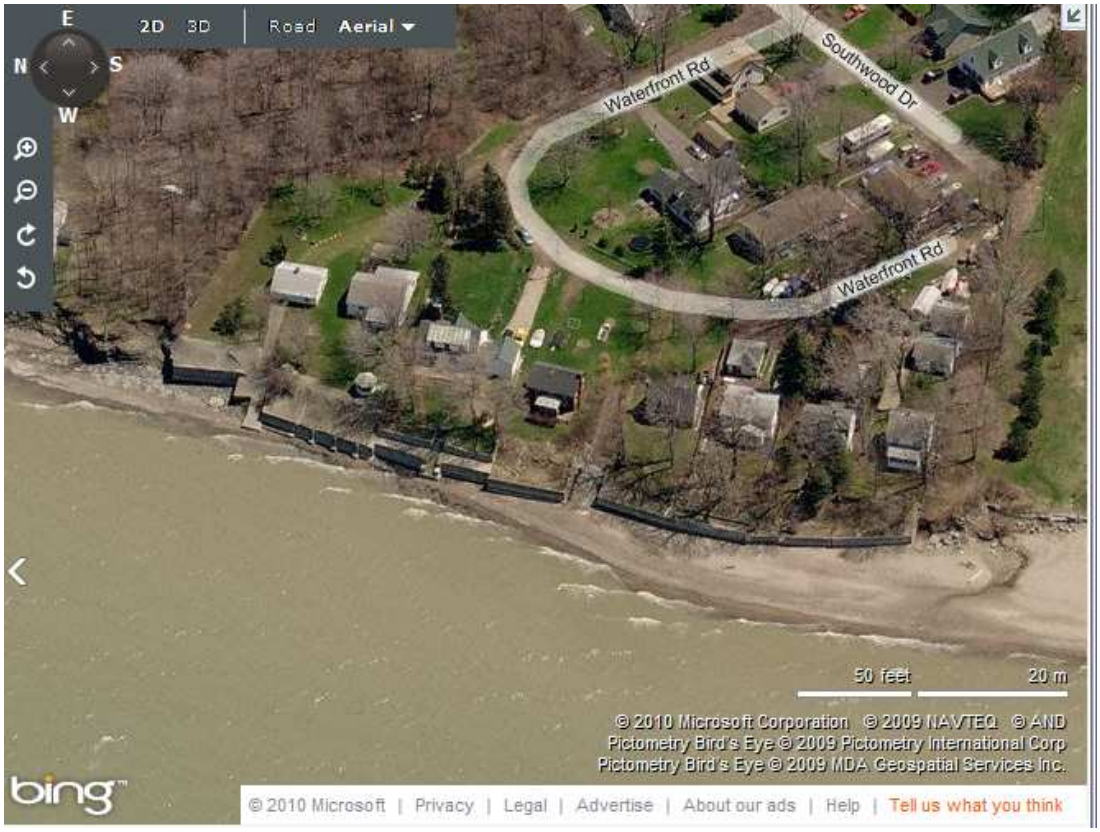


Point Breeze RV Resort boat launch



Shoreline of the Point Breeze RV Resort property

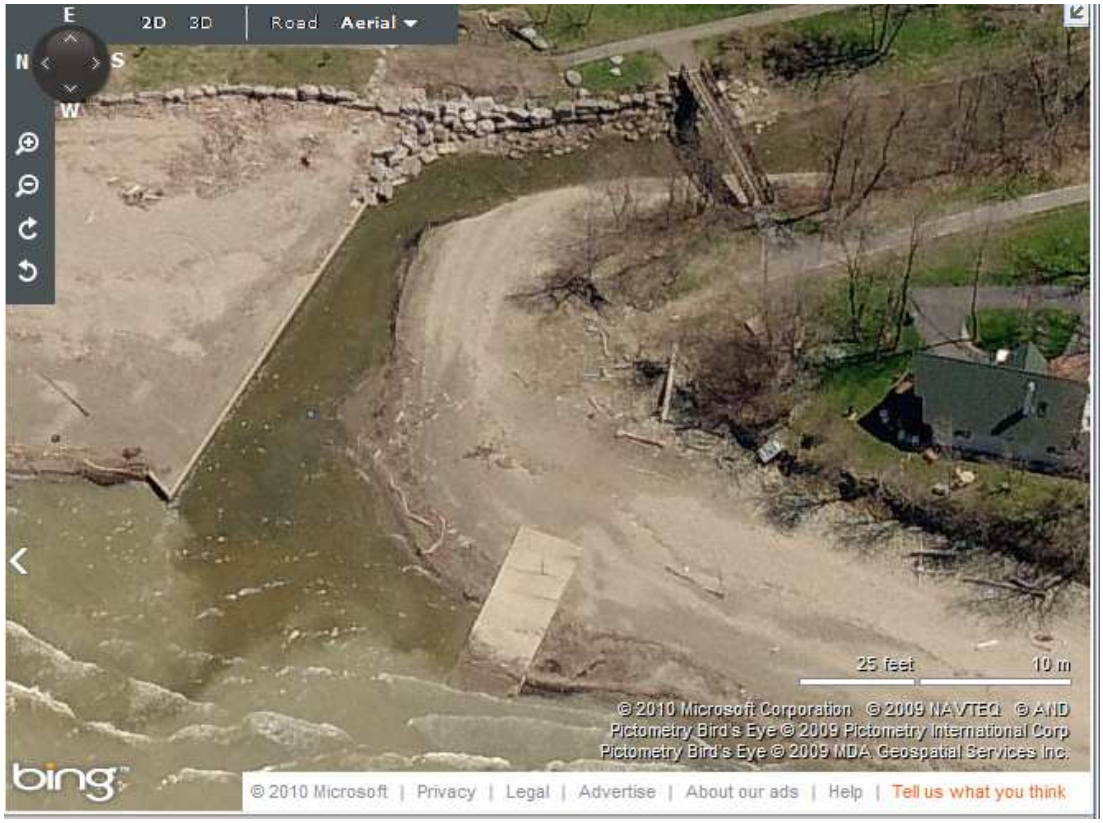
Shoreline Features in Sub – Area 3:



Seawalls along the Southwood Drive area, south of Point Breeze resort

Lake Erie Beach Town Park, showing beach and mouth of Muddy Creek

Shoreline Features in Sub – Area 3:

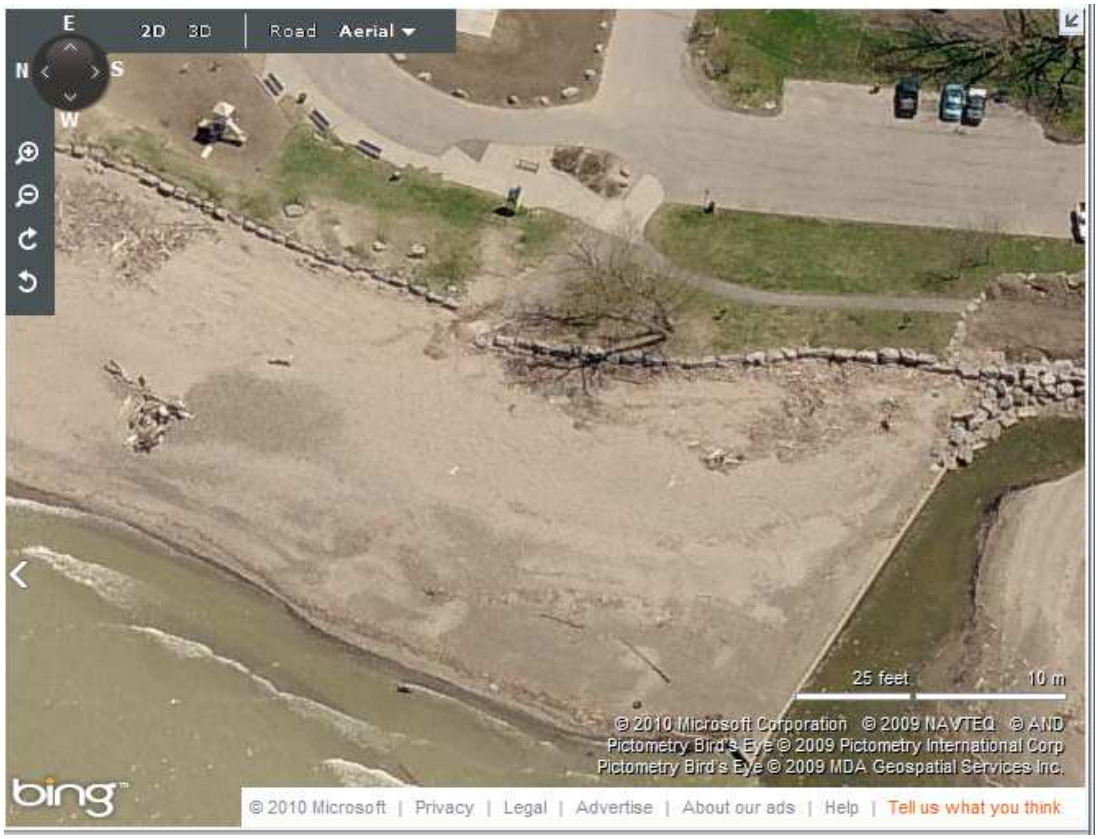


Wider view of the mouth of Muddy Creek

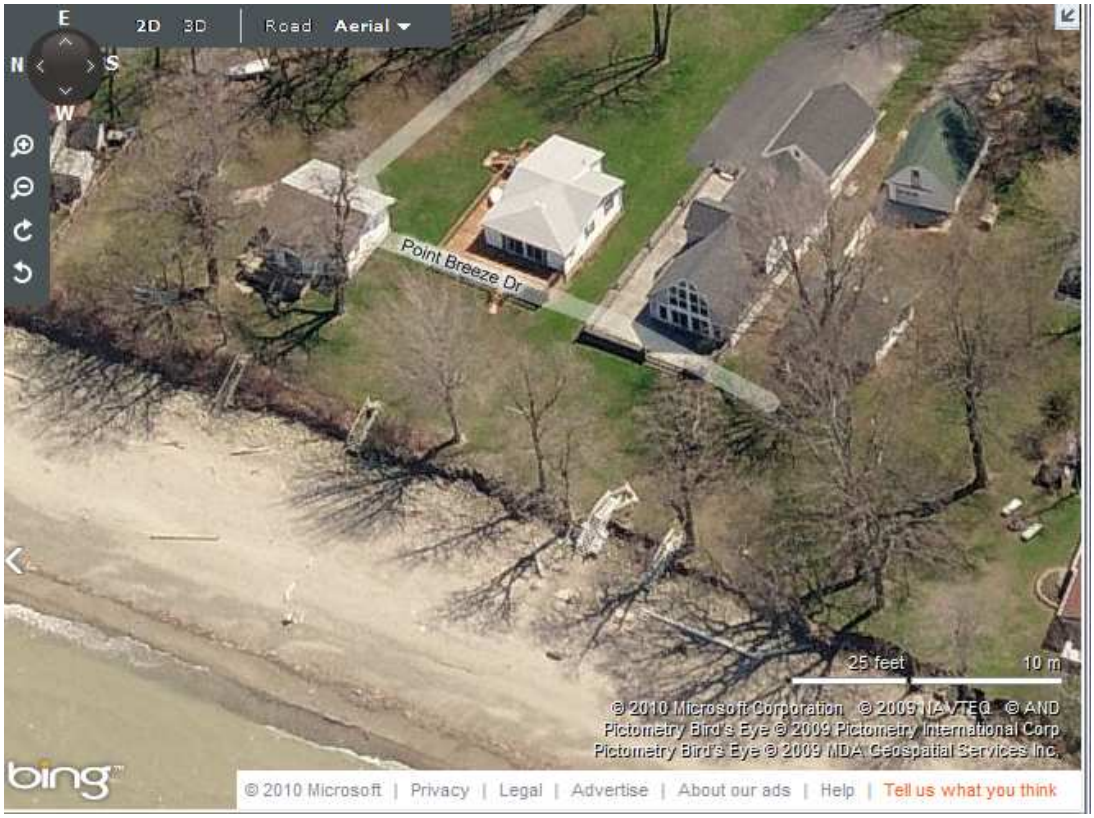
Lake Erie Beach hamlet area

Shoreline Features in Sub – Area 3:

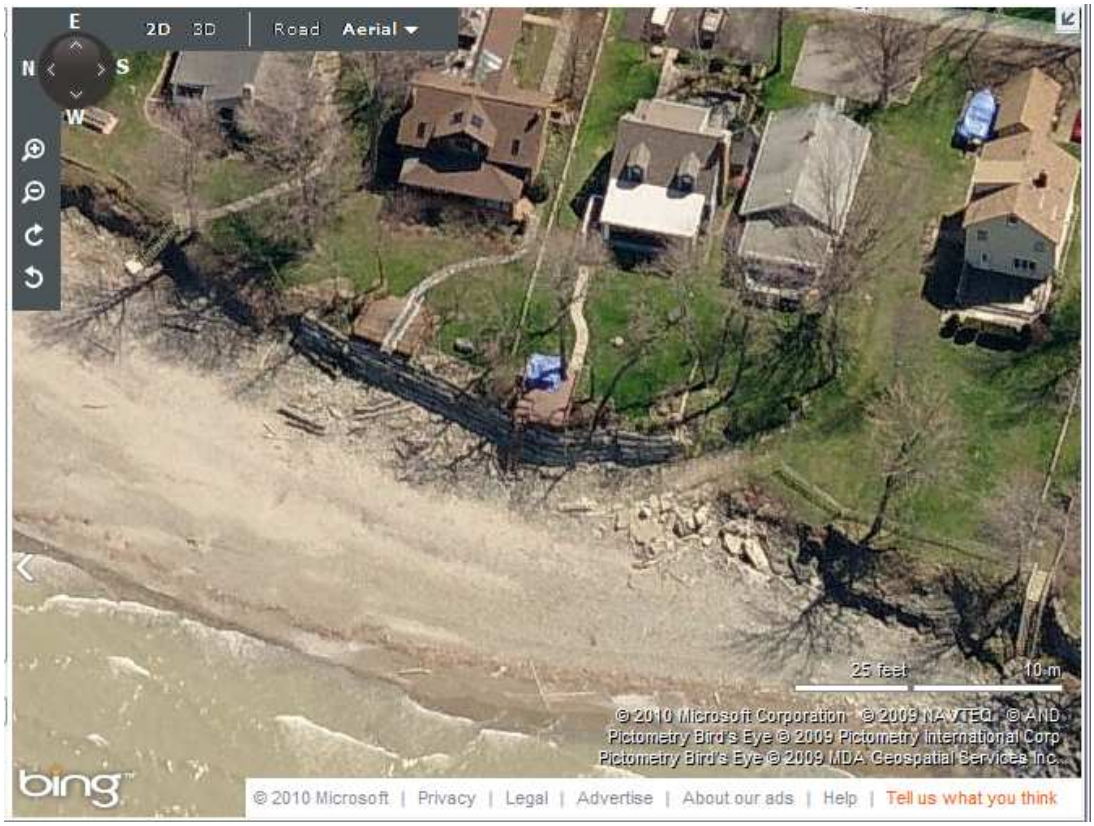
Additional views of Lake Erie Beach Town Park



Shoreline Features in Sub – Area 3:

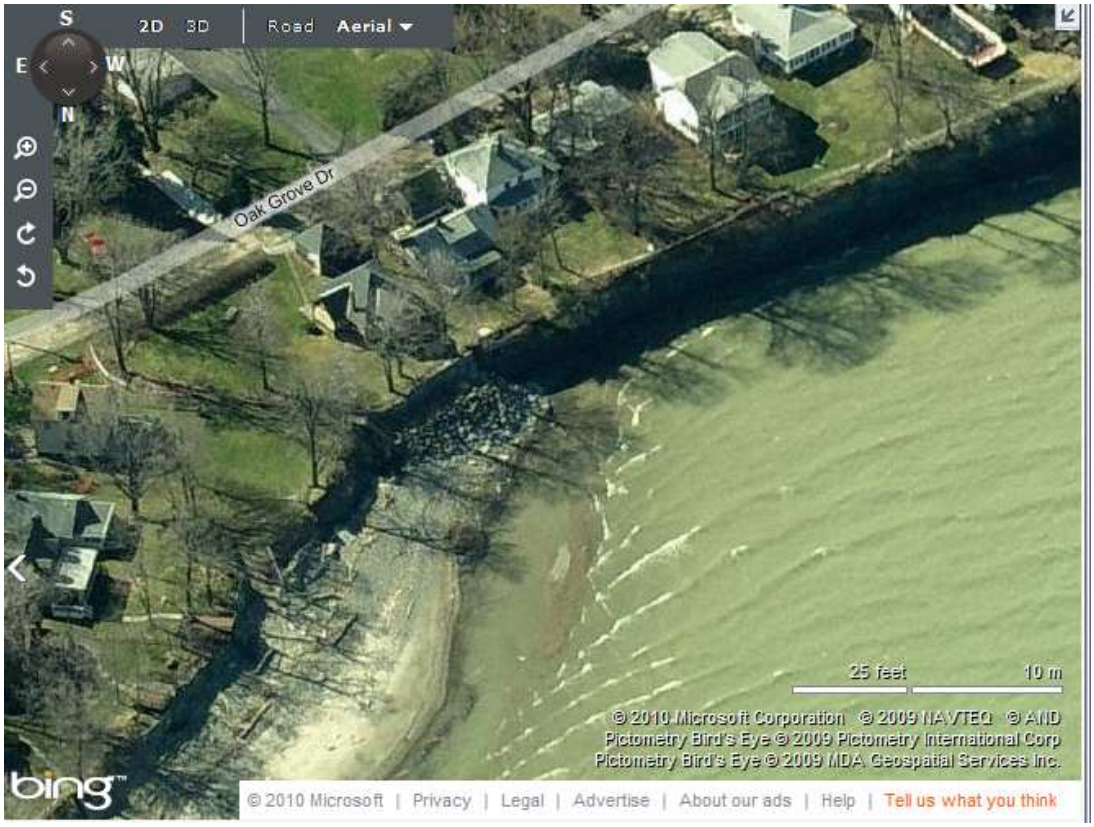


Shoreline view, south of Lake Erie Beach Park, showing stairway access to beach

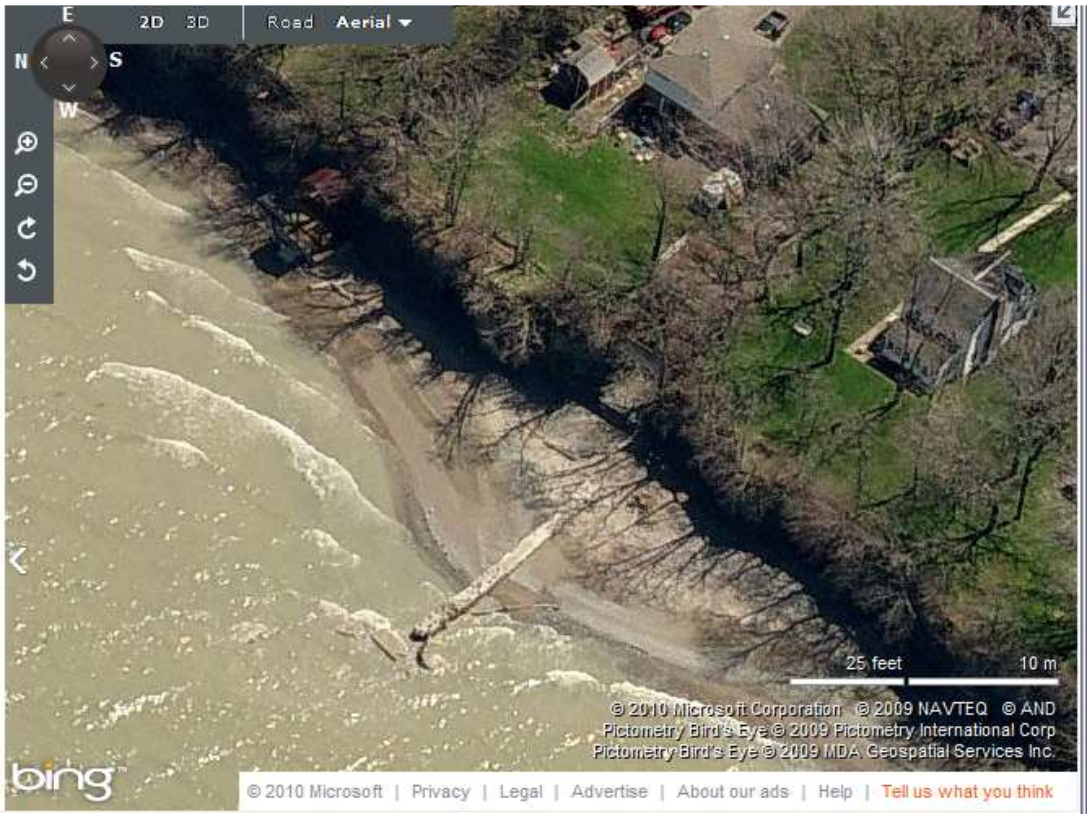


Shoreline view of the Oak Grove residential community, south of Lake Erie Beach

Shoreline Features in Sub – Area 3:

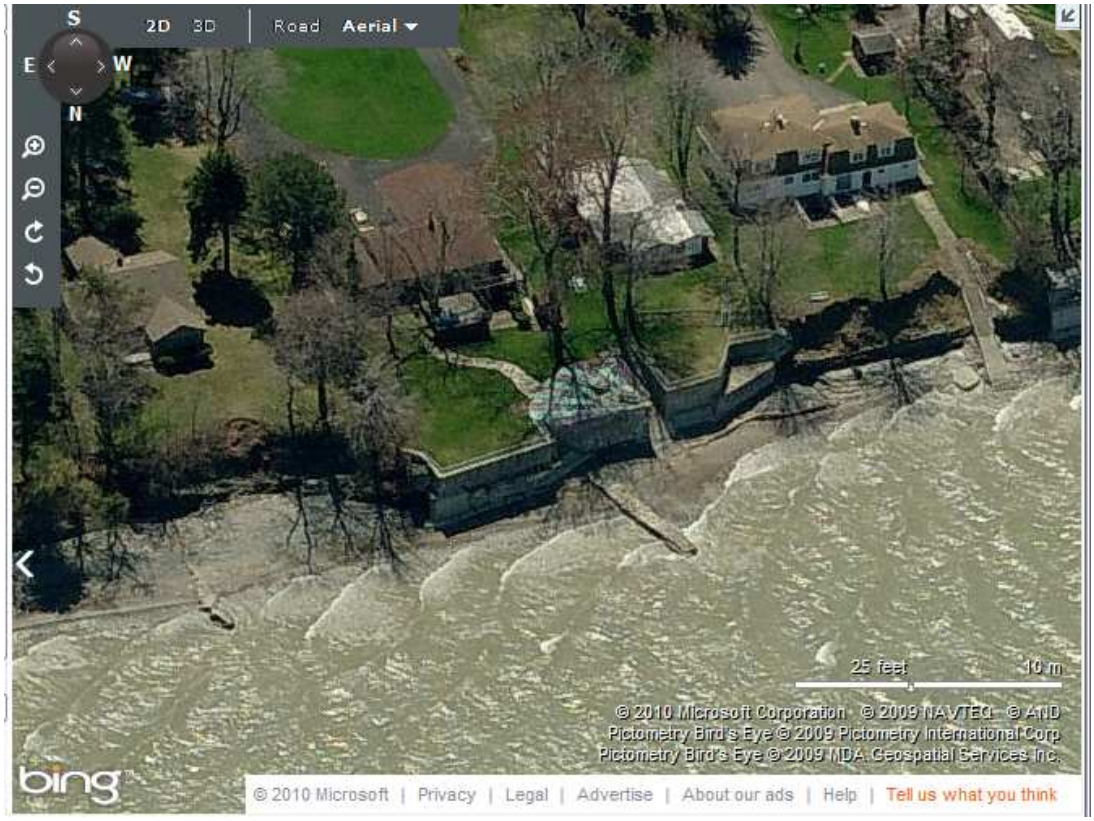


South end of the Oak Grove community, showing increasing elevation of shoreline

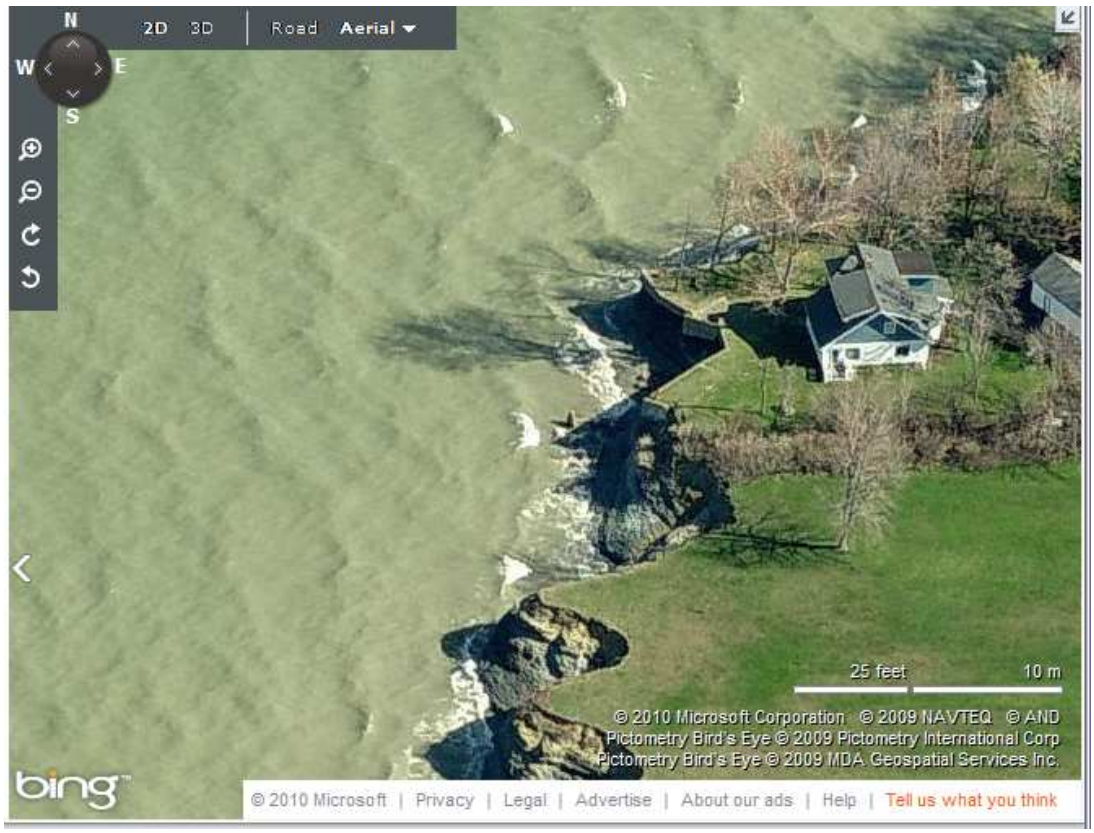


Shoreline along Shore Meadows community, at Middle Lane, with remnant dock

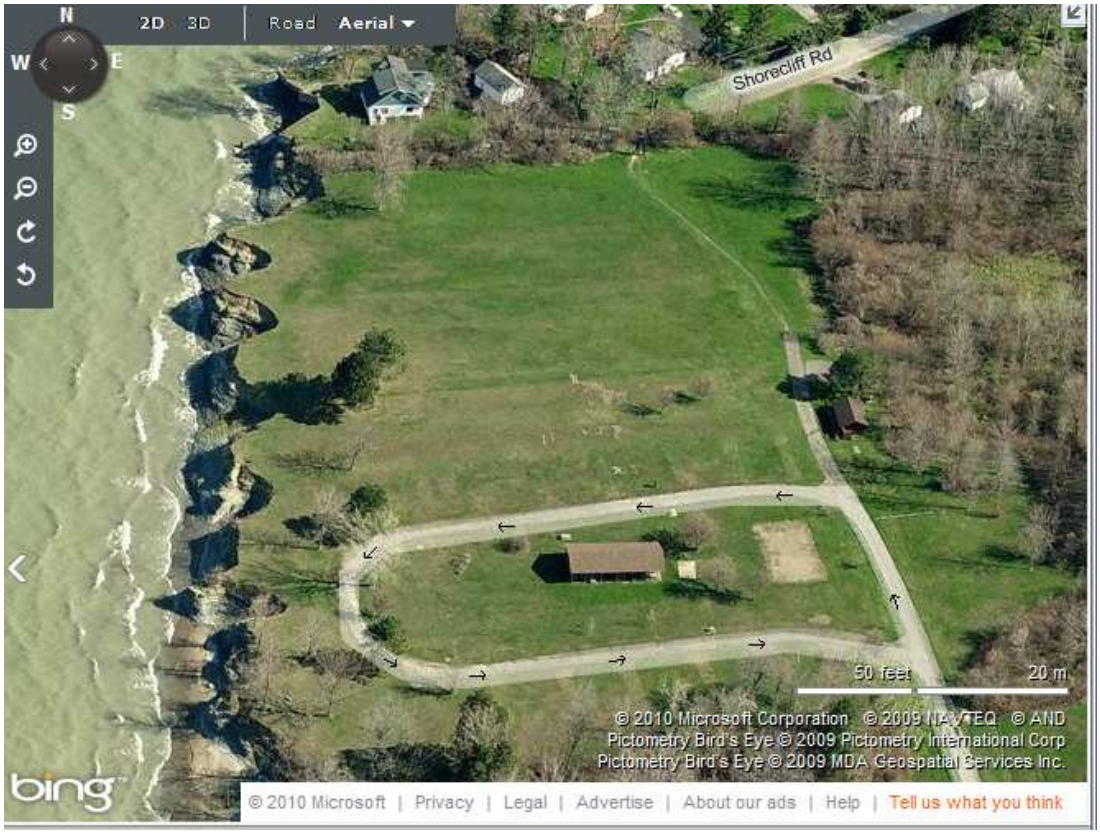
Shoreline Features in Sub – Area 3:



Views of the shoreline at the southern end of the Shore Meadows community



Shoreline Features in Sub – Area 3:



Shoreline along the northern end of Evangola State Park