
REGIONAL DREDGING MANAGEMENT PLAN
UPDATE
FINAL REPORT

Prepared for the:

County of Orleans (Lead)
Town of Greece
City of Oswego
Niagara County
Monroe County
Wayne County
Cayuga County
Oswego County

and the:

New York State Department of State
Division of Coastal Resources

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A. Introduction

This Regional Dredging Management Plan Update ('RDMP Update') has been prepared to provide a comprehensive approach to the on-going dredging needs for harbor access channels along the south shore of Lake Ontario. It provides an update and expansion of a plan originally developed in 2000, which dealt with only a portion of the Lake Ontario shoreline.

The RDMP Update has been developed under the direction of and in cooperation with the Counties of Orleans, Monroe, Niagara, Cayuga, Oswego and Wayne, the Town of Greece, the City of Oswego and the Division of Coastal Resources of the New York State Department of State. The County of Orleans administered the plan development with funding by the participating communities and the New York State Department of State.

This RDMP Update addresses the required maintenance dredging of nineteen harbor access channels, utilized primarily for recreational boating, along the south shore of Lake Ontario. The location of the harbors is shown in Figure 1.

As detailed in this report, dredging needs for the Lake Ontario recreational channels are either not being met or are being provided through private efforts, sometimes with sporadic support from local governments. Even the channels originally constructed by the US Army Corps of Engineers with Federal funds, which are supposed to be maintained by the Corps of Engineers, are not automatically or regularly maintained due to budget constraints. This situation will continue to worsen since Corps of Engineers funding for the dredging of recreational channels is not expected to be restored.

Despite the lack of maintenance, vessel operations were able to continue in the recreational channels since water levels on Lake Ontario were generally at or above average over the last two decades. However, the Lake experienced below average levels during the 2011 and 2012 boating seasons, underscoring the consequences of delayed maintenance. As a result,



Figure 1: Harbor Locations

charter boat captains reported shortened operating seasons, and there were several groundings in the Lake Ontario channels during 2012.

Given the widely recognized need and economic importance of regular and dependable maintenance dredging of the recreational channels, the local governments and State of New York have worked together to formulate this RDMP Update. The plan addresses several issues related to dredging and presents potential solutions. This includes the identification of dredging needs, the economic benefits of a regular dredging program; the costs and potential funding mechanism for dredging projects; the feasibility, nature and form of potential inter-municipal cooperation; dredging priorities and scheduling; the requirements for permitting; and alternatives for ownership, control and operation of dredging equipment.

Section B of this report details dredging needs in the participating counties and Section C details the economic benefits provided by the harbors covered by the study, which can only be maintained and expanded by a consistent, dependable dredging operation. It is found that the recreational harbors within the study area are all in need of dredging as of 2012, some with critical needs. This neglect of maintenance dredging threatens the recreational boating

and related tourism industry, which is so important to Lake Ontario south shore communities. The recreational boating activity in the study area harbors is estimated to generate approximately \$94 million annually in economic activity, support over 1,350 jobs, and generate sales tax revenues of almost \$3.8 million for the local counties and almost \$3.8 million for New York State. This is significant on a regional basis with recreational boating and associated tourism potentially representing a bright spot for further growth if the required infrastructure can be maintained. Unfortunately, as also discussed later in this report, the lack of such maintenance is already causing a curtailment in this sector of the economy.

Estimated costs for a regional dredging management program are detailed in Section D of this report. The final annual costs for the dredging program will vary depending upon how the program is structured. The least expensive option is for the dredging to be done directly with purchased equipment. Under this scenario, total annual costs are estimated from \$522,000 to \$776,000 with the total dependent upon whether or not the operation includes the Genesee River and Oswego Harbor, the largest, deepest and most complex to handle. A more expensive option is for private contracting of all dredging. Under the current range of prices, it is estimated that such an operation would cost between \$648,000 and \$3.2 million annually, again depending upon if the Genesee River and Oswego Harbor are included as well as the final unit price obtained under bidding. It is noted that bid prices for private dredging contracts could be reduced in the future if multi-year contracts are let, allowing contractors to confidently invest in newer, more efficient equipment.

Potential funding mechanisms for the program are discussed and evaluated in Section E. The focus is on local sources combined with contributions from the user community. On the basis of the evaluation, it is recommended that the local contribution be provided through the participating county governments while the user community contribution be provided through an increase in the NYS DMV boating registration surcharge. It is noted in this regard that the county contributions, which can be distributed among them in several ways, represents only 4–6% of the sales tax revenues to the counties that is generated annually by the recreational boating activities and that the registration surcharge represents a tiny fraction of the cost of ownership of boats.

Section F of this report evaluates potential forms of organization for a regional dredging management program. These range from operations under an existing county or town to the formation of a new public authority to the incorporation of a new not-for-profit corporation. The evaluation includes consideration of the ability of any structure to provide focus and responsibility for the dredging operations, the economies of scale that could be achieved with respect to the sharing of management functions, personnel and equipment, and the flexibility of any structure to allow for private contract dredging where feasible to help offset operating expenses. In addition, consideration is given to the ease with which structures can be implemented given potential political or public perception constraints. While all forms of organization are feasible, it is recommended that a new, not-for-profit local development corporation (LDC) be formed to implement and operate the regional dredging management program. One of the purposes of LDC's is to conduct public or quasi-public functions on behalf of multiple government jurisdictions, exactly what is being proposed under the regional dredging management program.

A potential implementation schedule is presented in Section G of this report. It is anticipated that spin-up to full funding and full operations would take two-three years, and may be longer if County or State legislative action is delayed. Funding for the first year is anticipated to be provided solely by the participating counties or through a one-time Federal or State grant. First year activities are anticipated to include formation of the LDC and its governing Board of Directors, the hiring of an executive director, and the contract dredging of several of the non-federal channels. With success in obtaining legislation for the remainder of the funding, year two would include the hiring of an engineer, evaluation of potential equipment to purchase and private contracting for the dredging of channels as funding permits. Year three would be the first under full operations.

For start-up actions, it is recommended that the NYS Department of State, Division of Coastal Resources, convene a meeting of representatives of the Counties participating in this planning effort in order to identify a leadership role for moving the plan recommendations forward. It is anticipated that this leadership role would be assumed by the Planning or

Public Works administrator for one of the Counties, or jointly by two of them. These individuals would then lead the organizing effort to form the LDC and get the initial funding from the participating County governments. Once the LDC is formed, the Board of Directors of the LDC would have the responsibility of carrying the effort forward.

The recommendations for funding sources and organizational structure for a regional dredging management program, as detailed in this report, will no doubt be modified as the program comes to life and evolves. In addition, the pace and form of implementation will depend on several factors, including the political will to solve the existing problem and the ability to raise the required funding. Establishing the program will require much effort on the part of its organizers and supporters. Given the economic importance to the region, these efforts are worthy of the task and have the potential to result in decades of benefit to many.

B. Dredging Needs

It is clear from the experience during the 2012 boating season that dredging of the recreational harbors along the Lake Ontario shoreline of New York are is being neglected.

To demonstrate this, a spot survey of water depths at fifteen of the nineteen study channels and harbors was conducted during the 2012 boating season. At each site, spot measurements were made of the minimum water depth, which was then converted to bottom elevations using the water level on the date of the measurement. This existing bottom elevation was then compared to the bottom elevation desirable to support the recreational boating activity at that location. Table 1 contains the results of this survey.

Channel/Water Body Designation	Critical Desired Bottom Elevation (ft - IGLD 85)	Existing Max Bottom Elevation (ft - IGLD 85)	deficit (feet)
Wilson	236	239.2	3.2
Olcott Harbor	236	239.2 near launch 238.2 channel	2.2
Oak Orchard Harbor	236	240.2	4.2
Sandy Creek	237	239.7	2.7
Irondequoit Bay	234.3	245	10.7
Bear Creek Harbor	239.8	241.4	1.6
Pultneyville	238.3	240.6	2.3
Great Sodus Bay	233.3	236.6	3.3
East Bay	239.3	241.6	2.3
Port Bay	236.8	240.6	3.8
Blind Sodus Bay	239.3	240.9	1.6
Little Sodus Bay	236	238.8	2.8
Mexico Point	239	240.4	1.4
Port Ontario	235.3	236.4 channel 240.9 harbor	1.1
Sandy Pond Inlet	236.3	241.4	5.1

As is evident from Table 1, the recreational harbors within the study area all are in need of dredging as of 2012. This neglect of maintenance dredging threatens the recreational boating and related tourism industry, which is so important to Lake Ontario south shore communities. As detailed later in this report, the recreational boating industry is estimated to generate over \$90 million annually in economic activity and support over 1,277 jobs. This is significant on a regional basis. Recreational boating and associated tourism represents a sector of the upstate New York economy that could represent a bright spot for further growth if the required infrastructure can be maintained. Unfortunately, as also discussed later in this report, the lack of such maintenance is already causing a curtailment in this sector of the economy.

The first step in the development of a regional maintenance dredging program is the identification of on-going dredging needs. In support of this, all harbor access channels to Lake Ontario in Niagara, Orleans, Monroe, Wayne, Cayuga and Oswego Counties have been identified and background information on each collected. The background information was derived from available published sources; site visits; interviews with public officials, marina operators, yacht clubs and marine contractors; review of selected Town and County files; and a review of NYS DEC and US Army Corps of Engineers regulatory permit files. Emphasis was placed upon those items of relevance in determining dredging needs and operational requirements. This includes the channel physical configuration and protection, the type and level of use, size of vessels, sediment physical characteristics and chemical quality, and past dredging experience including sponsoring entity, frequency, amounts, and disposal.

It is noted that internal channels within harbors, including those leading into feeder creeks and streams, are not included as part of the RDMP Update. This is due to the overwhelming number of such channels, the unique characteristics and needs of each, and the fact that dredging such channels would only benefit a small, identifiable number of private docks and/or individual marinas in most cases. In contrast, maintenance of the larger connecting channels to Lake Ontario is expected to provide benefits to a large number of private docks, public launches, yacht clubs and/or several marinas for each identified channel. Given these factors, the participating communities decided at project commencement to only plan for

dredging of the access channels leading from Lake Ontario into harbors that were included in the 2000 RDMP as well as the Oak Orchard Harbor in Orleans County, and the Olcott and Wilson Harbors in Niagara County. As discussed in a later section, the secondary internal channels may be dredged, with private or local public funding, by contract with the entity created to implement the Regional Plan, depending upon the exact organizational and institutional form adopted. Otherwise, the internal channels can be maintained with private or local government funding, as is done under the present circumstances.

A total of nineteen harbor access channels are included as part of this RDMP Update over the approximately 100 linear miles of Lake Ontario shoreline in the six counties (Niagara, Orleans, Monroe, Wayne, Cayuga and Oswego). These were each assigned a site number, commencing with number one for the western-most harbor and progressing eastward. Table One contains a listing of the nineteen channels.

Site	Channel / Waterbody Designation	Municipality	County
1	Wilson Harbor	Wilson (T)	Niagara
2	Olcott Harbor	Newfane (T), Olcott (V)	Niagara
3	Oak Orchard Harbor	Carlton (T), Point Breeze (Hamlet)	Orleans
4	Sandy Creek	Hamlin (T)	Monroe
5	Braddock Bay	Greece (T)	Monroe
6	Long Pond Inlet	Greece (T)	Monroe
7	Genesee River	Rochester (C)	Monroe
8	Irondequoit Bay	Irondequoit (T), Webster (T), Penfield (T)	Monroe
9	Bear Creek Harbor	Ontario (T)	Wayne
10	Pultneyville	Pultneyville (Hamlet), Williamson (T)	Wayne
11	Great Sodus Bay	Sodus Point (V), Sodus (T), Huron (T)	Wayne
12	East Bay	Huron (T)	Wayne
13	Port Bay	Huron (T), Wolcott (T)	Wayne
14	Blind Sodus Bay	Wolcott (T)	Wayne
15	Little Sodus Bay	Sterling (T), Fairhaven (V)	Cayuga
16	Oswego Harbor	Oswego (C)	Oswego
17	Mexico Pt. - Little Salmon River	Mexico (T)	Oswego
18	Salmon River - Port Ontario	Richland (T)	Oswego
19	Sandy Pond Inlet	Sandy Creek (T)	Oswego

Several additional channels connecting to Lake Ontario exist within the six counties, such as Eagle Creek Harbor in Orleans County and Fairbanks Point/Hugh's Marina in Wayne

County. However, these generally service a single private entity without general public access. Given this, it is reasonable that the single private entity assumes responsibility for dredging of the channel as part of the cost of doing business.

Relevant information for each channel included in the RDMP Update was organized into a database. The resulting inventory database is contained in Appendix A.

Utilizing the collected information, the channels were grouped into four classes based upon the degree of current channel stabilization, the type of sediment present, and whether utilized for commercial shipping or not. The four classes are defined as follows:

Class	Properties
I	Sands and some small stone; presumed clean based on location and past experience; should be suitable for adjacent shoreline beach nourishment or other beneficial uses.
II	Minimum stabilization consisting of partial jetties; sand and/or cobble substrate. Sediment should be clean with some beneficially utilized in the past for shoreline nourishment with others disposed or utilized beneficially at upland sites.
III	Sands with some fines and silts of variable quality. These sites will require at least Tier II sampling and testing. Expected that some of the sediment should be suitable for beach nourishment or similar beneficial use. Remainder probably suited for construction fill, landfill cover, or other similar use, which may not be economically feasible. Non-usable material will likely require open lake or upland disposal.
IV	Stabilized Federal Projects utilized for commercial shipping. Materials contain significant silts and clays with high nutrient/organic concentrations and traces of other contaminants. Past disposal has been at open lake disposal sites.

Critical to the establishment of a regular dredging maintenance program is the estimate of the amount and frequency of dredging for each of the channels. Unfortunately, it is difficult to estimate this with complete accuracy. The primary tool utilized to estimate dredging amounts and frequency in this effort is the past dredging history for each site, primarily derived from regulatory permit records. However, this is inexact since some channels have historically been better maintained than others due to available funding, local government or private entity involvement, and political pressures. In addition, the rate of sedimentation of each channel will depend upon weather and the resulting stream flow and lake water level conditions, as well as manmade or man influenced factors such as physical changes to the stream or river feeding the outlet channel and land use changes in its upstream watershed.

Given these diverse factors, it is expected that required dredging amounts and frequencies will vary not only channel to channel but also over time for each channel.

With an appreciation for the uncertainty involved, conservative estimates of the required amount and frequency of dredging for each channel were made. The estimates are based upon the available data, leavened with professional judgment, and reflect the on-going requirements of a sustained program. Initial dredging amounts may be higher since the channels have been neglected of late. This may impact the initial timing or frequency of dredging as the program spins up.

The estimated amounts and frequencies for an on-going dredging maintenance program are given in Table 3.

Site Number	Channel	Frequency (yr)	Quantity (cu yd)	Class
1	Wilson	5	15,000	III
2	Olcott Harbor	5	15,000	III *
3	Oak Orchard Harbor	5	15,000	III
4	Sandy Creek	5	1,200	II
5	Braddock Bay	1	5,000	I
6	Long Pond Outlet	1	200	I
7	Genesee River	2	150,000	IV
8	Irondequoit Bay	5	15,000	III
9	Bear Creek Harbor	10	6,000	II
10	Pultneyville	2	500	II
11	Great Sodus Bay	5	15,000	III
12	East Bay	1	500	II
13	Port Bay	1	1,000	II
14	Blind Sodus Bay	1	300	II
15	Little Sodus Bay	5	15,000	III
16	Oswego Harbor	5	75,000	IV
17	Mexico Point	?	?	II
18	Salmon River/Port Ontario	?	?	III
19	Sandy Pond Inlet	2	6,000	I

* Eighteen Mile Creek, including the entire Olcott Harbor and outlet, was classified as a hazardous waste disposal site by the US EPA in March 2012 and by the NYS DEC in October 2012. The sediments are potentially contaminated by PCB's and metals. As such, more stringent testing is likely to be required and disposal of the sediments could be significantly more costly than at other locations.

As indicated in Table 3, dredging amounts for both Mexico Point and Salmon River/Port Ontario could not be estimated. There are no records of either of these sites having been dredged since their construction. Despite this, the Army Corps of Engineers states only that the Port Ontario site needs sand bypassing to alleviate a buildup on the south side of the channel, however this is not presently impeding use of the channel for navigation.

This Regional Dredging Management Plan is intended to deal with all nineteen channels within the study area. However, the class IV channels, the Genesee River and the Oswego Harbor, deserve a separate discussion.

Until very recently, the class IV channels have been maintained by the Army Corps of Engineers since they both support commercial shipping operations. The Corps, however, has indicated that they can no longer maintain these low volume commercial harbors. In 2012, the Corps piloted a public-private partnership to dredge the Genesee River in which the single commercial shipper utilizing the port funded the bulk of the cost.

In contrast to the other channels and harbors, the two class IV harbors generate a large amount of spoil of low quality that is generally not suited for beneficial use. These waterways must be maintained to minimum depths of 21 to 27 feet, far in excess of that required for recreational use. In addition, dredging to the required depths and handling the large volumes of spoil requires the use of equipment for dredging operations that would be too large for use in many of the other RDMP channels. For these reasons, and the fact that there are commercial shipping operations that may be able to fund dredging of these two harbors, the Genesee River and Oswego harbors will be called out and treated separately in this planning effort.

The estimated dredging amounts and frequencies in Table 4 were combined to obtain annual average dredging amounts by class of sediment. These annual amounts will form the basis for the analysis of equipment needs, organizational structure and cost of the maintenance

dredging program. Table 5 contains a summary of the estimated annual dredging demand for an on-going, sustained program.

Class	Sites	Material/Disposal	Annual Amount (cu yd)
I	Braddock Bay, Sandy Pond, Long Pond Outlet	Sands; presumed clean and probably suited to beneficial uses.	~ 8,100/ year
II	Bear Creek Harbor, Blind Sodus Bay, East Bay, Port Bay, Pultneyville, Sandy Creek	Sands, gravels, some cobbles; and little silt. Portions should be suitable for beneficial uses.	~ 3,000/year
III	Wilson, Olcott, Oak Orchard, Irondequoit Bay, Great Sodus Bay, Little Sodus Bay, Mexico Point, Salmon River/Port Ontario	Sands with some fines and silts of variable quality. These sites will require at least Tier II sampling and testing. Some of the sediment should be suitable for beach nourishment or similar beneficial use. Remainder probably suited for construction fill, landfill cover, or other similar use if economically feasible. Non-usable materials will likely quality for open lake disposal.	~ 15,000 / year plus Port Ontario and Mexico Point (see text)
IV	Genesee River Oswego Harbor	If adequately maintained for commercial shipping, no further maintenance will be required for recreational uses. Materials contain significant silts and clays with high nutrient/organic concentrations and traces of other contaminants. Past disposal has been at open lake disposal sites.	~ 90,000 / year

On the basis of maintaining the class I, II and III channels, the total annual dredging amount is 26,100 cubic yards. The class IV channels will add approximately 90,000 cubic yards per year to the annual total.

In addition to the above amounts, representing the on-going dredge amounts for a sustained program, the neglect of the channels has created a backlog that will have to be addressed at the commencement of any program. The primary backlog is within the federally authorized projects within class III. The Corps of Engineers provided a November 2012 update of its estimate of the backlog amounts for six of the class III harbors listing in Table 4, excluding Mexico Point and the Salmon River/Port Ontario sites. These updated estimates are contained in Table 5.

Harbor	To Obtain Design Depth (cu. yd.)	One Foot Overdraft Amount (cu. yd.)	Total Backlog (cu. yd.)
Wilson	17,797	21,260	39,057
Olcott	5,755	4,988	10,743
Oak Orchard	13,357	9,596	22,953
Irondequoit	9,565	11,107	20,672
Great Sodus	1,002	5,019	6,021
Little Sodus	16,601	10,026	26,627
Totals	64,077	61,996	126,073

The RDMP is primarily intended to address the on-going, sustained maintenance dredging of the south shore harbor channels, but allowance in the analysis will be provided to first deal with these backlog dredging needs.

C. Economic Impacts

The economic benefits, direct and indirect, of dependable maintenance dredging and the incremental cost associated with the neglect of the channels are both difficult to estimate with any precision. However, studies of the economic impact of recreational boating on the Great Lakes have been completed that provide economic factors applicable to the Lake Ontario harbors. When applied to the Lake Ontario harbors, an estimate can be obtained of the economic impacts, direct and secondary, associated with the use of the harbors for recreational boating. As detailed in this section, the resulting analysis demonstrates the substantial economic activity associated with this sector of the regional economy and, hence, the value of maintaining the channels for safe use.

As part of this planning effort, available studies of the economic impact associated with recreational boating were reviewed¹. The most relevant and applicable such study was conducted by the US Army Corps of Engineers (COE) with the assistance of the Great Lakes Commission and published in 2008². It provides a comprehensive survey and compilation of the direct spending for recreational boating on the Great Lakes as well as modeling that provides estimates of the indirect economic activity resulting from the direct spending. Combining the findings of the COE study with local use data allows for a calculation of the economic impact resulting from recreational boating for each harbor and for the region as a whole.

¹ *Economic Impact of the Canadian Recreational Boating Industry: 2006*, Prepared by Genesis Public Opinion Research, Inc. and Smith Gunther Associates, September 2007.

Recreational Boating in New Jersey: An Economic Impact Analysis. Prepared by Marine Trades Association of New Jersey and HDR Associates, April 2008.

Recreational Boating in Maryland, an Economic Impact Study. Prepared by D. Kpton and S. Miller for the Marine Trades Association of Maryland and the Maryland Department of natural Resources. 1995.

Economic Statistics on Massachusetts Marine Trades. Massachusetts Marine Trades Association. http://www.boatma.com/boating_in_ma.html. November 2011.

² *Great Lakes Recreational Boating*. Prepared in response to Public Law 106-53, Water Resources Development Act of 1999, Section 455(c), John Glenn Great Lakes Basin Program. December 2008.

The economic impact analysis is based upon the number of wet slips, launch lanes and charter boats associated with each harbor. Table 7 contains a compilation of these elements by harbor in the study region.

Table 7: Slips, Launch Lanes and Charter Boats by Harbor				
Site Number	Channel/Water Body Designation	Boat Slips	Launch Lanes	Charter Boats
1	Wilson	476	2	15
2	Olcott Harbor	124	6	47
3	Oak Orchard Harbor	422	6	38
4	Sandy Creek	287	2	14
5	Braddock Bay	528	4	
6	Long Pond Outlet	20	0	
7	Genesee River	1034	5	26
8	Irondequoit Bay	1670	6	5
9	Bear Creek Harbor	4	3	
10	Pultneyville	170	1	10
11	Great Sodus Bay	802	4	45
12	East Bay	32	2	
13	Port Bay	382	4	10
14	Blind Sodus Bay	99	1	
15	Little Sodus Bay	550	8	12
16	Oswego Harbor	536	6	29
17	Mexico Point/Little Salmon River	322	7	17
18	Salmon River/Port Ontario	68	2	8
19	Sandy Pond Inlet	610	9	1
	Totals	8136	78	263

The COE economic analysis breaks recreational boater spending into craft and trip components and contains a separate analysis applicable to charter fishing boats. Craft spending includes items associated with the vessel ownership, upkeep and storage such as equipment, insurance, repairs, slip and storage fees. Trip spending consists of items utilized in the use of the vessels such as gas, oil, food and lodging. It was found that, on average, Great Lakes boaters expend \$1,400 per year in craft spending and \$2,200 per year in trip spending for a total \$3,600 total per year in direct spending

For the current analysis, this \$1,400 per year in direct craft spending and \$2,200 per year in direct trip spending was assumed on average for all vessels kept in wet slips within the Lake Ontario harbors within the study area. The total number of wet slips was determined for each of the harbors through a combination of satellite photos and direct counts.

In addition to vessels kept in wet slips, a significant number of boaters store vessels on trailers and utilize boat launches for use. To account for these vessels, the number of active, public boat launch lanes for each harbor was determined. Three years of data from the Irondequoit Bay public boat launch, considered typical for the region, indicated that, on average, 1,425 individual boat launches occur on an annual basis per launch lane. Applying this to the number of launch lanes allowed for an estimate of the number of day use trips associated with trailer launched boats.

To determine spending associated trailered boat use, an average of \$102 per day in direct trip spending was applied to the number of launched vessels. The \$102 spending figure was the average daily direct trip spending found by the COE for Great Lakes boaters for vessels sizes between 16 and 20 feet in length, which is typical for launched vessels.

It is noted that the use of only the direct daily trip spending for trailer-launched vessels is conservative since these vessels also incur direct craft expenses such as insurance, storage, repairs and costs associated with the trailers themselves. Thus, the estimates for this component of the economic impact may be under estimated.

The COE economic estimates for charter boat operations in the Great Lakes are based upon Sea Grant surveys, with the 2002-2003 Sea Grant effort forming the basis of the 2008 COE analysis. Despite being ten years old, this is the most recent analysis available for charter economics.

The direct economic impact related to charter boat operations stems from direct spending by the craft operators as well as direct spending by their clients. The COE found that charter

vessels generate, on average, \$11,093 in direct spending on operations while customer direct spending averages \$13,443 per vessel.

These direct spending factors have been applied to the inventory of slips, launch lanes and charter boats within each of the nineteen study harbors and the results are shown in Table 8.

Channel/Water Body Designation	Wet Slips	Launch Lanes	Charter Boats	Total Direct Spending
Wilson	\$1,713,600	\$290,598	\$368,040	\$2,372,238
Olcott Harbor	\$446,400	\$871,794	\$1,153,192	\$2,471,386
Oak Orchard Harbor	\$1,519,200	\$871,794	\$932,368	\$3,323,362
Sandy Creek	\$1,033,200	\$290,598	\$343,504	\$1,667,302
Braddock Bay	\$1,900,800	\$581,196	na	\$2,481,996
Long Pond Outlet	\$72,000	na	na	\$72,000
Genesee River	\$3,722,400	\$726,495	\$637,936	\$5,086,831
Irondequoit Bay	\$6,012,000	\$871,794	\$122,680	\$7,006,474
Bear Creek Harbor	\$14,400	\$435,897	na	\$450,297
Pultneyville	\$612,000	\$145,299	\$245,360	\$1,002,659
Great Sodus Bay	\$2,887,200	\$581,196	\$1,104,120	\$4,572,516
East Bay	\$115,200	\$290,598	na	\$405,798
Port Bay	\$1,375,200	\$290,598	\$245,360	\$1,911,158
Blind Sodus Bay	\$356,400	\$145,299	na	\$501,699
Little Sodus Bay	\$1,980,000	\$1,162,392	\$294,432	\$3,436,824
Oswego Harbor	\$1,929,600	\$871,794	\$711,544	\$3,512,938
Mexico Point/Little Salmon	\$1,159,200	\$1,017,093	\$417,112	\$2,593,405
Salmon River/Port Ontario	\$244,800	\$290,598	\$196,288	\$731,686
Sandy Pond Inlet	\$2,196,000	\$1,307,691	\$24,536	\$3,528,227
Totals	\$29,289,600	\$11,333,322	\$6,796,472	\$47,419,394

As indicated in Table 8, the Lake Ontario harbors generate over \$47 million in direct spending per year.

The direct spending on any activity generates secondary economic benefits. For example, dollars spent by a boater at a restaurant are then spent by the restaurant owner on employee salaries, supplies and maintenance. This economic activity is termed indirect economic impact and is sometimes quantified through the use of simple “multipliers”. A more precise

estimate can be derived through detailed modeling of economic activity and the generation of individual factors that can be applied to the individual categories of direct spending.

The 2008 COE analysis of Great Lakes boating includes estimates of the indirect activity resulting from direct spending by recreational boaters. This is based upon a detailed input/output economic model for the Great Lakes states. Of interest for this analysis are the results with respect to the total indirect spending as well as the number of jobs supported by both the direct and indirect spending.

As with direct spending, the indirect spending and its effects are calculated separately for craft spending and trip spending by individual boaters and by operational and customer spending for charter boats. Details of these calculations are provided in the spreadsheet outputs in Appendix B to this report.

By combining the direct and indirect economic activity, along with the jobs supported by both, we arrive at a total view of the economic impact of recreational boating in the region. Table 9 contains a summary of the total direct and indirect spending as well as the jobs generated by both.

As indicated by the results in Table 9, the indirect spending due to recreational boating accounts for an additional \$46.5 million in economic activity beyond the direct spending by users of the system. In addition, approximately 1363 jobs are supported by the recreational boating use of the Lake Ontario south shore harbors.

Combining the direct and secondary spending, the economic activity associated with recreational boating at the study area harbors totals approximately \$94 million and supports 1363 jobs. This significant economic activity is directly threatened by the lack of maintenance of the harbor infrastructure of the region including, most immediately, the dredging of the harbors so they can remain operational.

Site Number	Channel/Water Body Designation	Total Direct Spending	Total Indirect Spending	Direct + Indirect Spending	Jobs Supported
1	Wilson	\$2,372,238	\$2,348,060	\$4,720,298	69
2	Olcott Harbor	\$2,471,386	\$3,309,270	\$5,780,656	109
3	Oak Orchard Harbor	\$3,323,362	\$3,763,739	\$7,087,101	117
4	Sandy Creek	\$1,667,3028	\$1,746,474	\$3,413,776	53
5	Braddock Bay	\$2,481,996	\$2,049,952	\$4,531,948	54
6	Long Pond Outlet	\$72,000	\$58,717	\$130,717	2
7	Genesee River	\$5,086,831	\$4,874,967	\$9,961,798	141
8	Irondequoit Bay	\$7,006,474	\$5,886,158	\$12,892,632	158
9	Bear Creek Harbor	\$450,297	\$386,615	\$836,912	11
10	Pultneyville	\$1,002,659	\$1,091,174	\$2,093,833	33
11	Great Sodus Bay	\$4,572,516	\$4,956,430	\$9,528,946	152
12	East Bay	\$405,798	\$343,861	\$749,659	9
13	Port Bay	\$2,201,756	\$2,088,443	\$4,290,199	60
14	Blind Sodus Bay	\$501,699	\$415,605	\$917,304	11
15	Little Sodus Bay	\$3,436,824	\$3,174,918	\$6,611,742	90
16	Oswego Harbor	\$3,512,938	\$3,678,013	\$7,190,951	111
17	Mexico Point/Little Salmon River	\$2,593,405	\$2,614,151	\$5,207,556	77
18	Salmon River/Port Ontario	\$731,686	\$823,251	\$1,554,937	26
19	Sandy Pond Inlet	\$3,528,227	\$2,962,189	\$6,490,416	80
	Totals	\$47,419,394	\$46,571,986	\$93,991,380	1363

The economic activity associated with the recreational boating use of the Lake Ontario harbors supports property tax revenues and generates sales tax revenue for the host counties and the State. The sales tax portion of this fiscal support to government operations can be estimated from the projected direct and indirect spending figures. Each of the six counties that are part of the study region have a total sales tax rate of 8.0%, with 4.0% going to the local county and the remaining 4.0% going to the State. Table 10 shows the results by county of applying these sales tax rates to the direct and indirect spending activities estimated at each of the harbors. It is noted that the results in Table 10 are based upon the assumption that all direct and indirect spending from boating activities is subject to sales tax in the county in which the boating activity occurs,

County	local rate	State rate	total spending	County Sales Tax Amount	State Sales Tax Amount
Niagara	4%	4%	\$10,500,954	\$420,038	\$420,038
Orleans	4%	4%	\$7,087,101	\$283,484	\$283,484
Monroe	4%	4%	\$30,930,870	\$1,237,235	\$1,237,235
Wayne	4%	4%	\$18,416,854	\$736,674	\$736,674
Cayuga	4%	4%	\$6,611,742	\$264,470	\$264,470
Oswego	4%	4%	\$20,443,860	\$817,754	\$817,754
Total			\$93,991,380	\$3,759,655	\$3,759,655

The degree to which deferred maintenance dredging reduces the economic activity associated with recreational boating use is complex and cannot be estimated with any precision. It is expected that the impacts will occur in a step function resulting from the loss of use by different segments of the boater community. As dredging is neglected, available water depths are reduced. This will first curtail use by sailboats, which generally require the deepest water. As news of unacceptable depths spreads through the sailing community around Lake Ontario, tourism via sail will decrease along with local use. As depths decrease further, large power boats (> 24 feet) will also be precluded from use and this will effectively eliminate boating tourism and charter operations in the region. Further reductions in depth will finally preclude all use with the exception of kayaks and canoes.

The economic losses associated with this step function reduction in use will not be uniform. The COE documented that, on average, spending and the resulting secondary economic activity are much higher for the larger vessels in the fleet. For instance, direct craft spending averages \$20,000 per year for vessels greater than 41 feet, over fourteen times higher than the \$1,400 per year for the fleet average. Trip spending, which is especially relevant for the tourism sector, varies from \$275 per day for boats larger than 40 feet down to \$76 per day for those less than 16 feet in length. Thus, as the available water depths decrease, the highest spending portion of the vessel fleet will first be eliminated.

While predictions of the exact timing of the economic reductions due to deferred maintenance dredging is beyond the scope of this analysis, it is clear that effects were starting to be felt during the 2012 boating season. For example, a July 2012 report calling for the dredging of Wilson Harbor in Niagara County, a prime destination for Lake Ontario cruising vessels, stated the following:

“Negative trends are emerging. Boats are having increasing difficulty accessing launch areas, waste management and fuel access at the harbor is silting in. Boaters who would normally end their season in October or November have been forced to haul out in August and September due to low-water conditions. One marina owner reports a 20% loss of sailboats over the past two years. Canadian boats can no longer access major boat yard maintenance during the offseason, an estimated loss of \$100-200,000 per year for just one marina (as well as a significant source of tax revenue).”

These impacts were reported as of July 2012, even before the water level dropped in the fall of 2012 to the lowest it has been since the 1960’s.

Another example of the impact of neglected dredging and unreliable water access is provided by the experience at North and South Sandy Ponds in Oswego County. A draft comprehensive plan for the Town of Sandy Creek indicated that 53 charter boats were active in the Town as of 1989. As of 2012, this has dropped to only 1 charter boat operating out of the Sandy Ponds. While impossible to attribute all of this reduction to access issues, it is noted that access to the ponds is a continuing problem that has only recently been addressed by a local, voluntary effort with some Town funding. It is noted that the drop in charter boat activity from 53 to 1 represents an annual loss in local direct spending of \$1.28 million and in indirect spending of \$2.43 million for a total loss of \$3.70 million as well as the the loss of 87 jobs.

It is very clear from this analysis that recreational boating is an important economic activity in harbors along the south shore of Lake Ontario, generating approximately \$94 million in

spending and supporting 1,363 jobs, and that this sector of the economy is and will continue to be significantly impacted by the lack of infrastructure maintenance including regular dredging of the harbor channels to allow for their continued operation.

D. Dredging Technology, Costs and Material Disposal

Dredging Technology

There are two overall types of dredging technologies available for use on the subject harbors and channels. These are mechanical and hydraulic dredging.

Mechanical dredging is achieved through the use of a crane or an excavator mounted on a barge or, where feasible, on the land adjacent to the dredge area. The sediments are scooped out by the crane or excavator and placed on a barge, landside holding area, or on trucks for eventual disposal. Since similar mechanical equipment is used for dry land construction activities, there are many types of cranes and excavators that are available and suited for dredging work. “Clamshell” buckets are generally preferred for dredging work since they minimize the release and re-suspension of sediments during operation.

Mechanical dredging offers some advantages. The equipment is readily available, both for purchase and lease/contracting, relatively inexpensive and experienced operators are plentiful. Cranes and long reach shovel excavators can operate in deeper water than hydraulic dredges and mechanical excavators can handle large stones and easily break up hard-packed sediments.

The disadvantages of mechanical dredging include the need to have additional barges and push boats, with Coast Guard licensed operators, to position the equipment and to move the excavated sediment where the dredging cannot be done from the adjacent land. Mechanical dredging equipment needs relatively deeper water for access and for the supporting barges and generally cannot be launched from land areas without heavy lift facilities. Finally, since the mechanical dredges generally need barge support, they are not land transportable, which can add to the cost of using one set of equipment at multiple sites.

Hydraulic dredges generally consist of a large pump mounted on a platform or shallow-draft barge with a large suction pipe mounted to the front. The suction pipe usually is equipped with a rotary or horizontal cutterhead. The cutterhead breaks up and suspends the sediments with the resulting slurry sucked into the piping by the action of the pump. The output from the dredge is either spray discharged to the side or, more commonly, discharged through piping to a temporary or permanent disposal area or to a transport barge.

Hydraulic dredges come in a variety of sizes and pumping powers and are generally classified by the size of the input piping to the pump. Thus, an “eight inch” dredge would utilize eight inch diameter piping to pump the sediment. Common sizes are eight to twelve inches for dredging in ponds, lakes, sheltered channels and marinas. Larger models, with sizes in the forty-eight to sixty inch range are utilized for large harbor projects and, very commonly, for beach nourishment in coastal areas.

Hydraulic dredges have many advantages. Smaller units can work in shallow water and many are one truck transportable. Many models are self-propelled and do not require push boats or tugs while working and some are self-launching from a suitable ramp. Since the sediments are sucked up and contained within the machine piping, hydraulic dredging results in less turbidity in the waters they are working, resulting in less environmental impact. For the same reason, hydraulic dredges are very efficient at handling silty sediments, which are more difficult to scoop up by mechanical means. Where suitable disposal sites are within close proximity of the dredge site, generally within 3,000 to 4,000 feet, the sediment is transported by the dredge itself and no secondary barge or truck handling and transport is necessary. Finally, hydraulic dredging is generally very efficient on a production rate basis where conditions are suitable for it.

The disadvantages of hydraulic dredging include the specialized nature of the equipment, which increases the cost relative to mechanical equipment and makes shared use of it for other, upland work infeasible. Since it is specialized, some training and a dedicated crew is generally recommended to achieve maximum productivity and efficiency. The smaller hydraulic dredges (eight to twelve inch) cannot reach deep water sediments beyond a 20–25

foot range. However, this is not a significant drawback for the Lake Ontario harbors since desired depths are generally 12 feet or less for all the harbors in the program with the exception of the Genesee and Oswego harbors, with even these requiring less than 25 feet of depth.

The biggest disadvantage of hydraulic dredges comes with sediment that needs to be transported to off shore disposal sites or to upland sites due to sediment quality. Since the sediment is suspended in a slurry, transporting the sediment includes transporting a large volume of water. This can be alleviated through dewatering, however that process would add to the cost and can slow down the production rate. Finally, hydraulic dredges cannot handle large stones, although some specify that they will pass stones up to the 6 to 8 inch size.

A variant on the two major categories of dredge, mechanical and hydraulic, are hopper dredges. These are large open barges with mechanical or hydraulic dredges mounted directly on them. The pumped or scooped materials is put into the barge holding area, or hopper, and once full, the entire hopper dredge moves to the disposal area for dumping or off-loading. Since the hopper dredge needs to support both the dredging equipment and the sediment, the units are generally very large and require relatively deep water to work in. For this reason, hopper dredges are not considered as feasible alternatives for the Lake Ontario harbors with the exception of the Genesee River and Oswego Harbor.

Equipment Suitability by Harbor and Material Disposal Options

A review has been conducted of the type of equipment that could be utilized for the Lake Ontario harbors included in this study. This review is based upon the expected sediment quality/type, the channel access, and the likely disposal options for each of the harbors.

It should be recognized that the sediment quality and resulting disposal options for some of the harbors cannot be adequately resolved with the available information and will only be

finally determined after sediment sampling and analysis is conducted as part of the permitting process.

Given the above caveat, the results of the review are given below for the harbors, lumped together by the classification system outlined in Section B of this report.

Class I Harbors: Braddock Bay, Long Pond Outlet, Sandy Pond Inlet

These harbors have clean sands that are suitable and have been permitted for beneficial use as beach nourishment and/or for littoral zone placement in adjacent and nearby shoreline locations. As such, these sites are ideally suited to hydraulic dredging and two of them, Braddock Bay and Sandy Pond Inlet, have current permits for such dredging. The dredging at both of those sites is being conducted with hydraulic dredges and both are using 10 inch IMS models. The Sandy Pond Inlet dredging is being conducted by a volunteer organization with some funding by the Town. The volunteer organization owns the dredge and utilizes Town Highway Department personnel and volunteers to perform the work. The Braddock Bay dredging is being done by a private contractor with private funds. The contractor is under the same ownership as the entity leasing and operating the Braddock Bay marina under contract with the Town of Greece.

Class II Harbors: Sandy Creek, Bear Creek Harbor, Pultneyville, East Bay, Port Bay and Blind Sodus Bay

These harbors have generally clean sediments with some variation in consistency. Sandy Creek and Bear Creek Harbor have clean sands in the main channels. They are also quite shallow. Hydraulic dredging with an 8-12 inch dredge should be feasible at these locations with sediment disposal in the adjacent littoral zone. Bear Creek Harbor has been dredged by mechanical means in the past with disposal at an adjacent upland, Town owned site.

The Pultneyville site should have a mix of sediment types with clean sands at the outlet grading to more silty materials within the harbor. This has been dredged in the past, with private funding, by mechanical means with disposal at a nearby upland site. Given the mix of sediments, mechanical dredging with transport to an upland site may be the most efficient. However, hydraulic dredging could be utilized with portions placed on the adjacent beach/littoral zone and the rest dewatered on an adjacent upland area and then trucked to the upland disposal site.

East Bay, Port Bay and Blind Sodus Bay all have coarse sand and gravel sediments with some larger stones. They are presently dredged annually by mechanical means from the adjacent upland. The dredge spoil is placed on adjacent upland and littoral areas and, in the case of East Bay, placed back in the channel at the end of the boating season. The dredging is funded by a volunteer organization in each case. These three harbors are most efficiently dredged by mechanical means from the adjacent upland, as they are presently being done.

Class III Harbors: Wilson, Olcott, Oak Orchard, Irondequoit Bay, Great Sodus Bay, Little Sodus Bay, Mexico Point, and Port Ontario

These harbors generally have sands in the outer portions of the channels, generally between the protecting jetties and just beyond, grading to silt/clay and more organic sediments as one moves up the harbor. All of the channels with the exception of Mexico Point and Port Ontario have been previously dredged with disposal at the Corps of Engineers open lake disposal sites located off shore from each location. No records are available of previous dredging at Mexico Point and Port Ontario.

All of the Class III harbors are suitable for hydraulic or mechanical dredging or a combination of both. Combining both types of dredging would allow for the beneficial use of the sands in the outer portions of the channels through discharge to adjacent littoral

areas or beaches while providing for more efficient mechanical dredging and open lake disposal of the silt/clay and organic sediments found in the inner harbors. An alternative would provide for all hydraulic dredging with beneficial use of the sands and discharge to transport barges of the inner harbor sediments.

It is noted that there are some questions regarding whether the sediment quality in two of the harbors would result in a prohibition on open lake disposal for all or a portion of the sediments. The Corps of Engineers has stated that Wilson Harbor, where the main navigation channel extends a significant distance inland, may have sediments that will not meet open lake disposal standards. A proposed sediment testing plan has been developed to assess this situation and is awaiting funding.

The second, Olcott Harbor at the mouth of Eighteen Mile Creek, has recently had its sediments designated as potentially contaminated with PCB's and metals. The contamination is reported to extend approximately 15 miles upstream to an inactive hazardous waste site in the City of Lockport. Detailed sediment testing will be required to assess the level and extend of contamination of the harbor sediments and make a determination of the method of disposal that will be acceptable.

For both the Wilson Harbor and Olcott Harbor sites, the regional dredging management plan has to anticipate and be prepared to deal with upland disposal options, perhaps including transport of some portion of the sediments to a confined disposal site or secure landfill. Under such conditions, mechanical dredging would be preferred due to the complexities and cost of dewatering contaminated sediments before transport.

It is concluded that having both hydraulic and mechanical dredging capabilities would be best for dealing efficiently with the Class III harbors in the study area.

Class IV Harbors: Genesee River, Oswego Harbor

As noted in Section B of this report, the Genesee River and Oswego Harbor both support commercial shipping requiring depths in the 20 + foot range. In addition, they both have rather rapid sedimentation rates requiring a large volume of dredging on a frequent basis.

Sediments from both harbors have been found to be suitable for open lake disposal and this has been the practice for all past dredging activities at these sites, including the privately funded 2012-13 dredging of the Genesee.

While these harbors could be dredged with hydraulic equipment, the most efficient means is mechanical with a barge mounted crane and supporting, large capacity scows for transport of the sediment to the open lake disposal sites. Given the depths of these harbors, much larger and heavier equipment, drawing much larger depths, can be utilized to get the work done efficiently. Unfortunately, such equipment is not suitable for dredging of the smaller harbors making up the rest of the regional dredging management sites.

On the basis of the above review, it is concluded that all harbor dredging could be done with relatively small hydraulic or mechanical dredging equipment, with the exception of the Genesee and Oswego harbors. However, a more efficient program would employ a combination of both hydraulic and mechanical equipment.

Interviews with private marine contractors located in the regional dredging management area indicate the presence and availability of one ten inch hydraulic dredge, at least two barge mounted excavators with long reach shovels, and one barge mounted crane. Supporting these are several transport barges and scows with tugs and push boats suitable for open lake disposal of sediments. In addition to this private contractor equipment, one ten inch hydraulic dredge, owned by a volunteer organization at the Sandy Ponds in Oswego County, is in operation. Contractors interviewed as part of this effort have indicated the willingness

to purchase additional equipment, if needed, to accommodate an expanded dredging program if multi-year contracts are let.

Dredging Permit Restrictive Dates

A factor with important implications for dredging operations and costs for the Lake Ontario harbors are the restrictive dates included as conditions in dredging permits issued by the Army Corps of Engineers and the NYS Department of Environmental Conservation. These conditions restrict dredging to certain times of year in light of environmental conditions. It is understood that the restrictive dates are generally incorporated upon the recommendation of the NYS Department of State (DOS), which reviews coastal permit applications to assure consistency with the policies under the NYS Coastal Management Program.

As part of the DOS review, considerable weight is given to the recommendations regarding potential habitat impairment for areas designated as Significant Coastal Fish and Wildlife Habitats. All of the harbors included in this regional dredging management plan have been designated as containing Significant Coastal Fish and Wildlife Habitats and, hence, the recommendations regarding potential habitat impairment are applicable for each of their dredging permits.

The designation of an area as containing a Significant Coastal Fish and Wildlife Habitat is based upon a rating system and summarized in a Coastal Fish and Wildlife Rating Form. These forms are available on the NYS DOS web site.

As part of the regional dredging management plan, a review was conducted of all the Coastal Fish and Wildlife Rating Forms for the Lake Ontario harbors. The habitat ratings and significance designations were all completed in October of 1987 and have not been updated or re-evaluated since. They all contain similar, if not identical, statements to the effect that impacts due to activities such as dredging could be detrimental during fish spawning and nursery periods, listed as late February-July for warmwater species and steelhead, and

September-November for most salmonids. On the basis of these general statements, permits for dredging in the harbors are generally restricted to the period from late June or early July through August and from the end of November to the first of March. While some dredging can usually be achieved during December of each year, the remainder of the winter through the first of March is generally not feasible for dredging due to icing and rough seas on Lake Ontario. Thus, most dredging has to be conducted during the approximately ten week period from late June to the end of August. This, unfortunately, also coincides with the peak recreational boating season when the channels are heavily used.

It is clear that the general recommendations contained in the habitat rating sheets need to be revisited. In general, warm water fish species do not spawn until water temperatures reach the 55-60 degree range. This does not generally occur for the Lake Ontario outlet channels until mid to late April or early May. In addition, there are specific habitat requirements for fish spawning. For instance, Northern Pike spawn in wetland vegetative beds and Smallmouth Bass spawn on coarse, gravelly bottoms. Given this, it would appear appropriate to consider permit conditions that restrict dredging using a temperature threshold instead of fixed dates and that specific bottom habitat considerations be included in the recommendations regarding restrictive dates for specific areas of the channels.

As discussed in more detail later in this report, some minimal relaxation of the prevailing restrictive dates would have a significant impact on the operational costs for the regional dredging management program. Simply using a 50 degree water temperature threshold to implement the warm water fish spawning restriction could result in an additional ten to twelve weeks of dredging operations during the months of March and April, essentially doubling the dredging window for the year. The implications of such a modified approach are detailed as part of the operational plan options and resulting costs presented later in this report.

Costs

Costs for a regional dredging management program are estimated in two general ways, with several sub-options, for comparison purposes and to determine funding requirements. The first general approach is to have some new or existing entity, government or non-profit, purchase and operate the dredging equipment for all of the sites with little to no contracting out with private firms. In the second approach, it is assumed that some centralized entity, new or existing, funds the work but all of the dredging is performed by one or more private contractors hired through competitive bidding. Several variants combining both approaches are also possible with total costs generally falling between these two pure approaches.

The costs for all options are based upon data collected from current nonprofit dredging operations and from reported recent private contracts for dredging. Under the assumption of funding and operations by a new entity, the cost will depend upon the equipment used, the production rates that can be achieved and the available time for dredging within the restrictive dates.

In general, and depending upon weather conditions, operators and manufacturers report production rates of 125 – 250 cubic yards per hour for hydraulic dredging and 200 – 300 cubic yards per hour for mechanical dredging. These production rates will vary considerably depending upon local conditions. Hydraulic dredging rates are critically dependent upon the distance to the disposal area and the consistency of the material being dredged and the overall average production rate can be reduced considerably by set up time for the discharge piping. By contrast, mechanical dredging average production rates, with dependence on open water transport for mobilization, are dependent upon weather conditions. Finally, if open lake disposal with barge transport is utilized, both hydraulic and mechanical dredging are highly weather dependent.

For those operating plans involving private contracting for some or all of the work, current contract rates are for dredging on Lake Ontario ports are utilized. These costs vary from \$15 to \$25 per cubic yard with some variations in mobilization costs added on. While these same

contracting costs are utilized to get program cost estimates, it should be recognized that multi-port, multi-year dredging contracts, if possible, may result in lower unit costs.

The following unit cost assumptions are utilized to determine total program costs under a variety of operational plan options:

Table 11: Unit Cost Assumptions	
Capital Equipment*	
Hydraulic dredge and associated equipment	\$600,000
Transport truck	\$100,000
Crane/shovel plus barge & work boat	\$120,000
Scow (each)	\$75,000
*capital costs are annualized over 20 years @ 3%	
Labor (including benefits)	
foreman/equipment operator	\$42.05 / hr
crew	\$26.10 / hr
Central Operations:	
Director	\$100,000
Engineer	\$75,000
Sediment testing/permitting/surveys	\$40,000
With class IV included	\$90,000
Overhead	@ 40% of central salaries

For those operating plans involving private contracting for some or all of the work, current contract rates are for dredging on Lake Ontario ports are utilized. These costs vary from \$15 to \$25 per cubic yard with some variations in mobilization costs added on. While these same contracting costs are utilized to get program cost estimates, it should be recognized that multi-port, multi-year dredging contracts, if possible, may result in lower unit costs.

Total Program Cost Estimates

As noted above, there are several organizational options available for the dredging operations. These range from having a new entity, or new unit of an existing entity, own and operate the dredging equipment suitable for all the harbors to having a central entity handle the permitting and management of the program with all dredging work being let to private contractors under competitive bid. There are also combinations of these approaches that may be more suitable for getting the work done and several of these are also suggested and analyzed later in this report.

In this section, a brief description of several program options, labeled A through D, are each presented and cost estimates derived. A more thorough discussion of the advantages and disadvantages of each approach, and recommendations for implementation, are presented in Section F of this report. The purpose here is to come up with a range of costs for various program options so that potential funding mechanisms can be evaluated. The results for the funding evaluation are contained in Section E of this report.

The following is a description and total annual cost estimate for each of the potential operational plan options. The cost estimates are based upon the unit cost assumptions previously presented. Detailed cost estimates for each plan are contained in the spreadsheet output contained in Appendix C. It is noted that the cost for each of the potential plans includes the central administration of the program as well as assumed permitting costs, all as detailed in the unit cost breakdown previously given.

Potential Plan A

- A new or existing non-profit or authority manages, permits and operates the dredging equipment.
- Operations utilize both one hydraulic dredge plus one crane/excavator on a barge with two scows.

- Annual priority: 1 Class III harbor @ 15,000 cubic yards
1 Class I harbor @ 6,000 cubic yards
1 Class II harbor @ 1,200 cubic yards
3 small Class II – East Bay, Port Bay, Blind Sodus Bay
- The hydraulic dredge unit is used for the outer portions of each channel containing sands under the assumption that the sands can be pumped to adjacent littoral or beach areas for beneficial use. The hydraulic dredge is supplemented with the crane/excavator unit for upper harbor areas that require open lake or upland disposal. The crane/excavator would also do the 3 small Class II harbors annually from the adjacent upland while barge/scows are transported to the other sites scheduled for that season.
- It is noted that this plan excludes the Class IV harbors (Genesee and Oswego), but could be accomplished within the existing restrictive dates. (10-12 weeks of work including transport and setup.)

On the basis of this operating plan, the total annual cost is estimated at \$522,403 including capital equipment amortization costs and administration. This works out to \$21.59 per cubic yard of dredging done for the season.

Potential Plan B

- This is the same as Plan A, but includes dredging of the Genesee and Oswego harbors. In order to achieve the necessary dredging while respecting the existing restrictive dates it is necessary to add another crane/excavator plus barge and work boat plus two more scows and appropriate personnel. This second crane unit would work all season in either the Genesee or Oswego (rotating basis) and the second crane/excavator would join it once the other Plan A work for the crane is done.

On the basis of this operating plan, the total annual cost is estimated at \$776,143 including capital equipment amortization costs and administration. This works out to \$6.80 per cubic yard of dredging done for the season.

Potential Plan C

- This is the same amount of seasonal dredging as Plan B, including the Genesee and Oswego harbors. However, it is assumed that the State reduces the restrictive dates to give approximately three more months of work. With this, all seasonal dredging could be completed with the one hydraulic unit and one crane/excavator unit working a longer season.

On the basis of this operating plan, the total annual cost is estimated at \$673,931 including capital equipment amortization costs and administration. This works out to \$5.90 per cubic yard of dredging done for the season.

Potential Plan D

- Under this plan, a central entity manages permits and lets contracts to private firms for all the dredging operations. This approach results in the highest total annual cost under the assumed cost structure and provides an upper bound on the amount of funding that may be necessary. Two variants are presented. In the first, the Class IV harbors (Genesee and Oswego) are omitted and assumed funding through other sources. In the second, the Class IV harbors are also included. For each variant, costs are presented for a range based upon \$15 per cubic yard to \$25 per cubic yard for the contract work in order to bookend the potential funding requirements.

On the basis of this operating plan, the total annual cost is estimated at from \$648,000 to \$890,000 with the Class IV harbors excluded and from \$2,048,000 to \$3,190,000 with the Class IV harbors included.

The following table contains a summary of the above costs for the various plans. It is noted that there are several variants of these approaches, including having a new entity purchase

equipment and conduct a portion of the work with private contracting for the remainder. These hybrid approaches are discussed and evaluated in Section F of this report.

Plan	Annual Cost	Unit Cost (per cy)
Plan A(excludes Genesee and Oswego)	\$522,403	\$21.59
Plan B(includes Genesee and Oswego, respects existing restrictive dates)	\$776,143	\$6.80
Plan C(includes Genesee and Oswego, relief from restrictive dates)	\$673,931	\$5.90
Plan D (central entity contracts out all work) (wo Class IV)	\$648,000 @ \$15 \$890,000 @ \$25	
Plan D (central entity contracts out all work) (all harbors)	\$2,048,000 @ \$15 \$3,190,000 @ \$25	

These cost figures are utilized in the next section to evaluate the feasibility of various potential funding mechanisms.

E. Potential Funding Mechanisms

Funding is the single most difficult component of any dredging plan. This section discusses several approaches to funding and provides an evaluation of funding levels by source that would result under the approaches.

In keeping with the goal of providing a long term and sustainable program, sources of operating funds that are of a continuous nature are preferred over “one-shot” sources that cannot be reliability renewed year after year. In consideration of issues of equity and feasibility of implementation, funding linked to users of the system, or derived from revenues generated from such users, is preferred. Finally, sources of funding that are regional are preferred to assure local control and continuity of the program.

As noted earlier in this report, ten of the nineteen harbors included in the plan were constructed by the Federal government and the Federal government has explicitly recognized its responsibility to maintain them. This includes the financial responsibility for periodic dredging. As also noted, the Federal government has not provided adequate funding for the maintenance dredging of these harbors and there is little chance that funding for regular maintenance dredging will be provided in the future.

Given the above considerations, five different regional funding approaches have been examined as part of the development of this Regional Dredging Management Plan Update. In addition, a discussion is included of the Federal funding option as that is currently relied upon for the ten Federal channels and may be continued to be relied upon for the two large harbors that still support commercial shipping operations. The other regional funding options are as follows:

- Voluntary, Private Funding
- County Funding
- Town Funding Utilizing Harbor Improvement Districts

- User Fee through a Per Slip/Launch Lane Basis
- User Fee through an increase in the existing Boat Registration Surcharge

Each of the potential regional funding sources is discussed separately below following a brief description of the Federal funding option.

Federal Funding through the Army Corps of Engineers

The Army Corps of Engineers (COE) has had limited funding for harbor maintenance over the last decade. In light of this limited funding, the COE has prioritized the allocation of its dredging funds with the highest priority given to harbors supporting commercial vessel traffic. The Genesee River and Oswego River harbors are the only locations in the study area currently supporting commercial shipping operations. Even for these harbors, funding has been inadequate to maintain channel depths and the COE has resorted to partnering with the private commercial shippers in order to conduct the necessary dredging.

Given the shortfall in funding and the priority for the commercial harbors, COE dredging of the recreational harbors has and continues to be neglected. As a result, dredging of the recreational harbors only occurs when there is a critical need affecting safety and only when strong public and political pressure results in a special, targeted congressional appropriation.

In addition, even if at adequate levels, COE funding can only be utilized for maintenance dredging of ten recreational harbors in the study area that were constructed as Federal projects. This leaves the other nine recreational harbors included in the study area without the possibility of any dredging with Federal funding.

The advantage of COE funding is that it comes with no local or regional cost contribution. The primary disadvantages are that there is not enough funding to meet even the minimal needs of the Federal channels and COE funding cannot be used for dredging in the non-Federal recreational channels. In addition, the program is out of the control of local governments and the user community.

It is not recommended that Federal funding through the COE be relied upon for operations under the Regional Dredging Management Plan. However, Federal funds should be sought, perhaps in conjunction with New York State funds, for capital equipment necessary for program implementation. To the extent that such funding can be obtained, annual program funding allocated to capital equipment can be reduced or eliminated.

Voluntary Private Funding

Seven of the identified recreational access channels in the study area are maintained through voluntary, private funding. These consist of Sandy Creek in Monroe County, Bear Creek, Pultneyville Harbor, East Bay, Port Bay and Blind Sodus Bay in Wayne County, and Sandy Ponds Inlet in Oswego County. Bear Creek is periodically maintained by the Constellation Energy Group as needed to bring equipment to the area for its Ginna Nuclear Power Plant. In the absence of such need, the Town of Ontario has performed some maintenance dredging of the Bear Creek Harbor in support of the Town boat launch located there. Sandy Creek and Pultneyville Harbor are both maintained, as needed, by local yacht clubs located near the channel entrances, even though both channels support marinas and launches further upstream. In the case of Sandy Creek, this includes a large public launch, which would likely not be usable without the yacht club maintenance of the access channel to Lake Ontario. East Bay, Port Bay and Blind Sodus Bay are maintained on an annual basis by voluntary dues to private improvement associations. The Sandy Pond Inlet is maintained through a combination of voluntary dues and a contribution from the Town of Sandy Creek. The Sandy Pond Inlet situation is unique in that the voluntary organization, The Sandy Pond Improvement Association, purchased and operates a hydraulic dredge for its dredging.

The primary problem with private funding is that it is not adequate to meet the identified need for dredging in the entire study area. In addition, it is not equitable to the parties involved. Only seven of the nineteen channels identified for maintenance under this Plan have willing and able private dredging sponsors. In addition, dredging of these channels is at

the will and at the option of the sponsors, leaving the other users in the system vulnerable to conditions beyond their control.

County Funding

None of the counties in the study area are providing funding for dredging activities despite the fact that this public infrastructure generates over \$3.7 million in direct sales tax revenues to the county governments annually.

In recognition of the economic activity generated by recreational boating, and the economic development potential of area waterways, it is reasonable to request county funding for some of the dredging activity proposed as part of this Regional Dredging Management Plan Update. It is noted that dredging program funding solely by County governments is not recommended. This is due to the fact that, for equity, at least a portion of the project funding should be borne by system users and that at least a portion of the funding should be borne by the State and/or Federal governments. In addition, continuity and reliability of the program operation is important and should not be subject to short term changes in County funding which could result from a high dependence on this one source.

The proportion of the program costs to be borne by the counties, and the contribution of each of the four counties in the study area, would have to be determined. The following calculations can be utilized for discussion purposes.

It is noted that the following figures assume that the Class IV harbors will initially be left to Federal funding with the rest of the dredging conducted by a new entity operating its own equipment. As detailed in Section D, this results in the minimum program cost of \$440,400 for operations and an additional \$82,003 if capital equipment has to be amortized for an annual total of \$522,403.

It is not anticipated that the counties alone would completely fund the required dredging and it is assumed that a portion of the funding would come from other sources. As detailed later

in this section, it is not unreasonable to assume that approximately \$276,481 could be generated annually from an addition to the existing boat registration surcharge, leaving approximately \$163,919 (without capital equipment cost) or \$245,923 (with capital equipment cost) to be provided by the participating counties.

Assuming that the six counties in the study area will provide the remaining program funding, and that the \$163,919 to \$245,923 annual cost range is utilized, individual county contributions could be based upon an equal share, a share proportional to the amount of dredging required in the county, or a share proportional to the amount of county sales tax raised from recreational boating within each county. A summary of county funding for each of these options is contained in Table 13.

Table 13: County Funding Options

	w.o. capital cost	include capital cost
Every County Share (equal division)	\$27,319.90	\$40,987
County Share (proportional to annual dredge volume)		
Niagara	\$31,535	\$47,311
Orleans	\$15,768	\$23,655
Monroe	\$49,447	\$74,184
Wayne	\$32,481	\$48,730
Cayuga	\$15,768	\$23,655
Oswego	\$18,921	\$28,387
Total	\$163,919	\$245,923
County Share (proportional to sales tax generation)		
Niagara	\$18,313	\$27,475
Orleans	\$12,360	\$18,543
Monroe	\$53,943	\$80,929
Wayne	\$32,119	\$48,187
Cayuga	\$11,531	\$17,299
Oswego	\$35,654	\$53,490
Total	\$163,919	\$245,923
% of boating sales tax	4.4%	6.5%

As can be seen, individual county funding support for the Regional Dredging Plan will vary depending upon the cost allocation basis. However, in no case is the cost to any county large in comparison to the amount of money generated in direct sales tax revenue due to recreational boating activities. In fact, the cost to counties for dredging represents roughly 5% of the sales tax revenue generated by the recreational boating activity.

A specific recommendation for the level and allocation of county funding for the Regional Dredging Management Plan is contained in the section entitled Recommended Program Funding.

Town Funding Utilizing Section 190 Harbor Improvement Districts

Funding for channel dredging could also be requested from the individual Town governments along the shoreline. As noted in an earlier section, there are seventeen different Towns and two cities with channels and harbors identified as part of this study. One mechanism for obtaining funding for harbor dredging is through the creation of Harbor Improvement Districts pursuant to Section 190 of the NYS Town Law.

The creation and management of any Harbor Improvement District is governed by the same procedural and legal requirements as all other types of improvement district. This includes the need to obtain petitions from a majority of the land owners, the holding of a public hearing and the adoption of a local law creating the district and specifying costs and assessments.

As for the Counties, any Town funding of dredging would have to be allocated among the participating Towns. Funding could be on the basis of an equal share, on the number of docks and/or launch ramps served, or on the basis of the annual average amount of dredging done in support of the harbors in each Town/Village. An analysis of the amount of funding that would be necessary under these allocation scenarios was conducted as part of the 2000 Regional Dredging Management Plan. It was concluded that funding levels for individual

Towns, utilizing town wide districts, will vary and may be substantial (up to 11%) for some areas, depending upon the funding allocation basis chosen. This would make it politically difficult to establish town wide improvement districts to support the dredging. In addition, establishing and maintaining seventeen separate Harbor Improvement Districts would represent a formidable barrier to plan implementation. For these and other reasons, discussed below, direct funding from Towns is not being recommended for the Regional Dredging Management Plan and, hence, no further discussion of funding allocation is necessary.

One apparent advantage of direct Town funding of dredging is that the cost of dredging could be assessed only to those properties on the waterfront through the careful configuration of Harbor Improvement District boundaries. There are questions regarding the equity of doing so, given that open navigation benefits more than just direct waterfront properties. However, these questions are superseded by a more practical difficulty regarding the effect on waterfront property tax rates and the impact of this on being able to establish the districts.

An analysis of the impact on waterfront property tax rates that would be necessary for Town Harbor Improvement Districts containing only such properties to support the required dredging was conducted as part of the 2000 Regional Dredging Management Plan. It was shown that property tax rates for the waterfront properties would have to increase by over 100%, even for areas with relatively high property values. Such an increase would make it difficult to establish the Harbor Improvement Districts.

As noted earlier, the formation of Harbor Improvement Districts requires favorable petition of a majority of the land owners in the district and individual legislation in each of the seventeen Towns. Further, if even one Town does not participate, the entire dredging program is jeopardized. Given these factors, and the anticipated steep tax rate increases necessary to fund the program, it is concluded that funding of the Regional Dredging Management Plan through the formation of Town sponsored Harbor Improvement Districts is not fiscally or politically realistic and is not recommended.

User Fee Through a Per Slip/Launch Lane Charge

The idea of funding through a direct user fee is appealing since under such a scenario those that principally receive the benefit will pay for the service. One approach to this is to levy a per slip or per launch lane fee for all commercial marinas. The equity and potential pitfalls of this approach are discussed below.

An estimate was made for the 2000 Regional Dredging Management Program of the estimated annual per slip cost if commercial marina boat slips in the study area were each assessed an equal share fee. The resulting cost came to a per slip fee of approximately \$72 per year, which is believed to still be valid and provides a rough estimate for feasibility assessment purposes. The \$72 per year fee, estimated to be less than ten percent of the average annual rental for boat slips along the south shore of Lake Ontario, would seem to be a reasonable approach to funding the dredging program. Unfortunately, this approach is not practicable for other reasons.

The first problem has to do with the perception of equity. A commercial marina per slip or per launch lane fee would not be borne by residential properties with docks. In some areas, such property owners would be the major beneficiaries of improved dredging maintenance. In addition, a per slip or launch lane fee would not be borne by boaters utilizing trailers and publicly owned launches, many of which do not assess fees and have no means in place for collecting fees. Even if this can be overcome, the most significant problem remains; there is no existing means for assessing and collecting any such fee. Marinas are primarily governed by local land use laws and no county or state agency issues operating permits or any other form of continuing approval. Thus, the institution and collection of any such fee would most likely have to result from individual Town actions all along the shoreline, with the same potential for political problems as funding through the creation of Harbor Improvement Districts.

Given the above factors, a user fee in the form of a per slip or per launch lane fee is not recommended as part of the funding for the Regional Dredging Management Plan.

User Fee Through Boat Registration Surcharge

Another source of potential funding for the Regional Dredging Management Plan is a user fee for boaters implemented through an addition to the existing surcharge applied to boat registrations. At present, all boats powered by a motor and operated in New York State waterways are required to register with the New York State Department of Motor Vehicles (NYS DMV). Current registrations are for three years with fees of \$22.50 for boats up to 16 feet in length, \$45 for boats 16 feet to less than 26 feet, and \$75 for boats of 26 feet or larger. In addition, the state adds a surcharge for boat registrations of \$3.75 for boats up to 16 feet in length, \$12.50 for boats 16 feet to less than 26 feet, and \$18.75 for boats of 26 feet or larger.

According to the NYS DMV, at present the boat registration surcharge goes to “a dedicated fund which supports improvements of vessel access and transient marina facilities.” A majority of the surcharge funds, established under Section 2251 of the NY Vehicle and Traffic Law, are passed by the NYS DMV to the NYS Office of Parks and utilized pursuant to section 97-nn of the New York State Finance Law. The portion dedicated to marine facilities is currently utilized only for NYS Park marine facilities. It is noted that increases in the vessel surcharge, approximately 25%, instituted by the 2010 New York Vehicle and Traffic Law (section 2251) were directed to the dedicated state highway and bridge trust fund. It is understood that this amounts to approximately \$250,000 per year from the boat registration surcharge that is diverted to the dedicated highway and bridge fund. Future effort may be directed to the recapture of this funding for boating infrastructure, including dredging. For the present, it is assumed that the existing boat registration surcharge funds are fully committed and that only an increase in the surcharge amount can be utilized to support dredging of recreational harbors.

A model for directing registration add-on fees to direct infrastructure maintenance exists for snowmobiles. Snowmobiles operated in New York, even on a temporary basis, are required to obtain a NYS DMV registration. The current annual fee is \$45 for members of recognized snowmobile clubs and \$100 for non-club members. Most of this annual fee is placed in the

NYS Snowmobile Trail Development and Maintenance Fund, which is administered through the NYS Office of Parks. The Office of Parks distributes these funds through an annual grant program to counties, or to municipalities if the county does not wish to participate. The funds are then distributed by the counties to snowmobile clubs for trail establishment, improvements and maintenance.

A similar system could be established, through State legislation, for all or partial funding for the Regional Dredging Plan program with a similar add-on fee established as an add on to the current boat registration surcharge.

To assess the required level of such a fee, boat registration figures for the counties in the study area were compiled and analyzed. The results indicate that full funding of the dredging program solely through an increase in the boat registration surcharge would result in an increase in the registration surcharge of approximately 340% for the boats registered in the coastal counties, even assuming the lowest annual operating funding of \$440,400 is needed.

Full funding of the dredging program solely through an increase in the registration surcharge is not recommended for reasons of equity and practicality. At least a portion of the benefit provided by the program would flow to boaters not residing in counties in the study area. In addition, some boaters that do resident in the study area counties do not utilize Lake Ontario for boating. Finally, the economic benefits of increased use of the identified channels and harbors would flow to the community, regional and state economies and, therefore, funding should also be provided from this broader base. Finally, an increase of 340% may generate substantial political opposition that could result in the entire program not being implemented.

Given these factors, partial funding through a registration add-on fee is recommended. As is done under the current surcharge, the increase would be tied to the vessel size. Thus, the required portion of the program funding is allocated to vessels in the three registration size classes on the same percentage basis as the current surcharge. The calculations and results on this basis are summarized in Table 14.

Table 14: Boat Registration Surcharge Funding Amounts

County	Number < 16 ft	Number 16 - 26 ft	Number > 26 ft	Total Surcharge Collected
Cayuga	2,033	2,946	250	\$40,947
Monroe	10,972	14,542	1,867	\$214,939
Niagara	3,113	4,793	663	\$70,015
Orleans	938	1,086	117	\$16,072
Oswego	4,261	4,414	497	\$67,060
Wayne	2,776	3,552	390	\$51,769
Totals	24,093	31,333	3,784	\$460,801
additional amount collected over the current surcharge				\$276,481
Total Increased Surcharge (per year)	\$3.13	\$10.42	\$15.63	
Percent Increase in Surcharge	250%	250%	250%	

As shown, the annual surcharge would rise to \$3.13 to \$15.63 from its existing \$1.25 to \$6.25 range per year depending upon the vessel size in order to raise the amount of program funding needed over and above that recommended to be provided from the counties in the study area.

Recommended Program Funding

On the basis of the discussion and analysis in this section, a combination of county and user fee sources are recommended as the primary funding for the proposed Regional Dredging Management Plan, with the possibility of Federal and/or State funding utilized for capital equipment. The specific allocation recommended among these sources is based upon the following considerations:

- County funding should be utilized to support roughly one-half of the annual program costs, allocated among the participating counties on the basis of the amount of annual dredging anticipated to be necessary within each county.
- Federal/State contribution should be directed toward capital equipment procurement, which is more easily obtained through one-time grant funding and justified as start-up costs.

- An increase in the current boat registration surcharge fee should make up the difference needed for annual program operating costs.

Based upon the above, the recommended annual and one-time funding amounts are shown in Table 15.

Table 15: Recommended Funding By Source

	<u>Annual Without Capital Cost</u>	<u>Annual Including Capital Cost</u>
Niagara County	\$31,535	\$47,311
Orleans County	\$15,768	\$23,655
Monroe County	\$49,447	\$74,184
Wayne County	\$32,481	\$48,730
Cayuga County	\$15,768	\$23,655
Oswego County	\$18,921	\$28,387
Total Annual Funding from Counties	\$163,919	\$245,923
One Time Federal/State Contribution (Capital Equipment)	\$1,220,000.	\$0.00
Annual from Boat Registration Surcharge Increase	\$276,481	\$276,481
Annual Operating Totals	\$440,400	\$522,403

The amounts shown in Table 15 assume the lowest level of program funding, consisting of maintenance dredging of only the Class I – Class III harbors. In particular, it is assumed that the dredging for the Genesee River and Oswego Harbor will be conducted with Federal funding and not through the Regional Dredging Management Program. If these harbors are included, the total cost will rise substantially (as detailed in Section D of this report) and the amounts in Table 15 will have to be adjusted accordingly.

It is noted that additional program funding may be derived by contract dredging of non-covered areas with voluntary private or local government funding. This aspect will evolve over time and may be used for a capital equipment replacement fund or to reduce the operating costs contribution from the Counties or from the registration surcharge.

It is also recommended that if additional areas of the state choose to participate in this program, the incoming counties be assessed an equitable operating share cost, plus a one-time capital equipment entry fee if Federal/State capital equipment funding is not realized.

F. Organizational Structure

There are many different organizational and management structures that are feasible for the implementation and operation of the proposed regional dredging management plan. The advantages and disadvantages of the best approaches are discussed in this section followed by a recommendation for the organizational structure to be implemented.

The potential organizational structures discussed and evaluated in this section are:

- Inter-municipal agreement with one County or Town taking the lead
- An existing or new public authority
- A not-for-profit local development corporation
- A not-for-profit private corporation

The evaluation of each option focuses on several desirable attributes. These are the ability of the structure to provide focus and responsibility for the dredging operations, the economies of scale that could be achieved with respect to the sharing of management functions, personnel and equipment, and the flexibility of any structure to allow for private contract dredging where feasible to help offset operating expenses. In addition, some consideration is given to the degree to which some structures will be difficult to implement due to political or public perception problems.

Inter-municipal Agreement with one County or Town taking the lead

Under this organizational structure, one of the participating counties or towns would undertake the dredging operations or the external dredge contracting on behalf of the entire system. This would most likely be placed within an existing public works department, but could be given more autonomy through the creation of a new local operating unit under the county or town. Funding and operations would occur under an inter-municipal agreement entered into by the participating counties.

The chief advantage of this organizational structure is the potential for cost reduction through the shared use of management functions, the potential for shared use of existing personnel for the dredging operations, and the potential for the sharing of equipment with other units of the county or town government. Other advantages include the ability of the county or town government to issue tax exempt bonds for capital equipment and the ease of implementing the program since a new governmental or private entity will not need to be established. Finally, if contracting is used for the dredging operations, the existing county or town government will have experience with bidding and contract management.

The disadvantages of this approach include the possibility that the focus on the dredging operations will be diluted in the face of other obligations of the lead town or county government. Such mission leakage could also result in funding intended for use in dredging being partially utilized to subsidize other operations. In addition, whether real or perceived, such an organizational structure may lead to the charge that certain harbors are getting more or less attention than others in the program due to local bias. An additional concern would be for the stability of any program residing in one municipality under any changes in local leadership. The cost savings resulting from the use of an existing government unit may be diluted or lost completely due to the need to comply with government employment (civil service) regulations or, for the case where contract dredging is utilized, due to government mandated bidding procedures and labor costs. Finally, a government unit could not contract out for additional private dredging operations..

An existing or new public authority

Under this scenario, a new or existing public authority, established through State legislation, would manage the dredging operations, either doing the work itself or through contracts to private firms.

The chief advantages of such an approach are that an authority would function independently under a board of directors and that it could issue tax exempt bonds for startup or capital

equipment. If an existing authority is tasked with the dredging, the program may be able to realize cost savings through the sharing of management functions, equipment and personnel. The enabling legislation for the existing authority would also have to be broad enough to allow it to conduct the dredging for the entire region. If a new authority is created specifically for the dredging program, its focus would be just on the dredging and mission leakage is less likely. In its enabling legislation, the board of directors could be specified as consisting in whole or part of representatives of the participating counties to assure local control.

The primary challenge to this approach is the difficulty of establishing a new public authority. It would take State legislation, requiring time and effort at the outset. In addition, there appears to be a reluctance by the State to establish new authorities given past, highly publicized problems with some existing authorities. On the other hand, if an existing authority is utilized, such as the Oswego Port Authority or the now moribund Port of Rochester Authority, the participating counties would not have any control over the operations or costs.

A not-for-profit local development corporation

An alternative method for creating an independent operating or contracting entity is through the creation of a local development corporation (LDC) pursuant to Section 1411 of the NY Not-For-Profit Corporation Law. The LDC could be incorporated jointly by any combination of Towns and Counties with the express purpose of the retention of the boating and tourism industry in the region and to lessen the burden of government to perform the dredging. By law, the LDC would be considered a “Type C” corporation, intended to achieve a lawful public or quasi-public objective.

The chief advantage of an LDC is its independence and focus on the dredging program. As a not for profit corporation, an LDC would not be bound by the contracting or civil service rules by which government agencies must function. Such a structure would also allow for the issuance of bonds and would allow additional contract dredging outside the channel areas

when possible to help defray program costs. Finally, if incorporated by the participating counties and/or towns, the LDC would be under the direct control of a board representing those entities and could receive government funding directly from those and other government entities.

The only disadvantage of an LDC structure is the recent bad publicity surrounding the use of such corporations, which may make the formation of the LDC difficult politically. This was made worse by an April 2011 report from the NYS Office of the Comptroller in which the independence from government procurement and debt rules and lack of transparency of LDC's were cited as reasons for concluding that "The use of LDCs and similar organizations to finance local government operations and projects increases the risk of waste, fraud, or abuse of taxpayer dollars or assets."

A not-for-profit private corporation

The final alternative structure being considered is the formation of a private not-for-profit corporation pursuant to Section 201 of the New York Not-For-Profit Corporation Law.

If formed as a "Type C" corporation, the entity could conduct any lawful public or quasi-public function and could be completely independent of any government entity. This would allow for dredging of the regional harbor channels through any combination of direct operations or private contracting. It would also allow for additional dredge contracting to defray program costs.

The primary disadvantages of a private corporate structure are the lack of ability to issue bonds, the difficulty of any arrangements for the shared use of equipment and/or personnel with the local governments, and the fact that funding through the local governments may be subject to bidding and procurement regulations. Finally control of the operations of a private corporation will be much more difficult for the participating communities since they will only have input via the Board of Directors, which may or may not be representatives of the local governments.

Recommendation for Program Organization

In light of the factors discussed in this section, it is recommended that the participating counties in the regional dredging management plan form a Local Development Corporation (LDC) pursuant to Section 1411 of the NY Not-For-Profit Corporation Law. Such a structure would allow for a focus by the organization solely on the dredging program, would provide bonding capabilities, would allow some sharing and/or donation of equipment from the participating counties, would allow seamless funding by governments, and would allow for control of the program by the participating counties through combined incorporation and representation on the corporate Board of Directors.

It is also clear that the LDC laws were established to facilitate public operations across government jurisdictions, such as the proposed regional dredging management program. Given this, it should be possible to overcome any political reluctance to establish the LDC by the counties involved.

It is noted that if one of the Counties in the study area decides to not participate in the formation of the LDC, the proposed dredging program can still be implemented by the others with the non-participating County having its dredging needs met by contracting with the LDC or through an inter-municipal agreement with one of the participating Counties.

G. Plan Implementation

The timing of the start, pace of implementation and final details of the regional dredging management program will depend upon many factors, not the least of which are the political will of the participating counties and State government to solve the existing problem and the ability of the organizers to raise the required funds.

In this section, a potential implementation schedule with required tasks is presented. There is no doubt that this schedule will be modified, but it is hoped that it will at least provide a crude roadmap for the initial steps in implementation.

Year 1 of the Program:

It is assumed that year 1 of the program will be completely funded by the participating counties or through a one-time grant from the State for startup. For planning purposes it is assumed that this funding is equivalent to the annual operating contribution from the counties at approximately \$163,000. With this funding, and perhaps some in-kind legal support from the counties, the LDC can be formed and the Board of Directors appointed. The Board could then hire an Executive Director to assume the duties of the program. In year 1, the Executive Director could assume the transfer of all existing dredging permits by the LDC, pursue permit issues with the State over restrictive dates, pursue State legislation for the remaining program funding, pursue State/Federal funding for capital equipment (if desired) or startup costs, and contract with private firms to dredge the critical needs of non-federal channels in the program area as the available funds permit.

Year 2 of the Program:

It is assumed that full program funding will be in place for year 2. With this, the LDC can hire an engineer, continue with contract dredging for all harbors, and evaluate the feasibility and desirability of purchasing and operating its own equipment for all or a portion of the

dredging, perhaps utilizing Federal or State funds obtained through the efforts during year 1. In this year, the decision over in-house or contract dredging will be made, informed by the experience obtained with the private contract dredging in this and the previous year. In addition, decisions regarding whether to extend the program to the Genesee River and Oswego Harbor will be made, informed by the results of negotiations with the regulatory bodies over restrictive dates for dredging.

Year 3 of the Program:

Full operations are in place with either purchased equipment, contract dredging, or some combination of the two will start to take place on a regular basis as per the defined schedule.

Appendix A
Harbor Inventory Database

Channel/Water Body Designation Wilson

Latitude 43.318

Longitude 78.836

County Niagara

Town, City or Village Town of Wilson

Total Slips 476

Total Launch Lanes 2

Total Charter Boats 15

Approximate Dimensions 4,900 ft long x 80 ft wide

Type of Use

- Recreational boating
- Large sail and power vessels
- charter fishing boats

Economic Benefit \$4,720,298 + 69 jobs

Maintained Public

- By**
- Corps of Engineers. Last reported dredging in 2000 with 5,100 cubic yards removed near interior jetty wall
 - last general channel dredging reported to be approximately 1997

Critical Desired Depth 8 feet

Critical Desired Bottom Elevation 236 feet (IGLD-85)

Existing Min Depth 5.5 channel, 5.0 harbor 9/28/12

Existing Max Bottom Elevation 239.2 ft (IGLD-85)

Critical Requirements

- Maintenance Dredging of Channel and Harbor

Corps Calculated Backlog in cu yd 17,797 design + 21,260 overdraft

Notes on Use - COE lists 9 charter fishing boats generating ~\$73,000 in net annual income.



Quantity (cu yd) 15,000

Anticipated Frequency (yr) 6

Sediment Condition

Testing Date

Sediment Quality

Class III

Federal Navigation Project Yes

Construction Completed

Federal Project Authorized Depth 8 feet in channel, 6 feet in Bay

Designated Harbor of Refuge Yes

Previously Permitted Dredging

Permittee US Army Corps of Engineers

DEC Permit ID. 9-2942-00017/00001

Permit Minimum Depth

DEC Permit Date 9/03/1997

Permit Bottom Elevation

DEC Expiration Date 12/31/2002

Permit Dredge Amount (Cubic Yards)

COE Appl. No.

Disposal

COE Permit Date

COE Expiration Date

Restrictive Dates

NYS Designated Significant Habitat? No, but Tuscarora Bay Marsh, on east branch of Twelvemile Creek is designated.

Notes

- Sources
- US Army Corps of Engineers Great Lakes Navigation System Fact Sheets (2012)
 - NYS DOS Tuscarora Bay Marsh Significant Coastal Fish and Wildlife Habitat Rating Form (1987)
 - NYS DEC Permit 9-2942-00017/00001 (Summary Sheet)
 - boat counts in 2010 by others

Channel/Water Body Designation **Olcott Harbor**

Latitude 43.340

Longitude 78.719

County Niagara

Town, City or Village Village of Olcott, Town of Newfane

Total Slips 124

Total Launch Lanes 6

Total Charter Boats 14

Approximate Dimensions 1,400 ft long x 140 ft wide

Type of Use

- recreational boating
- COE terms this a critical Harbor of Refuge
- charter fishing boats

Economic Benefit \$5,780,656 + 109 jobs

Maintained Public

- By**
- Corps of Engineers.
 - Last dredged in 1997 with 9,900 cubic yards removed

Critical Desired Depth 8 feet

Critical Desired Bottom Elevation 236 ft (IGLD-85)

Existing Min Depth 5.0 ft near launch, 6.0 in channel 9/28/12

Existing Max Bottom Elevation 239.2 ft launch & 238.2 channel

Critical Requirements

- Maintenance dredging.

Corps Calculated Backlog in cu yd 5,755 design cut + 4,988 overdraft

Notes on Use - COE lists 14 charter fishing boats generating ~\$114,000 in net annual income.



Quantity (cu yd) 15,000

Anticipated Frequency (yr) 6

Sediment Condition

Testing Date

Sediment Quality

Class III

- NYS DEC stated in October 2012 that the sediments in Eighteen Mile Creek may be listed as hazardous waste due to potential PCB and metals contamination.

Federal Navigation Project Yes

Construction Completed

Federal Project Authorized Depth 12 feet

Designated Harbor of Refuge Yes

Previously Permitted Dredging

Permittee Army Corps of Engineers

DEC Permit ID. 9-2928-00023/00001

Permit Minimum Depth

DEC Permit Date 3/17/1997

Permit Bottom Elevation

DEC Expiration Date 12/31/2002

Permit Dredge Amount (Cubic Yards)

COE Appl. No.

Disposal

COE Permit Date

COE Expiration Date

Restrictive Dates late February - July & September - November (SCFWH form)

NYS Designated Significant Habitat? Yes - Upstream of Route 18 bridge.

Notes

- Sources**
- US Army Corps of Engineers Great Lakes Navigation System Fact Sheets (2012)
 - NYS DOS Eighteen Mile Creek - Lake Ontario Significant Coastal Fish and Wildlife Habitat Rating Form (1987)
 - NYS DEC Permit 9-2928-00023/00001 (Summary Sheet)

Channel/Water Body Designation **Oak Orchard Harbor**

Latitude 43.372
Longitude 78.192
County Orleans
Town, City or Village Hamlet of Point Breeze, Town of Carlton
Total Slips 422
Total Launch Lanes 6
Total Charter Boats 38



Approximate Dimensions

Type of Use
 - Recreational boating
 - charter fishing boats

Economic Benefit \$7,087,101 + 117 jobs

Maintained Public
By - Corps of Engineers
 - Last dredged in 2004 with 10,700 cubic yards removed



Critical Desired Depth 8 feet

Critical Desired Bottom Elevation 236 ft (IGLD-85)

Existing Min Depth 4.0 ft at East entry, 8+ channel - 9/28/12

Existing Max Bottom Elevation 240.2 ft at entry

Critical Requirements

- maintenance dredging

Corps Calculated Backlog in cu yd 13,357 cut design + 9,596 overdraft

Notes on Use - Orleans County Sheriff Marine Patrol and Coast Guard Auxiliary located in harbor.
 - Orleans County reports 38 charter fishing boats generating ~\$310,000 in net annual income.

Quantity (cu yd) 15,000

Anticipated Frequency (yr) 6

Sediment Condition

Testing Date 2003

Sediment Quality

Class III

50% sand + 50% silt in channel

50% silt and 50% clay in harbor

Federal Navigation Project Yes

Construction Completed

Federal Project Authorized Depth 10 ft channel, 8 ft in harbor

Designated Harbor of Refuge Yes

Previously Permitted Dredging Yes

Permittee US Army Corps of Engineers

DEC Permit ID. 8-3424-00056/00006

Permit Minimum Depth 10 ft in channel, 8 ft in harbor

DEC Permit Date 4/29/2004

Permit Bottom Elevation 233.3 ft & 235.3 ft (IGLD-85)

DEC Expiration Date 9/1/2009

Permit Dredge Amount (Cubic Yards) 10,000

COE Appl. No.

Disposal open lake disposal

COE Permit Date

COE Expiration Date

Restrictive Dates late February - July & September - November (SCFWH form), Permit: June 15 - September 1 only allowed

NYS Designated Significant Habitat? Yes. Designated from mouth upstream approximately six miles to Waterport Dam.

Notes

- Sources
- US Army Corps of Engineers Great Lakes Navigation System Fact Sheets (2012)
 - NYS Department of State Coastal Fish & Wildlife Habitat Rating Form
 - NYS DOS Oak Orchard Creek Significant Coastal Fish and Wildlife Habitat Rating Form (1987)
 - Orleans County Planning Department

Channel/Water Body Designation **Sandy Creek**

Latitude 43.352
Longitude 77.891
County Monroe
Town, City or Village Town of Hamlin

Total Slips 287
Total Launch Lanes 2
Total Charter Boats 14

Approximate Dimensions

Type of Use

- Recreational Boating
- Fishing Access to Lake
- Sailboat Use ~40%

Economic Benefit \$2,416,298 + 29 jobs

Maintained Private
By Brockport Yacht Club

Critical Desired Depth 7 feet

Critical Desired Bottom Elevation 237 feet (IGLD-85)

Existing Min Depth 4.2 ft on 10/9/12

Existing Max Bottom Elevation 239.7 ft (IGLD-85)

Critical Requirements

Corps Calculated Backlog in cu yd

- Notes on Use**
- Slips are for small - medium size vessels
 - State boat launch has 50 parking spaces
 - Sailboats generally north of parkway bridge
 - Clean Vessel Study air photo count = 138
 - DEC/Sea Grant guide lists only 166 slips, including only 50 at BYC



Quantity (cu yd) 1,200

Anticipated Frequency (yr) 5

Sediment Condition

- hard packed sands

Testing Date 4/88

Sediment Quality

- clean by direct testing, grain size and chemical tests done in 1988
- Analysis indicates 97.4% sand, 2.6% fines
- Tests for PCB's, Hg, and pesticides/herbicides all had none detected.

Class II

Federal Navigation Project No

Construction Completed

Federal Project Authorized Depth

Designated Harbor of Refuge No

Previously Permitted Dredging Yes

Permittee Brockport Yacht Club

DEC Permit ID. 8-2630-00050/00022

Permit Minimum Depth

DEC Permit Date 7/18/2007

Permit Bottom Elevation

DEC Expiration Date 10/31/2009

Permit Dredge Amount (Cubic Yards) 1,791

COE Appl. No. 2006-01701

Disposal Beach nourishment for area located east of channel east jetty.

COE Permit Date 3/6/2008

COE Expiration Date 3/6/2016

Restrictive Dates late February - July & September - November (SCFWH form)

NYS Designated Significant Habitat? Yes

Notes

- Brockport Yacht Club previously dredged channel and marina basin during 1999-2000.
- BYC has a current permit to dredge its basin only. No current permit from DEC for the channel.

- Sources**
- Monroe County Waterfront Recreation Opportunities Study (1990)
 - NYS DEC/Sea Grant Marina Guide (1997)
 - Sandy Creek Marina DEIS, NYS DEC as Lead Agency (1994)
 - NYS DEC Permit 8-2630-00050/00022 (2007)
 - NYS DOS Sandy Creek Significant Coastal Fish and Wildlife Habitat Rating Form (1987)

Channel/Water Body Designation **Braddock Bay**

Latitude 43.314

Longitude 77.712

County Monroe

Town, City or Village Town of Greece

Total Slips 528

Total Launch Lanes 4

Total Charter Boats

Approximate Dimensions 1,200 ft long by 100 feet wide

Type of Use

- Recreational Boating
- Lake fishing access

Economic Benefit \$4,531,948 + 54 jobs

Maintained Private

By Braddock Bay Marina, Inc.

Critical Desired Depth 4.5 ft

Critical Desired Bottom Elevation 239.5 ft

Existing Min Depth

Existing Max Bottom Elevation

Critical Requirements

- maintenance dredging for small vessel access
- channel is unprotected and subject to annual shoaling
- Has current permit.

Corps Calculated Backlog in cu yd

- Notes on Use**
- Small - Medium vessels only
 - Sailboat use ~18%
 - Clean Vessel Study air photo count = 159



Quantity (cu yd) 5,000

Anticipated Frequency (yr) 1

Sediment Condition

Testing Date 3/14/96 & 5/90

- sand, trace of silt/clay
- Grain size analysis (1996) indicates 99.7% sand, 0.3% fines
- Six samples in 1990 indicate 89-97% sand, 0-7.6% gravel, 1.8-3.7% fines

Sediment Quality

Class I

- apparently clean based upon grain size analysis and source

Federal Navigation Project No

Construction Completed

Federal Project Authorized Depth

Designated Harbor of Refuge No

Previously Permitted Dredging Yes

Permittee Steve Gibbs, Braddock Bay Marina, Inc.

DEC Permit ID. 8-2628-00208/00007

Permit Minimum Depth -4.5 ft (MLW)

DEC Permit Date 8/26/2011

Permit Bottom Elevation 238.8

DEC Expiration Date 12/31/2015

Permit Dredge Amount (Cubic Yards) up to 15,000 (COE - 15,500)

COE Appl. No. 2007-00144

Disposal Beach nourishment for beach area approximately 1,000 feet east of channel

COE Permit Date 10/22/2009

COE Expiration Date 10/22/2019

Restrictive Dates late February - July & September - November (SCFWH form)

NYS Designated Significant Habitat? Yes

Notes

- Braddock Bay Marina owner purchased an 10 inch IMS4010 cutter head suction dredge and is using to dredge channel in 2012
- Dredging with this equipment previously performed by the Braddock Bay Marina under contract to the Town.
- Dredging with landside dewatering conducted in 1999.

- Sources**
- NYS DEC/Sea Grant Marina Guide (1997)
 - Monroe County Waterfront Recreation Opportunities Study (1990)
 - NYS DEC Permit 8-2628-00208/00007 (2011)
 - NYS DOS Braddock Bay and Salmon Creek Significant Coastal Fish and Wildlife Habitat Rating Form (1987)

Channel/Water Body Designation **Long Pond Outlet**

Latitude 43.290

Longitude 77.672

County Monroe

Town, City or Village Town of Greece

Total Slips 20

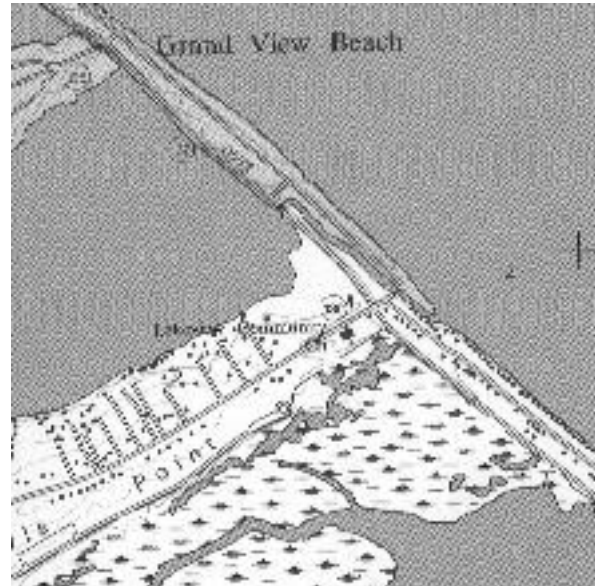
Total Launch Lanes 0

Total Charter Boats

Approximate Dimensions 100 ft long by 35 feet wide

Type of Use

- Small power boats for recreation and lake access



Economic Benefit \$130,717 + 2 jobs

Maintained Private

By Long Pond Marine, Inc. (previous dredging)

Critical Desired Depth 3 ft

Critical Desired Bottom Elevation

Existing Min Depth

Existing Max Bottom Elevation

Critical Requirements



Corps Calculated Backlog in cu yd

Notes on Use - Recreational boating
 - Lake access for small (< 20 ft) power boats, primarily docked at residences on Long Pond

Quantity (cu yd) 200

Anticipated Frequency (yr) 2

Sediment Condition

Testing Date 3/14/96

- Sands from littoral drift along lake
- Classed as Sand, trace of gravel, trace of silt/clay
- Grain size analysis indicates 3.9% gravel, 95.9% sand, 0.2% fines

Sediment Quality

Class I

- Assumed clean by source and physical character

Federal Navigation Project No

Construction Completed

Federal Project Authorized Depth

Designated Harbor of Refuge No

Previously Permitted Dredging Yes

Permittee Long Pond Marina, Inc.

DEC Permit ID. 8-2628-00324/00003

Permit Minimum Depth - 2 ft (LWD)

DEC Permit Date 8/27/1999

Permit Bottom Elevation 241.3 ft (IGLD-85)

DEC Expiration Date 11/31/2004

Permit Dredge Amount (Cubic Yards) 500

COE Appl. No. 0095-48313

Disposal Above OHW on adjacent beach to the east.

COE Permit Date 1999

COE Expiration Date 2004

Restrictive Dates

NYS Designated Significant Habitat? No

Notes

- Previous dredging permitted under Regional Permit No. 81-000-1 from COE.
- Drawings for DEC permit indicate dredging needed for an approximately 31 ft x 50 ft area where the channel turns northeast and enters the Lake
- No record that the dredging was ever performed.

Sources - NYS DEC Permit 8-2628-00324/00003

Channel/Water Body Designation **Genesee River**

Latitude 43.258
Longitude 77.603
County Monroe
Town, City or Village City of Rochester

Total Slips 1034
Total Launch Lanes 5
Total Charter Boats 26

Approximate Dimensions

Type of Use

- Recreational Boating
- Lake fishing access
- Limited commercial port with ~45 trips per year by bulk carrier (cement) with 97,000 tons in 2008

Economic Benefit \$9,961,798 + 141 jobs rec boating + \$3 million in commercial shipping

Maintained Public

- By**
- Army Corps of Engineers
 - Last dredged in 2009 with 160,000 cubic yards removed.
 - Joint public/private partnership with commercial shipper conducting dredging in 2012-13.

Critical Desired Depth 21 ft in channel

Critical Desired Bottom Elevation 222.3 ft (IGLD-85)

Existing Min Depth

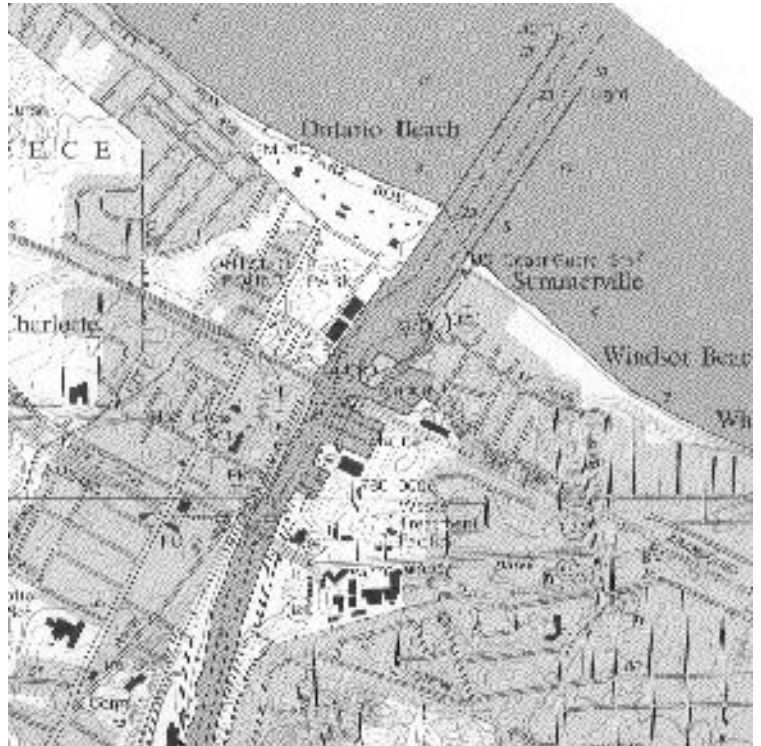
Existing Max Bottom Elevation

Critical Requirements

- Maintenance dredging to support commercial shipping use
- Approximately 1,000 ft of east pier severely deteriorated and in need of repair

Corps Calculated Backlog in cu yd

- Notes on Use**
- Small, Medium & Large Vessels
 - Sailboat use ~48%, including large sailboats
 - Clean Vessel Study air photo count = 711
 - Light loading losses between \$169,000 and \$394,000 annually reported for current conditions.
 - COE lists 26 charter fishing boats.



Quantity (cu yd) 150,000

Anticipated Frequency (yr) 2

Sediment Condition

- Silt with some sand and organics

Testing Date December 1994

Sediment Quality

- Some metals and nutrients

Class IV

Federal Navigation Project Yes

Construction Completed

Federal Project Authorized Depth 21 ft

Designated Harbor of Refuge Yes

Previously Permitted Dredging Dredged in 1999. Current permit application in process.

Permittee Army Corps of Engineers

DEC Permit ID. 8-2614-00604/00005

Permit Minimum Depth

DEC Permit Date 1/14/2009

Permit Bottom Elevation

DEC Expiration Date 12/31/2009

Permit Dredge Amount (Cubic Yards) 300,000

COE Appl. No.

Disposal Rochester area COE open lake disposal site.

COE Permit Date

COE Expiration Date

Restrictive Dates early April - Mid May & Mid August - Mid November (SCFWH Form)

NYS Designated Significant Habitat? Yes

Notes

- The Genesee River Harbor has been maintained periodically by the Army Corps of Engineers at a depth suited for the commercial traffic utilizing the port. These depths are far in excess of those necessary for recreational vessel use and no additional dredging of the channel is needed for recreational use.

- Sources**
- NYS DEC/Sea Grant Marina Guide (1997)
 - Monroe County Waterfront Recreation Opportunities Study (1990)
 - US Army Corps of Engineers Great Lakes Navigation System Fact Sheets (2012)
 - NYS DEC Permit 8-2614-00604/00005 (2009)
 - NYS DOS Genesee River Significant Coastal Fish and Wildlife Habitat Rating Form (1987)
 - Monroe County Planning Department

Channel/Water Body Designation **Irondequoit Bay**

Latitude 43.236
Longitude 77.534
County Monroe
Town, City or Village Towns of Irondequoit and Webster
Total Slips 1670
Total Launch Lanes 6
Total Charter Boats 5

Approximate Dimensions

Type of Use
 - Recreational boating
 - Lake fishing access

Economic Benefit \$12,892,632 + 158 jobs

Maintained Public
By Army Corps of Engineers
 - Last dredged in 2008 with 21,000 cubic yards removed.

Critical Desired Depth 9 ft

Critical Desired Bottom Elevation 234.3 ft

Existing Min Depth +1.0 ft on 10/4/12, 1/2 channel < 4.0 feet

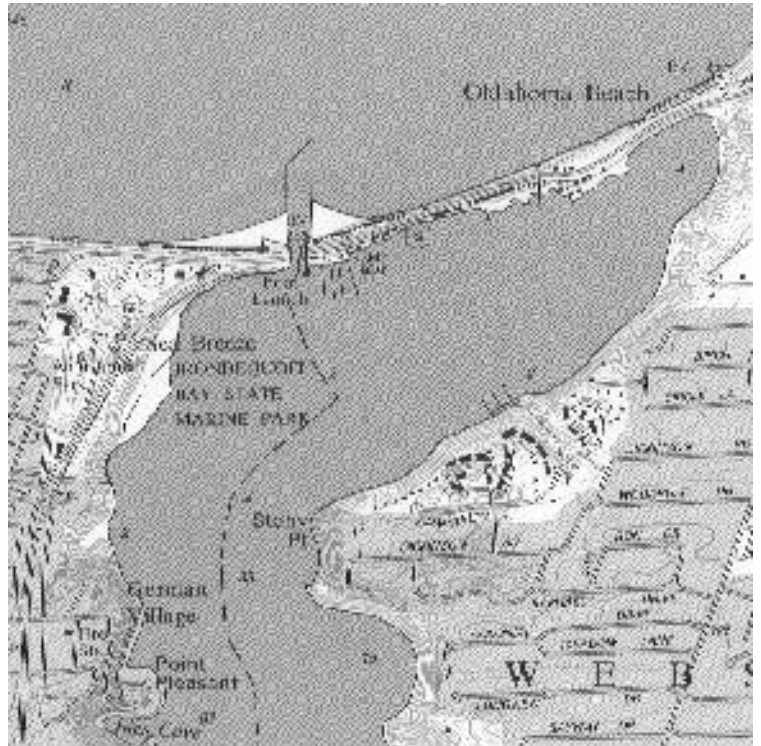
Existing Max Bottom Elevation 245.0 ft (IGLD-85)

Critical Requirements

- Maintenance dredging and associated sediment testing

Corps Calculated Backlog in cu yd 9,565 cut design + 11,107 overdraft

Notes on Use
 - Small, medium & large vessels
 - Sailboat use ~18%, including large sailboats
 - Clean Vessel Study air photo count = 886
 - Sea Grant Guide left out the Bounty Harbor and Rod and Gun Club - its slip count = 634, Use Monroe County WROS count instead
 - COE lists 8 charter fishing boats generating \$65,000 in net annual income.



Quantity (cu yd) 15,000

Anticipated Frequency (yr) 6

Sediment Condition

Testing Date 1990

- Channel sediments thought to be sands from littoral drift along lake shore
- Bay channel sediments are sand, silts and organics in various percentages. More sand to the north and less to the south in Bay.

Sediment Quality

Class III

- Entrance channel unpolluted and unrestricted for open lake disposal
- Bay channel - low to moderately polluted silts, clays and sands
- Sediments from both stated to be physically compatible for beach nourishment uses

Federal Navigation Project Yes

Construction Completed 1986

Federal Project Authorized Depth 9 ft in channel, 8 ft in harbor

Designated Harbor of Refuge Yes

Previously Permitted Dredging NYS DEC Permit issued in 2008

Permittee US Army Corps of Engineers O & M

DEC Permit ID. 8-2699-00001/00005

Permit Minimum Depth -9 ft (LWD)

DEC Permit Date 4/1/2008

Permit Bottom Elevation 234.3 ft (IGLD-85)

DEC Expiration Date 12/31/2008

Permit Dredge Amount (Cubic Yards) 30,000

COE Appl. No.

Disposal Discharge to nearshore area located 2,400 ft east of the harbor's East Jetty. to east of inlet and open lake disposal

COE Permit Date

COE Expiration Date

Restrictive Dates work to be performed on between July 1-September 1 (permit condition)

NYS Designated Significant Habitat? Yes

Notes

- Maintenance dredging of access channel and main Bay channel have been done by the ACE. Originally done as part of the project construction in 1985-86, again in 1988 (5,500 cu yd), in 1993 (10k-15k from channel and 3k-5k in Bay channel), in 2000 and last done in 2008..
- Extensive physical and chemical analyses of sediments performed in 1990.
- Harbor supports the operation of 5 charter fishing boats.

- Sources**
- NYS DEC/Sea Grant Marina Guide (1997)
 - Monroe County Waterfront Recreation Opportunities Study (1990)
 - US ACE- Phase I Design and EIS - 1979-82
 - US ACE - FONSI and EA for Maintenance Dredging, Oct. 1992
 - US Army Corps of Engineers Great Lakes Navigation System Fact Sheets (2012)
 - NYS DEC Permit 8-2699-00001/00005
 - NYS DOS Irondequoit Bay and Creek Significant Coastal Fish and Wildlife Habitat Rating Form (1987)
 - Monroe County Planning Department

Channel/Water Body Designation **Bear Creek Harbor**

Latitude 43.278

Longitude 77.276

County Wayne

Town, City or Village Town of Ontario

Total Slips 4

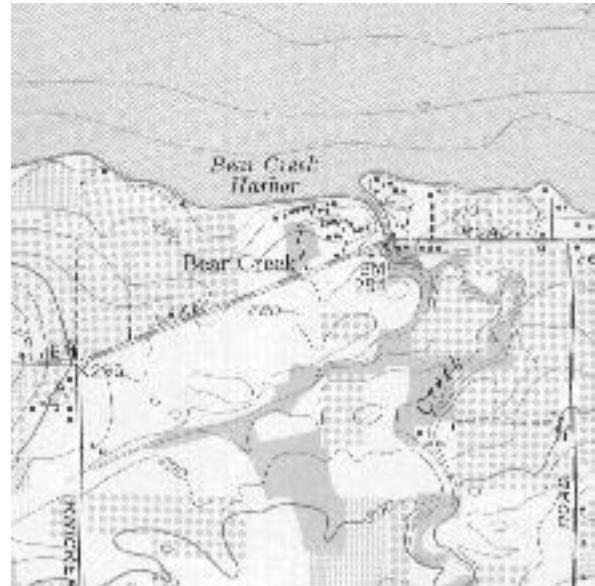
Total Launch Lanes 3

Total Charter Boats

Approximate Dimensions ~650 ft long by 60 ft wide

Type of Use

- Recreational boating
- Lake fishing access



Economic Benefit \$836,912 + 11 jobs

Maintained Public

- By** Town of Ontario
- Harbor created and maintained in the past for construction and maintenance activities for the Ginna nuclear power plant.

Critical Desired Depth 3.5 ft for rec boating

Critical Desired Bottom Elevation 239.8 ft (IGLD-85)

Existing Min Depth 3.0 feet (9/21/2012)

Existing Max Bottom Elevation 241.4 ft (IGLD-85)

Critical Requirements



Corps Calculated Backlog in cu yd

- Notes on Use**
- Boat launch owned and operated by the Town of Ontario for residents' use.
 - No trailer parking at the launch. Parking available at Town Highway facility to the west on Lake Road
 - Small car-top launch also present

Quantity (cu yd) 6,000

Anticipated Frequency (yr) 10

Sediment Condition

Testing Date 1993

- Brown sand, some gravel, little silt by grain size analysis.
- Analysis indicates 26.4% gravel, 62.4% sand, 11.2% fines

Sediment Quality

Class II

- Assumed clean by grain size analysis and source.
- Radionuclide testing done by State during dredging in 1995

Federal Navigation Project No

Construction Completed

Federal Project Authorized Depth

Designated Harbor of Refuge No

Previously Permitted Dredging Yes

Permittee Town of Ontario

DEC Permit ID. 8-5434-00042/00007 - 00009

DEC Permit Date 5/19/2009

DEC Expiration Date 12/31/2011

COE Appl. No. 2009-00327

COE Permit Date 4/10/2009

COE Expiration Date 4/10/2011

Permit Minimum Depth

Permit Bottom Elevation 240.0 ft (IGLD-85) (COE 236-239)

Permit Dredge Amount (Cubic Yards) 585

Disposal - Material transported to Town Wastewater facility for use in noise attenuation berms.

Restrictive Dates March 15 - June 30 (permit condition)

NYS Designated Significant Habitat? No

Notes

- No record that the dredging permitted in 2009 for recreational boating access was completed.
- Dredged to 8 feet to launch in 1995-1996.
- Inlet protected by armor stone on both the east and west sides.
- 1995-96 dredging done by CP Ward by excavator on barge.

Sources - NYS DEC Permit 8-5434-00042/00007

Channel/Water Body Designation **Pultneyville**

Latitude 43.283
Longitude 77.185
County Wayne
Town, City or Village Village of Pultneyville, Town of Williamson
Total Slips 170
Total Launch Lanes 1
Total Charter Boats 10



Approximate Dimensions

Type of Use
 - Recreational boating
 - Lake fishing access
 - Sailing

Economic Benefit \$2,093,833 + 33 jobs

Maintained Private
By Pultneyville Marina
 - previously maintained by the Pultneyville Yacht Club

Critical Desired Depth 5 ft



Critical Desired Bottom Elevation 238.3 ft (IGLD-85)
Existing Min Depth 5 ft (7/3/2012)
Existing Max Bottom Elevation 240.6 ft (IGLD-85)

Critical Requirements

Corps Calculated Backlog in cu yd

Notes on Use
 - Primarily small & medium vessels
 - Fishing charter boats up to ~28 ft.
 - Sailboat use ~57%
 - Clean Vessel Study air photo count = 259
 - Channel and harbor maintained in the past by the Pultneyville Yacht Club
 - Last issued permit to the Pultneyville Marina

Quantity (cu yd) 500

Anticipated Frequency (yr) 2

Sediment Condition

Testing Date

- Reportedly sands from littoral drift in main access channel.
- More silts and fines in material further upstream near the marina.

Sediment Quality

Class II

Federal Navigation Project No

Construction Completed

Federal Project Authorized Depth

Designated Harbor of Refuge No

Previously Permitted Dredging Yes

Permittee Pultneyville Marina

DEC Permit ID. 8-5446-00025/00003-00004

Permit Minimum Depth

DEC Permit Date 6/30/2004

Permit Bottom Elevation

DEC Expiration Date 10/31/2009

Permit Dredge Amount (Cubic Yards) 525

COE Appl. No. 2004-01403

Disposal - Upland at DEC approved Cornwall Trust disposal site..

COE Permit Date 7/22/2004

COE Expiration Date 7/22/2007

Restrictive Dates

NYS Designated Significant Habitat? No

Notes

- Main channel maintained as needed by the Pultneyville Yacht Club

- Sources**
- NYS DEC/Sea Grant Marina Guide (1997)
 - Monroe County Waterfront Recreation Opportunities Study (1990)
 - NYS DEC Permit 8-5446-00025/00003 (2004)

Channel/Water Body Designation **Great Sodus Bay**

Latitude 43.274
Longitude 76.973
County Wayne
Town, City or Village Sodus Point (V), Sodus and Huron (T)
Total Slips 802
Total Launch Lanes 4
Total Charter Boats 45

Approximate Dimensions

Type of Use
 - Recreational boating
 - Lake access for fishing



Economic Benefit \$9,528,946 + 152 jobs

Maintained Public

By Corps of Engineers
 - Last dredged in 2004 with 42,500 cubic yards removed.
 - Approximately 20,000 cubic yards of dredging needed as of 2012

Critical Desired Depth 10 feet

Critical Desired Bottom Elevation 233.3 ft (IGLD-85)

Existing Min Depth 9 ft - 11.8 ft (7/3/2012)

Existing Max Bottom Elevation 236.6 - 233.8 ft (IGLD-85)



Critical Requirements

- maintenance dredging
- repair of east breakwater and west pier

Corps Calculated Backlog in cu yd 1,000 cut design + 5,019 overdraft

Notes on Use
 - COE describes as a Critical Harbor of Refuge
 - Wayne County Sheriff Marine Patrol and Coast Guard Station located in harbor
 - Small, medium & large vessels
 - Large sailboats
 - Sailboat use ~20%
 - Clean Vessel Study air photo count = 1082

Quantity (cu yd) 15,000

Anticipated Frequency (yr) 6

Sediment Condition

Testing Date

Sediment Quality

Class III

Federal Navigation Project Yes

Construction Completed

Federal Project Authorized Depth 20 ft

Designated Harbor of Refuge Yes

Previously Permitted Dredging 2004 permit issued

Permittee Corps of Engineers

DEC Permit ID. 8-5442-00300/00001

Permit Minimum Depth -14 ft (LWD) + 1 ft over

DEC Permit Date 2004

Permit Bottom Elevation 238.3 ft (IGLD-85)

DEC Expiration Date 2009

Permit Dredge Amount (Cubic Yards) 60,000

COE Appl. No.

Disposal Open lake disposal site approximately 1.8 miles north-northeast of channel entrance.

COE Permit Date

COE Expiration Date

Restrictive Dates Work to be performed between July 1 and October 1 (permit condition)

NYS Designated Significant Habitat? Yes

Notes

- COE lists 5 charter fishing boats generating approximately \$41,000 in net annual income.

- Sources**
- NYS DEC/Sea Grant Marina Guide (1997)
 - US Army Corps of Engineers Great Lakes Navigation System Fact Sheets (2012)
 - NYS DEC Permit 8-5442-00300/00001
 - NYS DOS Sodus Bay Significant Coastal Fish and Wildlife Habitat Rating Form (1987)

Channel/Water Body Designation **East Bay**

Latitude 43.295
Longitude 76.892
County Wayne
Town, City or Village Town of Huron

Total Slips 32
Total Launch Lanes 2
Total Charter Boats

Approximate Dimensions

Type of Use
- recreational boating
- fishing
- lake access

Economic Benefit \$749,659 + 9 jobs

Maintained Private

By Wayne East Bay Association, Inc.
- Channel is opened each season with material stored on the adjacent bar. The outlet is refilled with the stored material each fall.

Critical Desired Depth 4 ft

Critical Desired Bottom Elevation 239.3 ft (IGLD-85)

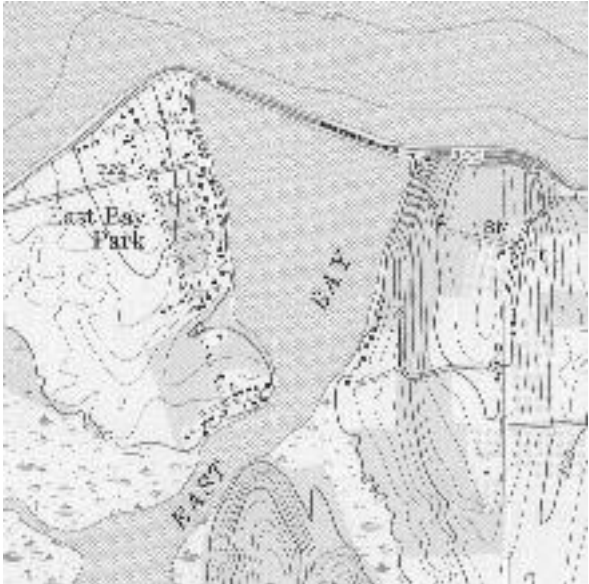
Existing Min Depth 4 ft (7/3/2012)

Existing Max Bottom Elevation 241.6 ft (IGLD-85)

Critical Requirements

Corps Calculated Backlog in cu yd

Notes on Use - used only for small crafts (est. < 22 ft)



Quantity (cu yd) 500

Anticipated Frequency (yr) 1

Sediment Condition

- Reported as sand, gravel and cobbles

Testing Date

Sediment Quality

- Assumed clean by physical characteristics and apparent source.

Class II

Federal Navigation Project No

Construction Completed

Federal Project Authorized Depth

Designated Harbor of Refuge No

Previously Permitted Dredging Yes

Permittee Wayne East Bay Improvement Association, Inc.

DEC Permit ID. 8-5426-0028/00008-9

Permit Minimum Depth

DEC Permit Date 4/19/2010

Permit Bottom Elevation

DEC Expiration Date 12/31/2014

Permit Dredge Amount (Cubic Yards) 400-600

COE Appl. No. 1993-99520

Disposal stored next to channel - redeposited in fall

COE Permit Date 8/6/2010

COE Expiration Date 8/6/2013

Restrictive Dates Dredge after May 15, refill by October 15. (permit condition)

NYS Designated Significant Habitat? Yes

Notes

- Existing permit indicates channel is opened seasonally only - cleared out in May and filled back in September
- Channel dimensions listed as 50 ft wide by 120 ft long. Assumed dredged to 4 ft minimum depth as per previous permits.
- Channel must be refilled to elevation 247.3 ft (IGLD-85) in fall.
- Installation of steel crib jetty filled with dredge spoil permitted in 1986 (DEC No. 80-85-0649)

- Sources**
- NYS DEC/Sea Grant Marina Guide (1997)
 - NYS DEC Permit 8-5426-00010/00008-9
 - NYS DOS East Bay Significant Coastal Fish and Wildlife Habitat Rating Form (1987)

Channel/Water Body Designation **Port Bay**

Latitude 43.305

Longitude 76.838

County Wayne

Town, City or Village Towns of Huron and Wolcott

Total Slips 382

Total Launch Lanes 2

Total Charter Boats 10

Approximate Dimensions 60 ft wide by 530 ft long

Type of Use

- Recreational boating
- Fishing access to Lake
- Little sailing, mostly transient

Economic Benefit \$4,290,199 + 60 jobs

Maintained Private

- By** Port Bay Improvement Association
- Dredged annually with material partially used for road to outlet area and partially deposited in Lake littoral zone to the east of outlet.

Critical Desired Depth -6.5 ft LWD

Critical Desired Bottom Elevation 236.8 ft (IGLD-85)

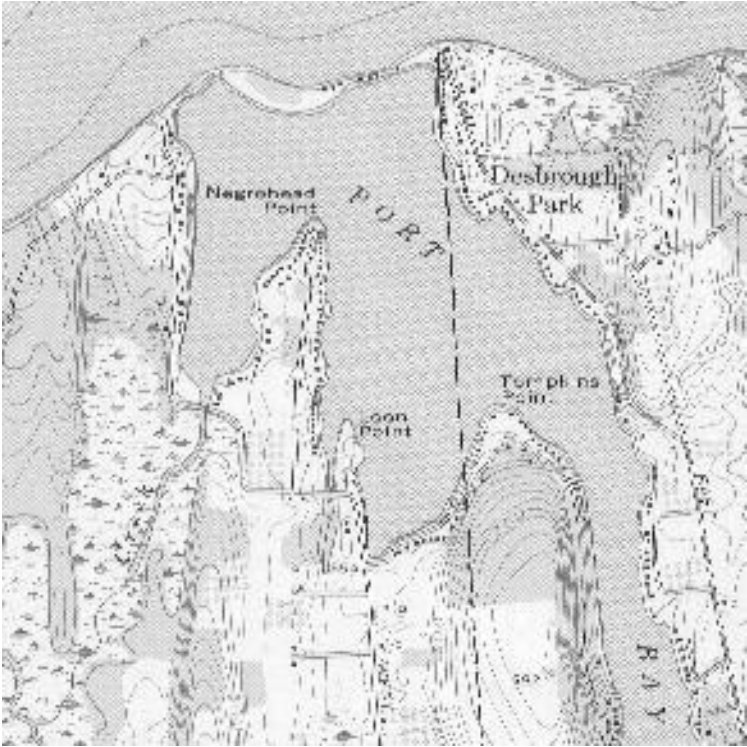
Existing Min Depth 7 ft - 5 ft (7/3/2012)

Existing Max Bottom Elevation 238.6 - 240.6 ft (IGLD-85)

Critical Requirements

Corps Calculated Backlog in cu yd

Notes on Use



Quantity (cu yd) 1,000

Anticipated Frequency (yr) 1

Sediment Condition

Testing Date none

- Reported to be coarse sand, gravel and loose stone with occasional pieces up to the size of basketballs

Sediment Quality

Class II

- Assumed clean by physical characteristics and source.
 - COE did not require testing due to nature of material present.

Federal Navigation Project No

Construction Completed

Federal Project Authorized Depth

Designated Harbor of Refuge No

Previously Permitted Dredging Yes

Permittee Port Bay Improvement Association

DEC Permit ID. 8-5426-00010/00003 & 00005

Permit Minimum Depth -6 ft (LWD)

DEC Permit Date 4/16/2008

Permit Bottom Elevation 236.8 ft (IGLD-85)

DEC Expiration Date 12/31/2013

Permit Dredge Amount (Cubic Yards) 1,200

COE Appl. No. 1996-7400001

Disposal - Stockpiled adjacent to outlet for road use and deposited into lake littoral zone east of outlet.

COE Permit Date 3/17/2011

COE Expiration Date 6/18/2018

Restrictive Dates March - July & September - November (SCFWH Form), none in permit

NYS Designated Significant Habitat? Yes

Notes

- Annual dredging done with a drag line on a crane which is stored at the outlet.
 - Dredged material apparently stockpiled adjacent to the outlet on the west side.

Sources - NYS DEC/Sea Grant Marina Guide (1997)
 - NYS DEC Permit 8-5426-00010/00003 & 00005
 - NYS DOS Port Bay Significant Coastal Fish and Wildlife Habitat Rating Form (1987)

Channel/Water Body Designation **Blind Sodus Bay**

Latitude 43.344

Longitude 76.721

County Wayne

Town, City or Village Town of Wolcott

Total Slips 99

Total Launch Lanes 1

Total Charter Boats

Approximate Dimensions 30 ft wide by 50 ft long

Type of Use

- recreational boating
- fishing
- lake access

Economic Benefit \$917,304 + 11 jobs

Maintained Private

- By** Blind Sodus Bay Improvement Association
- Annual dredging of approximately 200 cubic yards to clear material brought into channel during winter.

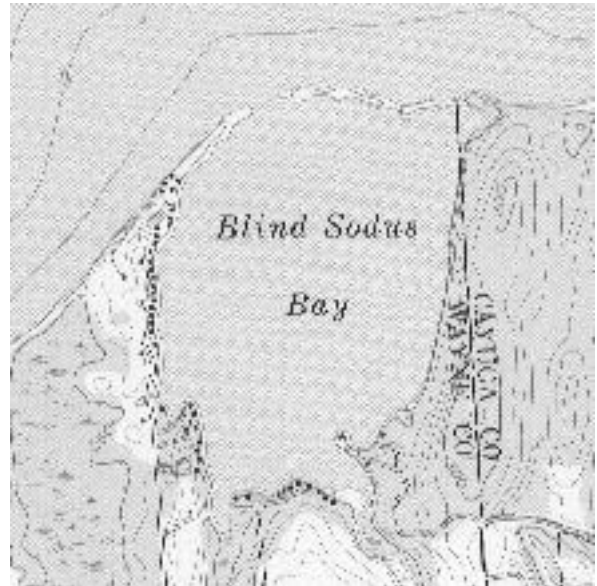
Critical Desired Depth - 4 ft MLW

Critical Desired Bottom Elevation 239.3 ft (IGLD-85)

Existing Min Depth 4.5 ft (7/11/12)

Existing Max Bottom Elevation 240.9 ft (IGLD-85)

Critical Requirements



Corps Calculated Backlog in cu yd

- Notes on Use**
- Only 1 marina, Holiday Harbor Resort, present
 - Additional private cottages

Quantity (cu yd) 300

Anticipated Frequency (yr) 1

Sediment Condition

Assumed clean sands, gravel and stone.

Testing Date

Sediment Quality

Assumed clean based upon source.

Class II

Federal Navigation Project No

Construction Completed

Federal Project Authorized Depth

Designated Harbor of Refuge No

Previously Permitted Dredging Yes

Permittee Blind Sodus Bay Improvement Association

DEC Permit ID. 8-5448-00034/00008

Permit Minimum Depth -4 ft. MLW

DEC Permit Date 8/11/2011

Permit Bottom Elevation 239.3 ft (IGLD-85)

DEC Expiration Date 3/3/2014

Permit Dredge Amount (Cubic Yards)

COE Appl. No. 1996-9740036

Disposal - Stockpiled adjacent to outlet on east and then taken for fill to trailer park/campground on east side of barrier bar.

COE Permit Date 12/2/2008

COE Expiration Date 3/3/2014

Restrictive Dates

NYS Designated Significant Habitat?

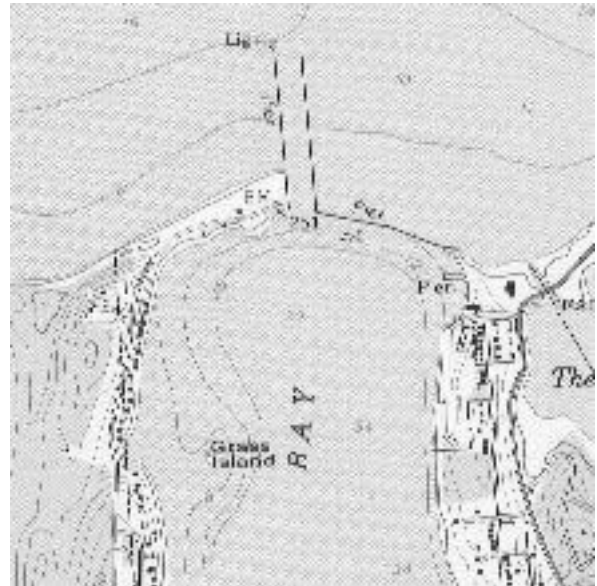
Notes

- Dredging to open channel usually done in the last week of May with further maintenance dredging done just before July 4th and Labor Day
- Application materials indicate that seasonal dredging of this channel has been done for decades.

Sources - NYS DEC/Sea Grant Marina Guide (1997)
 - NYS DEC Permit 8-5448-00034/00008

Channel/Water Body Designation Little Sodus Bay

Latitude 43.734
Longitude 76.708
County Cayuga
Town, City or Village Town of Sterling, Village of Fairhaven
Total Slips 550
Total Launch Lanes 8
Total Charter Boats 12



Approximate Dimensions

Type of Use

- Recreational boating
- Lake access for fishing
- Used by large power and sailboats

Economic Benefit \$6,611,742 + 90 jobs

Maintained Public

By Authorized Federal project. Last dredged by COE in 2005 with 12,000 cubic yards removed. Permit extended in 2009 for five years, but dredging not done due to insufficient funds.

Critical Desired Depth 8 feet

Critical Desired Bottom Elevation 236 ft (IGLD-85)

Existing Min Depth 6.6 ft (7/11/12)

Existing Max Bottom Elevation 238.8 ft (IGLD-85)

Critical Requirements

- Maintenance Dredging of Channel
- Repair of Approximately 50 feet of separated sheet piling on west pier



Corps Calculated Backlog in cu yd 16,601 cut design + 10,026 overdraft

- Notes on Use**
- Small, medium & large vessels reported up to 40 ft.
 - Sailboat use ~26%
 - Clean Vessel Study air photo count = 228
 - Current maintenance depth = 8 feet

Quantity (cu yd) 15,000

Anticipated Frequency (yr) 6

Sediment Condition

Primarily sands.

Testing Date 2002

Sediment Quality

No contamination. Materials suitable for nearshore or open lake disposal.

Class III

Federal Navigation Project Yes

Construction Completed 1906

Federal Project Authorized Depth 15.5 ft

Designated Harbor of Refuge Yes

Previously Permitted Dredging 2005 extended in 2009 to 3/15/2014

Permittee Army Corps of Engineers

DEC Permit ID. 7-0556-00067/00005

Permit Minimum Depth

DEC Permit Date 4/9/2009

Permit Bottom Elevation 243.3 ft (IGLD-85)

DEC Expiration Date 3/15/2014

Permit Dredge Amount (Cubic Yards)

COE Appl. No.

Disposal Nearshore disposal east of channel jetty and/or open lake disposal site.

COE Permit Date

COE Expiration Date

Restrictive Dates Work allowed between June 1 and March 15. (permit condition)

NYS Designated Significant Habitat? No. Eastern tributary Sterling Creek is designated.

Notes

- Review of Army Corps of Engineer files indicates that the outlet jetties and channel were completed in 1906.
- COE indicates that the channel was last dredged in 2005 with 12,000 cubic yards removed.
- COE requested extension of permit in 2009 to allow up to 30,000 cubic yards of maintenance dredging over a five year period.

- Sources**
- NYS DEC/Sea Grant Marina Guide (1997)
 - US Army Corps of Engineers Great Lakes Navigation System Database (2012)
 - NYS DOS Sterling Creek and Wetlands Significant Coastal Fish and Wildlife Habitat Rating Form (1987)

Channel/Water Body Designation **Oswego Harbor**

Latitude 43.466

Longitude 76.514

County Oswego

Town, City or Village City of Oswego

Total Slips 536

Total Launch Lanes 6

Total Charter Boats 29

Approximate Dimensions 3,000 ft of channel, 1.94 miles of breakwater

Type of Use

- Small, medium and large recreational vessels.
- Significant charter fishing, launch and sailboat use
- Commercial shipping utilizing Port of Oswego

Economic Benefit \$7,190,951 + 111 jobs rec boating plus \$15 million in commercial shipping

Maintained Public

- By** Army Corps of Engineers
- Harbor area last dredged in 2008 with 71,000 cubic yards removed
 - Both channel and 280 acre outer harbor dredged by the COE

Critical Desired Depth 21 ft

Critical Desired Bottom Elevation 222.3 ft (IGLD-85)

Existing Min Depth

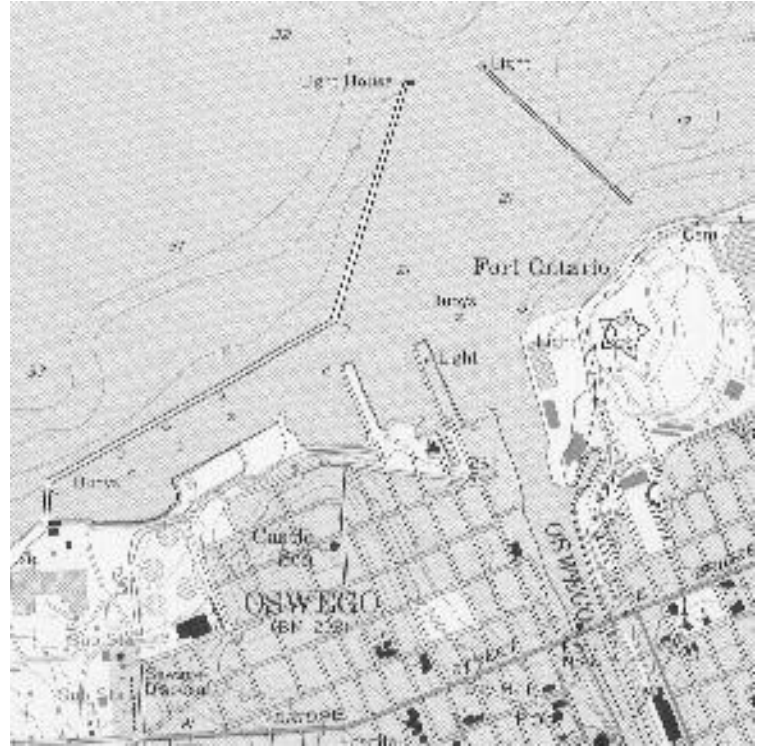
Existing Max Bottom Elevation

Critical Requirements

- Maintenance dredging of harbor and channel
- West breakwater repairs.
- Current functional backlog in the harbor area estimated at 203,000 cubic yards

Corps Calculated Backlog in cu yd \$1,899,000 for dredging plus \$4,600,000 in breakwater repairs

- Notes on Use**
- Clean Vessel Study air photo count = 206
 - 436,000 tons of commercial materials shipped or received in 2008
 - Harbor houses US Coast Guard, Oswego County sheriff Marine Patrol, and NOAA Fisheries Lab and docks
 - Major commercial stakeholders include NRG Energy, Sprague Energy Corp., Lafarge Cement, and Essroc Cement



Quantity (cu yd) 75,000

Anticipated Frequency (yr) 5

Sediment Condition

- Clays, silts and sands depending upon location.

Testing Date 2003

Sediment Quality

- Generally acceptable for open lake disposal based upon chemical and biological testing (bioassys) of sediments from proposed dredging areas as well as samples from the Lake disposal site.

Class IV

Federal Navigation Project Yes

Construction Completed

Federal Project Authorized Depth 25 ft outer channel, 21 ft in River

Designated Harbor of Refuge Yes

Previously Permitted Dredging Last permitted in 2004 with expiration in October 2008

Permittee Corps of Engineers

DEC Permit ID. 7-3512-00033/3

Permit Minimum Depth -21 to -27 feet LWD

DEC Permit Date 4/29/2004

Permit Bottom Elevation

DEC Expiration Date 10/1/2008

Permit Dredge Amount (Cubic Yards) 72,000

COE Appl. No.

Disposal Open lake disposal site located 1.5 miles northwest of channel.

COE Permit Date

COE Expiration Date

Restrictive Dates Work must be done between July 15 and October 1 (permit condition)

NYS Designated Significant Habitat? Yes

Notes

- Sources**
- NYS DEC/Sea Grant Marina Guide (1997)
 - US Army Corps of Engineers Great Lakes Navigation System Database (2012)
 - NYS DOS Oswego River Coastal Fish & Wildlife Habitat Rating Form (1987)

Channel/Water Body Designation **Mexico Point/Little Salmon River**

Latitude 43.525
Longitude 76.257
County Oswego
Town, City or Village Town of Mexico

Total Slips 322
Total Launch Lanes 7
Total Charter Boats 17

Approximate Dimensions

Type of Use

- Recreational Boating
- Lake Access for Fishing
- Active Charter Fishing Area

Economic Benefit \$5,207,556 + 77 jobs

Maintained Public
By NYS Office of Parks and Recreation (?)

Critical Desired Depth 5.0 ft

Critical Desired Bottom Elevation 239.0 ft (IGLD-85)

Existing Min Depth 5.0 ft (7/12/12)

Existing Max Bottom Elevation 240.4 ft (IGLD-85)

Critical Requirements

Corps Calculated Backlog in cu yd

- Notes on Use**
- Note that Dowie Dale Beach Campground has separate entry to Lake and supports 83 slips and a launch.
 - Clean Vessel Study air photo count = 167
 - Some large power boats (up to ~32 ft) are docked on river including many charters



Quantity (cu yd) ??

Anticipated Frequency (yr) ?

Sediment Condition

Testing Date

Sediment Quality

Class III

Federal Navigation Project No

Construction Completed

Federal Project Authorized Depth

Designated Harbor of Refuge No

Previously Permitted Dredging Yes

Permittee NYS Office of Parks and Recreation

DEC Permit ID.

Permit Minimum Depth

DEC Permit Date

Permit Bottom Elevation

DEC Expiration Date

Permit Dredge Amount (Cubic Yards) 200

COE Appl. No. 2004-01969

Disposal - COE states disposal at an undisclosed upland site

COE Permit Date 10/8/2004

COE Expiration Date 10/8/2007

Restrictive Dates late February - July & September - November (SCFWH form)

NYS Designated Significant Habitat? Yes

Notes

- There are a number of permits dating back to the early 1970's by the NYS Office of Parks and Recreation for various shore protection, bank stabilization and channel maintenance dredging. This includes a March 1979 to dredge the outlet area to an elevation of approximately 241.3 (IGLD'85). This was apparently before the major improvements at the outlet channel and the expansion of the State launch.
- No record of any additional maintenance dredging of outlet channel after the 1979 permit.

Sources - NYS DEC/Sea Grant Marina Guide (1997)

- NYS DOS Little Salmon River Significant Coastal Fish and Wildlife Habitat Rating Form (1987)

Channel/Water Body Designation Salmon River/Port Ontario

Latitude 43.577
Longitude 76.204
County Oswego
Town, City or Village Town of Richland

Total Slips 68
Total Launch Lanes 2
Total Charter Boats 8

Approximate Dimensions

Type of Use

- Recreational boating
- Fishing access to Lake including several charter boats in the 32 foot size range
- State boat launch located to the south as part of the

Economic Benefit \$1,554,937 + 26 jobs

Maintained Public

- By**
- Operation and maintenance to be done by the Corps of Engineers with 65% of costs provided by the NYS Office of Parks
 - Operation and maintenance includes dredging and sand bypassing to the north side of outlet.

Critical Desired Depth 8 ft channel, 6 ft harbor

Critical Desired Bottom Elevation 235.3 ft, 238.0 ft (IGLD-85)

Existing Min Depth 9 ft channel, 4.5 ft harbor

Existing Max Bottom Elevation 236.4 channel, 240.9 ft harbor

Critical Requirements

- Sand bypassing
- Has not been maintained since construction completion in 1987
- Approximately 300,000 cubic yards of sand has accumulated on south side since construction

Corps Calculated Backlog in cu yd \$800,000 for accumulated sand bypassing

- Notes on Use**
- Clean Vessel Study air photo count = 54
 - COE lists 3 charter fishing boats generating approximately \$24,000 in annual net income



Quantity (cu yd) ??

Anticipated Frequency (yr) ?

Sediment Condition

Testing Date

Sediment Quality

Class III

Federal Navigation Project Yes

Construction Completed 1987

Federal Project Authorized Depth 8 ft

Designated Harbor of Refuge Yes

Previously Permitted Dredging During Project Construction

Permittee

DEC Permit ID.

Permit Minimum Depth

DEC Permit Date

Permit Bottom Elevation

DEC Expiration Date

Permit Dredge Amount (Cubic Yards)

COE Appl. No.

Disposal

COE Permit Date

COE Expiration Date

Restrictive Dates late February - July & September - November (SCFWH form with misstype stating September - May)

NYS Designated Significant Habitat? Yes

Notes

- No records found of any maintenance dredging of navigation channel to lake.
- Several permit applications found for docks and access dredging further upstream near Route 3 and Port Ontario.

- Sources**
- NYS DEC/Sea Grant Marina Guide (1997)
 - NYS DOS Salmon River Significant Coastal Fish and Wildlife Habitat Rating Form (1987)

Channel/Water Body Designation **Sandy Pond Inlet**

Latitude 43.664

Longitude 76.196

County Oswego

Town, City or Village Town of Sandy Creek

Total Slips 610

Total Launch Lanes 9

Total Charter Boats 1

Approximate Dimensions 50 ft wide by 300 feet long

Type of Use

- Seasonal recreational boating
- Lake access for fishing

Economic Benefit \$6,490,416 + 80 jobs

Maintained Private

- By** Sandy Pond Channel Maintenance Association, Inc.
- Town of Sandy Creek may contribute funding for the dredging
 - Previously maintained by Oswego County

Critical Desired Depth - 7 ft LWD

Critical Desired Bottom Elevation 236.3 ft (IGLD-85)

Existing Min Depth 4.0 ft (7/12/12)

Existing Max Bottom Elevation 241.4 ft (IGLD-85)

Critical Requirements

- Bi-Annual dredging required to keep channel functional.

Corps Calculated Backlog in cu yd

- Notes on Use**
- Primarily small to medium size vessels
 - Sailboat use limited to occasional, small vessels and those with retractable keels.
 - Clean Vessel Study air photo count = 291



Quantity (cu yd) 6,000

Anticipated Frequency (yr) 2

Sediment Condition

- Generally sand from barrier bars

Testing Date

Sediment Quality

- Assumed good given source and location

Class I

Federal Navigation Project No

Construction Completed

Federal Project Authorized Depth

Designated Harbor of Refuge No

Previously Permitted Dredging Current Permit in force.

Permittee Sandy Pond Channel Maintenance Association, Inc.

DEC Permit ID. 7-3552-00055/00023, 24, & 25

Permit Minimum Depth

DEC Permit Date 4/30/2007

Permit Bottom Elevation

DEC Expiration Date 3/30/2014

Permit Dredge Amount (Cubic Yards) 12,000

COE Appl. No. 2003-01294

Disposal - Must use hydraulic dredge with disposal in the Lake littoral zone both north and south of channel and at least 1,000 feet from the channel.

COE Permit Date 7/14/2010

COE Expiration Date 7/14/2013

Restrictive Dates Must occur between July 15 and September 1 or between November 30 to March 30 (permit condition)

NYS Designated Significant Habitat? Yes.

Notes

- Inlet channel from Lake Ontario has shoals which form on both the Lake and Pond side. These shoals are sand and are due to the dynamic nature the barrier bar processes and sand transport through the channel.
- Most upstream areas around the Pond and the creeks leading in have private docks and bulkheads fronting on small, generally manmade, channels. These channels were observed dry or nearly dry as of 12/4/98 indicating a bottom elevation of approximately 244.0 or more.
- Corps evaluated this as a project but decided not to pursue it. Believed that Port Ontario was constructed instead.
- Permit modification in 2012 to start June 10. Took out 4,000 cy in 2012.
- Requesting permit modification for mechanical dredging of outer part of channel with disposal on south spit for 2013.

- Sources**
- NYS DEC/Sea Grant Marina Guide (1997)
 - Sandy Pond Resource Management Study (1989) - slips = 315
 - NYS DEC Permit 7-3552-00055/00023
 - Department of Army Permit No. 2003-01294
 - NYS DOS North and South Sandy Ponds Significant Coastal Fish and Wildlife Habitat Rating Form (1987)
 - NYS DOS Sandy Ponds Tributaries Significant Coastal Fish and Wildlife Habitat Rating Form (1987)

Appendix B
Economic Calculations

wet slip economics

Factors	direct annual craft spending/slip	\$1,400	craft sales indirect/direct	0.7456
	direct annual trip spending/slip	\$2,200	trip sales indirect/direct	0.86
	jobs/\$10^3 craft spending	0.01109	jobs craft indirect/direct	0.64748
	jobs/\$10^3 trip spending	0.015696	jobs trip indirect/direct	0.497497

Site Number	Channel/Water Body Designation	Boat Slips	Direct Spending		Direct Jobs		Indirect Sales		Indirect Jobs	
			Craft Spending	Trip Spending	Craft Spending	Trip Spending	Craft Spending	Trip Spending	Craft Spending	Trip Spending
1	Wilson	476	\$666,400	\$1,047,200	7.390	16.437	\$496,868	\$900,592	4.79	8.18
2	Olcott Harbor	124	\$173,600	\$272,800	1.925	4.282	\$129,436	\$234,608	1.25	2.13
3	Oak Orchard Harbor	422	\$590,800	\$928,400	6.552	14.572	\$440,500	\$798,424	4.24	7.25
4	Sandy Creek	287	\$401,800	\$631,400	4.456	9.910	\$299,582	\$543,004	2.89	4.93
5	Braddock Bay	528	\$739,200	\$1,161,600	8.198	18.232	\$551,148	\$998,976	5.31	9.07
6	Long Pond Outlet	20	\$28,000	\$44,000	0.311	0.691	\$20,877	\$37,840	0.20	0.34
7	Genesee River	1034	\$1,447,600	\$2,274,800	16.054	35.705	\$1,079,331	\$1,956,328	10.39	17.76
8	Irondequoit Bay	1670	\$2,338,000	\$3,674,000	25.928	57.667	\$1,743,213	\$3,159,640	16.79	28.69
9	Bear Creek Harbor	4	\$5,600	\$8,800	0.062	0.138	\$4,175	\$7,568	0.04	0.07
10	Pultneyville	170	\$238,000	\$374,000	2.639	5.870	\$177,453	\$321,640	1.71	2.92
11	Great Sodus Bay	802	\$1,122,800	\$1,764,400	12.452	27.694	\$837,160	\$1,517,384	8.06	13.78
12	East Bay	32	\$44,800	\$70,400	0.497	1.105	\$33,403	\$60,544	0.32	0.55
13	Port Bay	382	\$534,800	\$840,400	5.931	13.191	\$398,747	\$722,744	3.84	6.56
14	Blind Sodus Bay	99	\$138,600	\$217,800	1.537	3.419	\$103,340	\$187,308	1.00	1.70
15	Little Sodus Bay	550	\$770,000	\$1,210,000	8.539	18.992	\$574,112	\$1,040,600	5.53	9.45
16	Oswego Harbor	536	\$750,400	\$1,179,200	8.322	18.509	\$559,498	\$1,014,112	5.39	9.21
17	Mexico Point/Little Salmon River	322	\$450,800	\$708,400	4.999	11.119	\$336,116	\$609,224	3.24	5.53
18	Salmon River/Port Ontario	68	\$95,200	\$149,600	1.056	2.348	\$70,981	\$128,656	0.68	1.17
19	Sandy Pond Inlet	610	\$854,000	\$1,342,000	9.471	21.064	\$636,742	\$1,154,120	6.13	10.48
totals			\$11,390,400	\$17,899,200	126.3	280.9	\$8,492,682	\$15,393,312	81.8	139.8
Totals Craft + Trip Direct			\$29,289,600		407					
Totals Craft + Trip Indirect			\$23,885,994		222					
Totals - Direct + Secondary			\$53,175,594		629					

launch economics

Factors annual trips per launch lane 1424.5
 spending/trip \$102
 jobs/\$10^3 trip spending 0.015696

Site Number	Channel/Water Body Designation	launch lanes	Direct Trip Spending	Direct Trip spending Jobs	Indirect Trip Spending	Indirect Trip Jobs
1	Wilson	2	\$290,598	4.56	\$249,914	2.3
2	Olcott Harbor	6	\$871,794	13.68	\$749,743	6.8
3	Oak Orchard Harbor	6	\$871,794	13.68	\$749,743	6.8
4	Sandy Creek	2	\$290,598	4.56	\$249,914	2.3
5	Braddock Bay	4	\$581,196	9.12	\$499,829	4.5
6	Long Pond Outlet	0	\$0	0.00	\$0	0.0
7	Genesee River	5	\$726,495	11.40	\$624,786	5.7
8	Irondequoit Bay	6	\$871,794	13.68	\$749,743	6.8
9	Bear Creek Harbor	3	\$435,897	6.84	\$374,871	3.4
10	Pultneyville	1	\$145,299	2.28	\$124,957	1.1
11	Great Sodus Bay	4	\$581,196	9.12	\$499,829	4.5
12	East Bay	2	\$290,598	4.56	\$249,914	2.3
13	Port Bay	4	\$581,196	9.12	\$499,829	4.5
14	Blind Sodus Bay	1	\$145,299	2.28	\$124,957	1.1
15	Little Sodus Bay	8	\$1,162,392	18.24	\$999,657	9.1
16	Oswego Harbor	6	\$871,794	13.68	\$749,743	6.8
17	Mexico Point/Little Salmon River	7	\$1,017,093	15.96	\$874,700	7.9
18	Salmon River/Port Ontario	2	\$290,598	4.56	\$249,914	2.3
19	Sandy Pond Inlet	9	\$1,307,691	20.53	\$1,124,614	10.2
totals			\$11,333,322	178	\$9,746,657	88
Totals Direct + Secondary			\$21,079,979	266		

Charter Boats

Factors	direct operations spending/boat	\$11,093	operations spending indirect/direct	1.86
	customer spending/boat	\$13,443	customer spending indirect/direct	1.94
	direct jobs operations/boat	0.4732	operations jobs indirect/direct	1.21
	direct jobs customer spending/boat	0.2654	customer jobs indirect/direct	1.42

Site Number	Channel/Water Body Designation	Charter Boats	Direct Spending		Direct Jobs		Indirect Spending		Indirect jobs	
			operations	customers	operations	customers	operations	customers	operations	customers
1	Wilson	15	\$166,395	\$201,645	7.10	3.98	\$309,495	\$391,191	8.59	5.65
2	Olcott Harbor	47	\$521,371	\$631,821	22.24	12.47	\$969,750	\$1,225,733	26.91	17.71
3	Oak Orchard Harbor	38	\$421,534	\$510,834	17.98	10.09	\$784,053	\$991,018	21.76	14.32
4	Sandy Creek	14	\$155,302	\$188,202	6.62	3.72	\$288,862	\$365,112	8.02	5.28
5	Braddock Bay	0	\$0	\$0	0.00	0.00	\$0	\$0	0.00	0.00
6	Long Pond Outlet	0	\$0	\$0	0.00	0.00	\$0	\$0	0.00	0.00
7	Genesee River	26	\$288,418	\$349,518	12.30	6.90	\$536,457	\$678,065	14.89	9.80
8	Irondequoit Bay	5	\$55,465	\$67,215	2.37	1.33	\$103,165	\$130,397	2.86	1.88
9	Bear Creek Harbor	0	\$0	\$0	0.00	0.00	\$0	\$0	0.00	0.00
10	Pultneyville	10	\$110,930	\$134,430	4.73	2.65	\$206,330	\$260,794	5.73	3.77
11	Great Sodus Bay	45	\$499,185	\$604,935	21.29	11.94	\$928,484	\$1,173,574	25.77	16.96
12	East Bay	0	\$0	\$0	0.00	0.00	\$0	\$0	0.00	0.00
13	Port Bay	10	\$110,930	\$134,430	4.73	2.65	\$206,330	\$260,794	5.73	3.77
14	Blind Sodus Bay	0	\$0	\$0	0.00	0.00	\$0	\$0	0.00	0.00
15	Little Sodus Bay	12	\$133,116	\$161,316	5.68	3.18	\$247,596	\$312,953	6.87	4.52
16	Oswego Harbor	29	\$321,697	\$389,847	13.72	7.70	\$598,356	\$756,303	16.60	10.93
17	Mexico Point/Little Salmon River	17	\$188,581	\$228,531	8.04	4.51	\$350,761	\$443,350	9.73	6.41
18	Salmon River/Port Ontario	8	\$88,744	\$107,544	3.79	2.12	\$165,064	\$208,635	4.58	3.01
19	Sandy Pond Inlet	1	\$11,093	\$13,443	0.47	0.27	\$20,633	\$26,079	0.57	0.38

Totals	277	\$3,072,761	\$3,723,711	131	74	\$5,715,335	\$7,223,999	159	104
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Total Direct Spending	\$6,796,472
Total Indirect Spending	\$12,939,335
Total Spending	\$19,735,807

Total Direct Jobs	205
Total Indirect Jobs	263
Total Jobs	468

Appendix C
Program Cost Estimate Calculations

Dredging Amounts

annual by class

class I	8,100
class II	1,100
class III	15,000
class IV	90,000

hydraulic rate (cy/hr)	150
mechanical rate (cy/hr)	200

weekly @ 4d/wk @ 8 hr/dy		Using Cobourg
hydraulic	4800	1700
mechanical	6400	6400

Annual Weeks Needed

Assume Class I & II by hydraulic, Class III (1/2 hydraulic and 1/2 by mechanical simulataneously) and Class IV by mechanical

hydraulic	3.5	9.8
mechanical	15.2	
mech excluding Class IV	1.2	

Cost Estimates for Regional Dredging Plan

on a contract rate (per cy)	\$25	\$15
annual excluding Class IV	\$605,000	\$363,000
including Class IV	\$2,855,000	\$1,713,000
totals including central operation	\$890,000	\$648,000
with class IV	\$3,190,000	\$2,048,000

on operating expense basis:

capital cost

hydraulic dredge Plus piping	\$600,000
transport truck	\$100,000
crane/shovel	\$250,000
barge & work boat	\$120,000
scow(2)	\$150,000
total capital equipment	\$1,220,000
annualized @ 3% 20 yr	\$82,003

operations:

hour rates

foreman	\$42.05
heavy equip operator	\$42.05
labor	\$26.10

hydraulic @ 1 operator + 3 labor	\$962.80	per day	or	\$4,814	per week
mechanical @ 2 operators + 2 labor	\$1,090	per day	or	\$5,452	per week

Assume 10 weeks hydraulic + 5 weeks of Mech	\$75,400
w. Class IV (+ 14 wks of mech. + \$1,800 /wk fuel)	\$176,928
fuel, maintenance and transport(\$40 k each)	\$80,000

central operations

management + permitting		
director (w benefits)	\$100,000	
engineer (w benefits)	\$75,000	w. class IV
sediment testing/survey/engineering	\$40,000	\$90,000
overhead @ 40% of salaries	\$70,000	
annual total	\$285,000	\$335,000

totals for independent operation

annual capital + operations + central	\$522,403	or	\$21.59	per cy
annual same w Class IV	\$673,931		\$5.90	per cy**
annual same w Class IV contracted @\$25/cy=	\$2,822,403		\$24.71	per cy
annual same w Class IV contracted @\$15/cy=	\$1,922,403		\$16.83	per cy

** only if restrictive dates can be removed

on operating expense basis w, additional equip to deal with restrictive dates:

capital cost

hydraulic dredge Plus piping	\$600,000
transport truck	\$100,000
crane/shovel (2)	\$500,000
barge & work boat (2)	\$240,000
scow (4)	\$300,000
total capital equipment	\$1,740,000
annualized @ 3% 20 yr	\$116,955

operations:

	hour rates			
	foreman	\$42.05		
	heavy equip operator	\$42.05		
	labor	\$26.10		
	hydraulic @ 1 operator + 3 labor	\$962.80	per day	or \$4,814 per week
	mechanical @ 2 operators + 2 labor	\$2,181	per day	or \$10,904 per week

Assume 10 weeks hydraulic + 5 weeks of Mech	\$102,660
w. Class IV (+ 14 wks of 1 mech. + \$1,800 /wk fuel)	\$204,188
fuel, maintenance and transport(\$40 k each)	\$120,000

central operations

management + permitting		
director (w benefits)	\$100,000	
engineer (w benefits)	\$75,000	w class IV
sediment testing/survey/engineering	\$40,000	\$90,000
overhead @ 40% of salaries	\$70,000	
annual total	\$285,000	\$335,000

totals for independent operation

annual capital + operations + central w class IV	\$776,143	or \$6.80 per cy
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Totals for 100% contracting out

excluding Class IV @ \$15/cy	\$648,000
same @ \$25/cy	\$890,000
with Class IV included all at \$15/cy	\$2,048,000
with Class IV included all at \$25/cy	\$3,190,000