



Lower Longview Lake Dredging

Public Meeting
March 26, 2015
6:30 p.m.

Project Team

- City of Raleigh
 - Blair Hinkle, PE – Stormwater Program Manager
 - Veronica High, PE – Senior Engineer
 - Ben Brown, PE – Stormwater Development
 - Gilles Bellot, PE – Project Manager
 - Susan Mullins, Real Estate Specialist
 - Sarah Gentry, Real Estate Specialist
- Army Corps of Engineers
 - Jean Gibby, Chief - Raleigh Regulatory Field office
- Raleigh Country Club
 - Unable to Attend

Discussion

- ❑ General Characteristics of Lower Longview Lake

- ❑ Key Feedback from Lake Residents :
 - Rate of Sedimentation / Loss of Shoreline
 - Perceived Inconsistencies in Engineer's Reports
 - Input from Raleigh Country Club

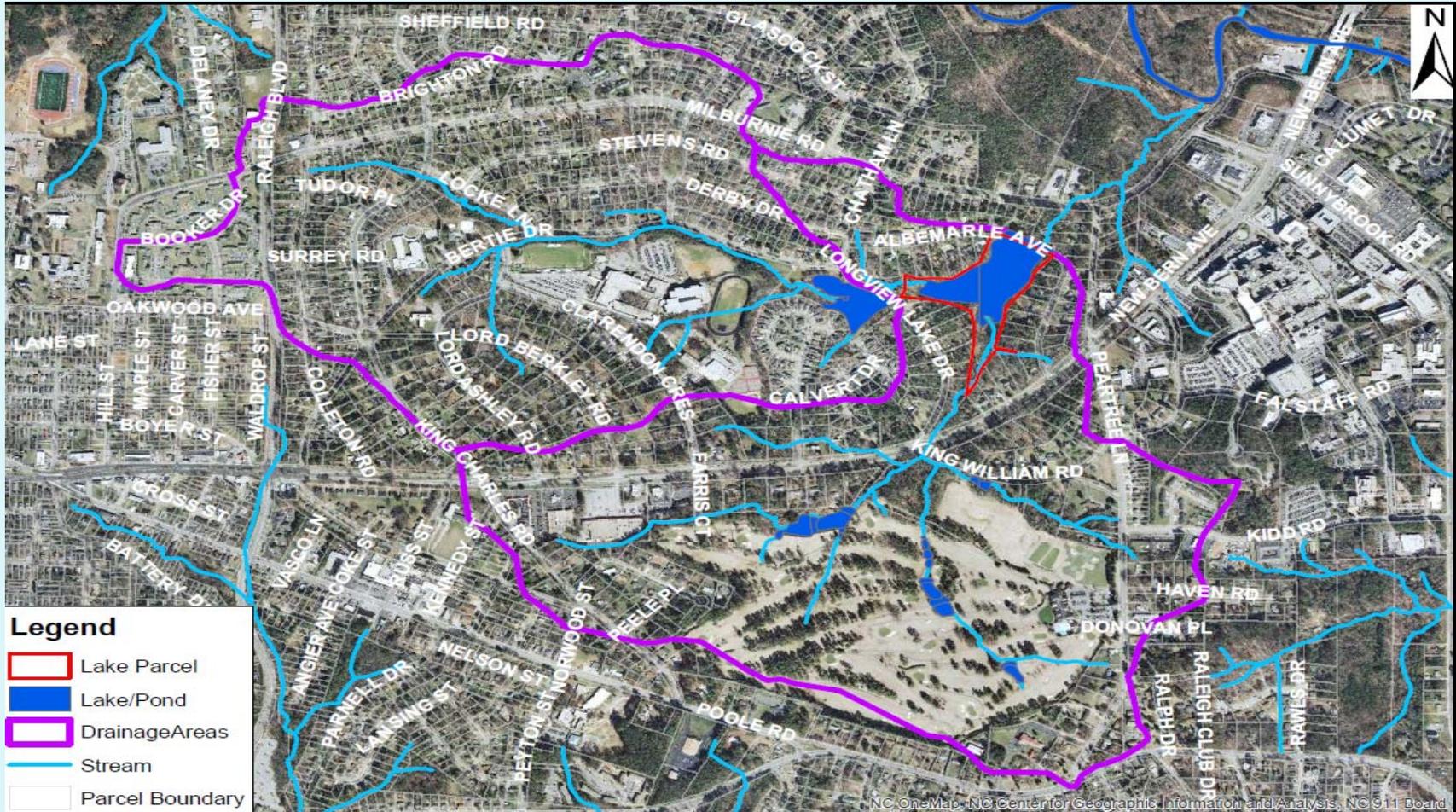
- ❑ City's Efforts To Develop Path Forward:
 - Point of Sufficient Public Purpose
 - Opportunity to Levy Assessment
 - Public Private Partnership
 - Minimum Water Quality Value in Dredging of Lake

- ❑ Lake Owners Options and Associated Costs



General Characteristics of Lower Longview Lake

Lower Longview Lake Watershed



Jurisdictional Wetlands





Lake Evolution

Aerial Photography (1981)



Aerial Photography (1993)



Aerial Photography (1999)



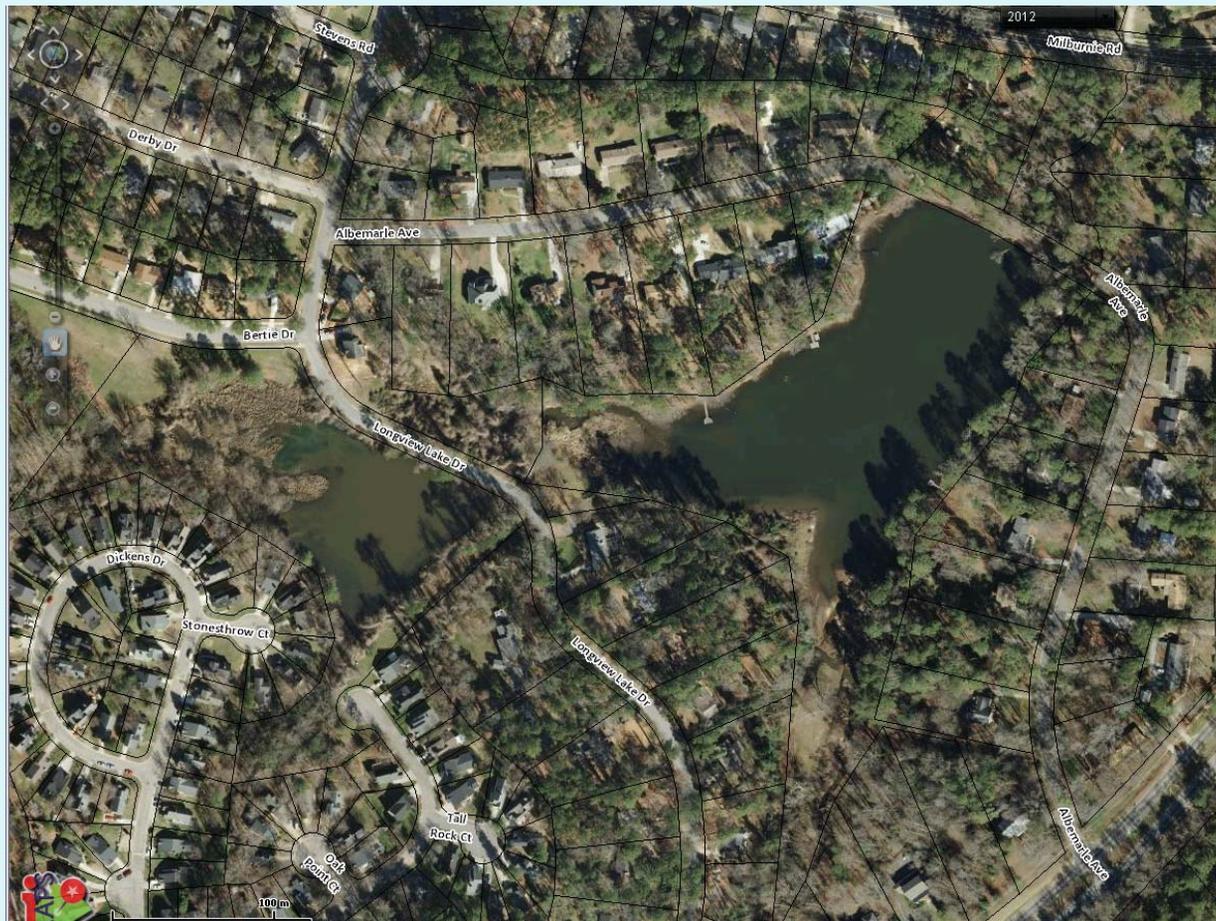
Aerial Photography (2002)



Aerial Photography (2007)



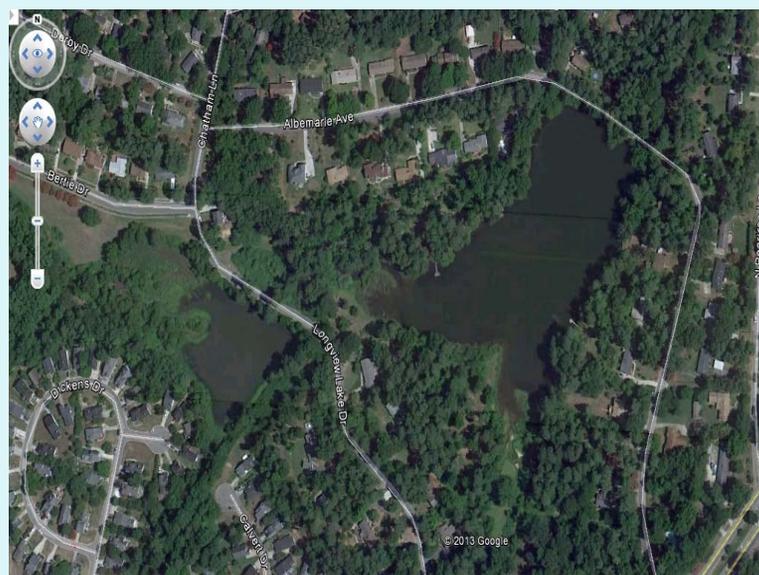
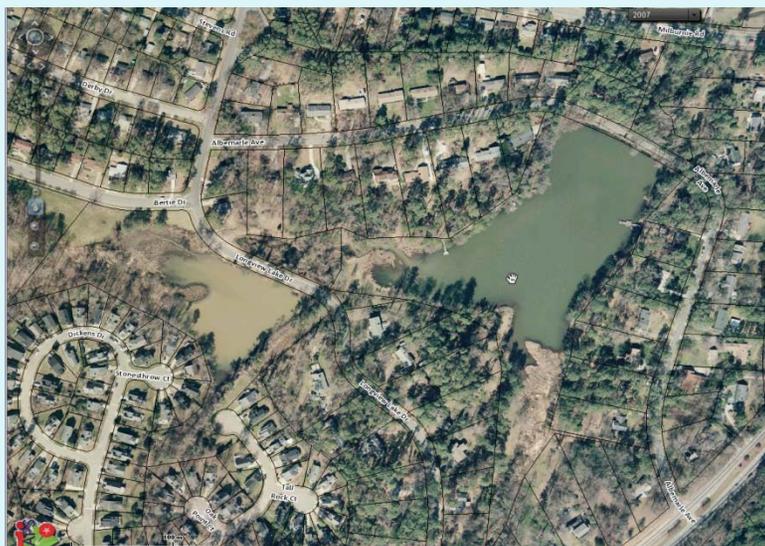
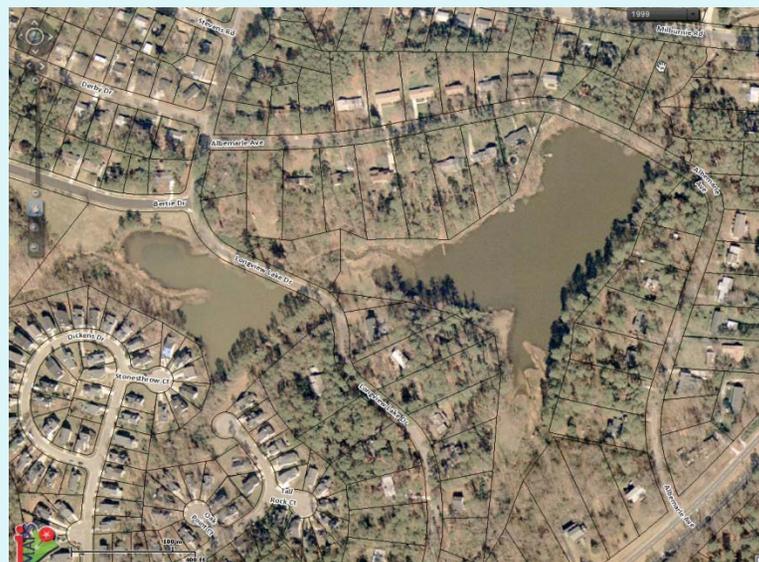
Aerial Photography (2012)



Aerial Photography (2013)



Period 1993-2013



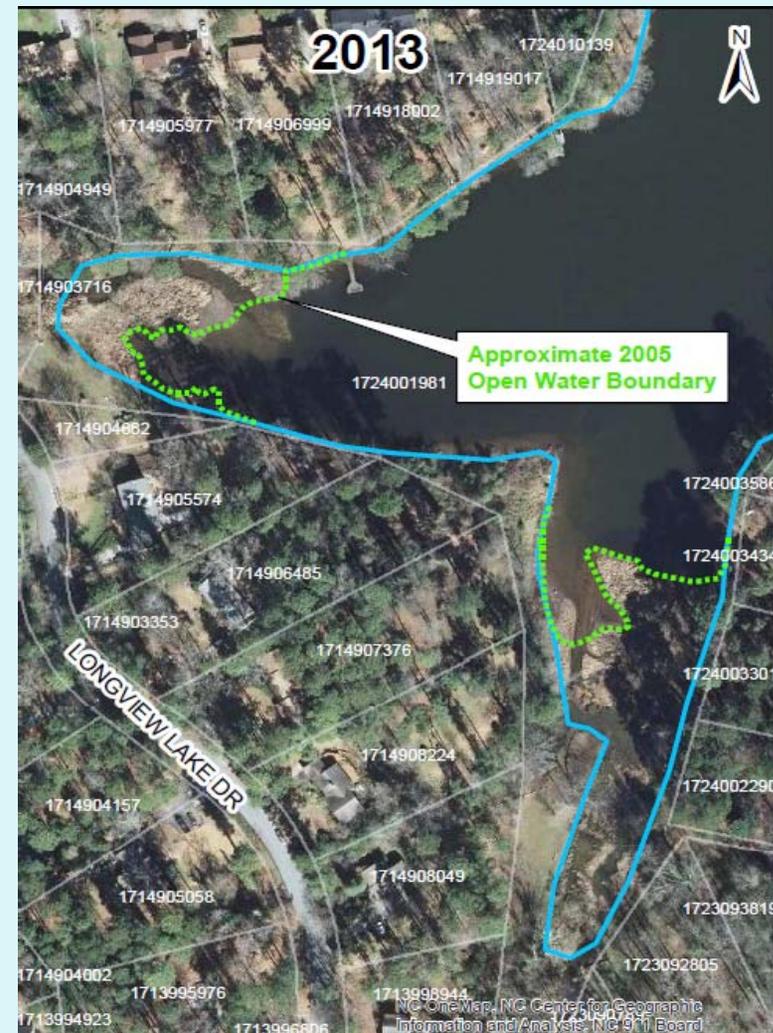
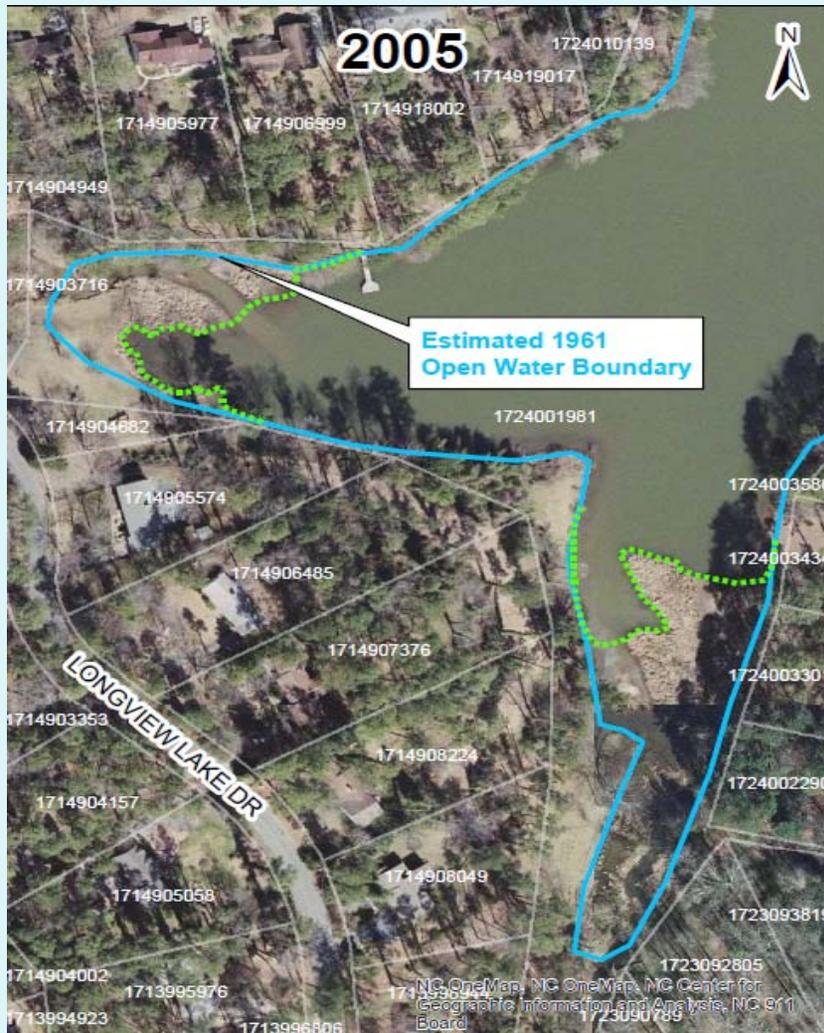


Key Feedback From Lake Residents



Rate of Sedimentation/ Loss of Shoreline

Sedimentation Accumulation Comparison 2005-2013



Life Expectancy – What is the life expectancy (i.e. time before the lake needs to be dredged)?

- Lower Longview Lake has been in place for approximately 69 years and accumulated approximately 15.6 acre-feet of sediment including areas filled and formed wetlands, thus yielding an average sedimentation rate of approximately 0.23 acre-feet/year.
- This sedimentation rate assumes that no sediment was removed from the lake in the past.
- This sedimentation rate is consistent with what has been observed and documented in technical literature (e.g. Petryniak, 2013).
- Assuming the same consistent sedimentation rate in the future, the lake is consequently not expected to fall below the recommended volume of 23.7 acre-feet for approximately another 75 years.
- It should further be noted that the future sedimentation rate is not expected to be as high as that of the previous 69 years, as the watershed has been built-out over time and should very likely not contribute as high a sediment load into the lake in the future.



Perceived Inconsistencies in Engineer's Reports

Same Conclusion Reached In Both CDM Reports

Excerpt taken from Page 7 of the April 2002 CDM Report:

While dredging both lakes would allow for the removal of the greatest total pollutant load over the planning period, the most cost effective management option (expressed on a per pound basis) is the removal of sediment from the upper lake only.

Excerpt taken from Page 11 of the October 9, 2014 CDM Report:

Based on the results of this additional evaluation, CDM Smith's maintains its recommendations made in the 2002* study, that accumulated sediments not be removed within Lower Longview Lake at this time.

* CDM has acknowledged that there was a typographic error in their report which incorrectly stated "2004".



Input from Raleigh Country Club

Comments from Billy Cole – Grounds Superintendent at Raleigh Country Club

“We here at RCC are always conscious in making sure we are always being environmental friendly in how we maintain the golf course and surrounding area. We have implemented a sustainability program in how we maintain and take care of our property. We use guidelines set forth by the National Audubon Society in maintaining the golf course. *We apply very little fertilizer to the golf course and the fertilizer we do use is organic in nature. We do not use insecticides or herbicides on our golf course and only apply fungicides when we see a disease that is starting to appear. This is only done on our greens which only makes of 3 acres of our total acreage. We are very conscious in using natural cultural practices and not chemicals. We are also very conscious in only giving the grass as little amount of water as possible.* Our members like the golf course to play fast and firm. It is not important to have the golf course lush and green. We are following guidelines set forth by the USGA that brown is the new green. This was done at Pinehurst #2 when they held the 2014 US OPEN. *We are always taking soil, tissue, and water samples to monitor how these actions are working.* This practice has indeed helped to increase the wildlife that is now on our golf course and have made the golf course friendly to the environment.”



City's Efforts To Develop Path Forward



Point of Sufficient Public Purpose

NC Constitution – Art. V Section 2(1)

Section 2(1) of Article V of the North Carolina

Constitution provides that “[t]he power of taxation[] be exercised in a just and equitable manner, for public purposes only” *Known as the public purpose limitation, this provision requires that all public funds, no matter what their source, be expended for the benefit of the citizens of a unit generally, and not solely for the benefit of particular persons or interests.* (“Although the constitutional language speaks to the ‘power of taxation,’ the limitation has not been confined to government use of tax revenues.” *Madison Cablevision v. City of Morganton*, 325 N.C. 634, 386 S.E.2d 200 (1989).)

NC Constitution – Art. V Section 2(1)

The North Carolina Supreme Court has not specifically defined the term “public purpose;” instead it has left the issue to be determined on a case-by-case basis. In fact, according to the Court, the “[t]he initial responsibility for determining what is and what is not a public purpose rests with the legislature,” and the legislature’s determination is “entitled to great weight.” *In re Housing Bonds*, 307 N.C. 52, 296 S.E.2d 281 (1982). Whether a particular activity, in a particular context, constitutes a public purpose is a legal issue that ultimately must be decided by the courts, though. The North Carolina Supreme Court has set forth two guiding principles to analyze whether a government activity satisfies the constitutional requirement. First, the activity must involve a “reasonable connection with the convenience and necessity of the particular” unit of government. Second, the activity must benefit the public generally, as opposed to special interests or persons.



Opportunity to Levy Assessment

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- The City would not be able to assess the lake property owners for the cost to dredge the lake because the City does not have authority to assess for improvements completed on private property.
 - The City of Raleigh Attorney's Office initial feedback is that this project would not be a viable candidate as a “public purpose” project utilizing Stormwater Utility funding.



Public Private Partnership

City of Raleigh Lake Preservation Policy

Excerpts from Resolution No. (2006) – 976

The City does not have legislative authority to require preservation of existing **private lakes** or wetlands which are not part of the MS4 system. Preservation of these existing lakes or wetlands will be pursued through agreements and easements negotiated with private property owners when such lakes or wetlands are not fully protected by state or federal water quality programs. In exchange for preservation of a lake by a private property owner, *the City would discuss participation in the funding of initial upgrades, repairs to the lake and maintenance dredging of the lake as needed for pollutant removal related to water quality or flood control, but not sediment removal for aesthetic purposes.*

COR Stormwater Drainage Assistance (Eligibility Requirements)

Program Eligibility Requirements:

“..... the City, to the extent reasonable and practical, will dredge such watercourse, at its discretion, on the advice of the City Manager and Public Works Director, when the **obstruction thereof has resulted or is likely to result in structural flooding or a public safety problem** as determined by the City, and the watercourse drains 100 acres or more. Such dredging shall be performed under the following conditions and pursuant to the following procedures:

- A. All dredging cost shall be borne by the City; but the City will bear none of the cost of any damage to any person or property.
- B. The petitioner(s) shall constitute the owners of enough property through which the watercourse flows or which it adjoins to form the basis of a project which the City Council decides should be undertaken.
- C. **The petitioner(s) and other owners of land touching the watercourse shall agree to accept or pay for the disposal of the spoil generated by the dredging.**
- D. The City will not participate in projects requiring removal of significant numbers of trees and/or natural areas adjacent to streams necessary for water quality purposes.



Minimum Water Quality Value in Dredging of Lake

CDM Smith Report Recognized There Is Minimal Value in Dredging Lower Longview Lake

The “minimal” value to dredging the lake was included in the text because of anticipated improvements to **aesthetics, recreation, and habitat**, none of which are easily quantifiable. Based on our analysis of the lake using the Jordan Lake Tool, it is adequately sized to provide the minimum effluent concentration, thus additional volume provides no improvement to the removal benefit. **The following minimal water quality benefits could be realized from dredging of the lake:**

- If a **littoral shelf** is added, wetland plantings can be used to improve nutrient uptake.
- Increased depth **reduces algae growth**, providing improved habitat for aquatic species.
- Increased depth **reduces water temperature swings** in the shallow depths, providing improved habitat for aquatic species.



Lake Owners Options and Associated Costs

Engineer's Opinion of Probable Construction Cost for Sediment Removal (*not associated with dam rehabilitation*)

(from CDM Smith Oct. 2014 Report)

Item	Description	Quantity	Unit	Unit Price	Cost
1	Mud Mats	10	ea.	\$500	\$5,000
2	Dewatering Pump	1	ls	\$10,000	\$10,000
3	Excavation and Loading (Excavator)	20,000	cy	\$15	\$300,000
4	Transport to Disposal Site (Dump Trucks)	20,000	cy	\$14	\$280,000
5	Disposal at Landfill (Tipping Fee)	30,000	ton	\$32	\$960,000
6	Surveying	1	ls	\$10,000	\$10,000
				Subtotal, Items 1-5:	\$1,565,000
				Mobilization (@ 5%):	\$78,000
				Contingencies (@ 10%):	\$157,000
				Engineering, Legal, Administration, Permitting (@ 15%):	\$235,000
				Total Project Costs:	\$2,035,000

Engineer's Opinion of Probable Construction Cost for Sediment Removal (done during dam rehabilitation)

(reduced mobilization, contingencies and engineering fees)
(from CDM Smith Dec. 2014 Additional Report)

Item	Description	Quantity	Unit	Unit Price	Cost
1	Mud Mats	10	ea	\$500	\$5,000
2	Dewatering Pump	1	ls	\$10,000	\$10,000
3	Excavation and Loading (Excavator)	20,000	cy	\$15	\$300,000
4	Transport to Disposal Site (Dump Trucks)	20,000	cy	\$14	\$280,000
5	Disposal at Landfill (Tipping Fee)	30,000	ton	\$32	960,000
6	Surveying	1	ls	\$10,000	\$10,000
				Subtotal, Items 1-5:	\$605,000
				Mobilization (@ 2%):	\$12,000
				Contingencies (@ 10%):	\$61,000
				Engineering, Legal, Administration, Permitting (@ 5%):	\$30,000
				Total Project Costs:	\$1,668,000

Lake Owner Dredging Participation Estimate

(with dredging done during dam rehabilitation)

Number of Fractional Lake Owners Participating In Cost Share	Project Cost of \$708,000 (Without Tipping and Associated Fees)	Project Cost of \$1,600,000 (With Tipping and Associated Fees)
1	\$708,000	\$1,600,000
2	\$354,000	\$800,000
3	\$236,000	\$533,333
4	\$177,000	\$400,000
5	\$141,600	\$320,000
6	\$118,000	\$266,667
7	\$101,143	\$228,571
8	\$88,500	\$200,000
9	\$78,667	\$177,778
10	\$70,800	\$160,000
11	\$64,364	\$145,455
12	\$59,000	\$133,333
13	\$54,462	\$123,077
14	\$50,571	\$114,286
15	\$47,200	\$106,667
16	\$44,250	\$100,000
17	\$41,647	\$94,118
18	\$39,333	\$88,889
19	\$37,263	\$84,211
20	\$35,400	\$80,000
21	\$33,714	\$76,190
22	\$32,182	\$72,727
23	\$30,783	\$69,565
24	\$29,500	\$66,667

Lake Owner Dredging Participation Estimate

(with dredging done post dam rehabilitation)

Number of Fractional Lake Owners Participating In Cost Share	Project Cost of \$787,000 (Without Tipping and Associated Fees)	Project Cost of \$2,035,000 (With Tipping and Associated Fees)
1	\$787,000	\$2,035,000
2	\$393,500	\$1,017,500
3	\$262,333	\$678,333
4	\$196,750	\$508,750
5	\$157,400	\$407,000
6	\$131,167	\$339,167
7	\$112,429	\$290,714
8	\$98,375	\$254,375
9	\$87,444	\$226,111
10	\$78,700	\$203,500
11	\$71,545	\$185,000
12	\$65,583	\$169,583
13	\$60,538	\$156,538
14	\$56,214	\$145,357
15	\$52,467	\$135,667
16	\$49,188	\$127,188
17	\$46,294	\$119,706
18	\$43,722	\$113,056
19	\$41,421	\$107,105
20	\$39,350	\$101,750
21	\$37,476	\$96,905
22	\$35,773	\$92,500
23	\$34,217	\$88,478
24	\$32,792	\$84,792

Construction Contract Alternate

- Dam rehabilitation Contractor to engage lake residents to participate into financing dredging of the lake and include work as part of their scope (contract change order).
- There would be no financial participation from the City.
- City would only assist with administrative needs if necessary.

Treatment of Algae

- Lake residents could work with a local lake management company to monitor and treat invasive species of aquatic plants and algae.
- The City would not be able to participate in this option.
- Initial Cost: \$15,000 - \$30,000 annually(est.) – Chemical Treatment.

Feasibility of Wetland Removal

PowerPoint Presentation by

Ms. Jean B. Gibby, Chief of the Raleigh Field Office of the U.S. Army Corps of Engineers

Topics Covered:

- Type of Permit Required: Individual vs. Nationwide
- Permit Requirements
- Time to Process Permit Requests
- Potential for Mitigation Requirements

Questions & Answers

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