

**Item #6:**  
**Village Trustee Acuna**  
**Lake Michigan Water Update**

**David Lothspeich**

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**From:** bill@wrblc.com  
**Sent:** Tuesday, June 01, 2010 12:09 PM  
**To:** mwolczyk@antioch.il.gov; jsmith@ati-ae.com; fmloffredo@gmail.com; bcarter@lakecountyil.gov; sschmidt@lakecountyil.gov; scarlson@lakecountyil.gov; lpedersen@lakecountyil.gov; mayorlahr@lindenhurstil.org; mdr4159@aol.com; brussell@villageofvolo.com; mayor@volz.org; mknigge@wauconda-il.gov; jmancino@vhw.org; bendere@foxlake.org; lhanson@antioch.il.gov; tims@tempelsmith.com; aea3738@aol.com  
**Cc:** jkeim@antioch.il.gov; mformica@lindenhurstil.org; David Lothspeich; pnwton@vhw.org; dquick@wauconda-il.gov; pkolb@lakecountyil.gov; vitas@volz.org; Barbara.adams@hklaw.com; mcgree@chapman.com; kmccanna@speerfinancial.com  
**Subject:** North-West Lake Michigan Water Group: MEETING CONFIRMATION, June 22, 2010 4:30 PM

Ladies and Gentlemen,

This is a confirmation that we have scheduled a briefing for elected officials on the subject of the financial and borrowing strategy options for the North and West Lake County Lake Michigan Water Group as follows:

Tuesday June 22, 2010  
4:30 PM  
Libertyville Township Hall  
359 Merrill Court  
Libertyville Illinois 60048

This building is just south of Winchester Road and immediately south of the Lake County Libertyville governmental campus. The Planning Group met last month and received a report from Mr. Timothy McGree on the options available to the communities to launch a successful Lake Michigan procurement program. It is important that the elected officials of the effected communities review this information and discuss options with your respective Boards. The June 22 meeting will be structured to give an overview presentation on the options available to participants then to be followed by an exchange of ideas of elected officials on the pros and cons of the various options.

By presenting the options to elected officials in June we have left the month of July for participant Board deliberations of what each member believes is the best approach for a successful Lake Michigan procurement financing program and authorization. The group should plan to be prepared by the week beginning August 9, 2010 to express their preference on the best strategy for authorization and launching the Lake Michigan program.

Due to the time schedules of several officials we will be promptly starting the meeting at 4:30 PM with the first hour tied to the overview presentation and discussion between elected officials. Additional discussion on the proposed memorandum of agreement will follow that item for those able to remain at the meeting. We must conclude the entire meeting by 6:30 PM.

My call around has indicated that most of the participants will be in attendance and for those unable to attend, you can express any thoughts you may already have on financing to Mr. Peter Kolb, [PKolb@lakecountyil.gov](mailto:PKolb@lakecountyil.gov), or myself at [Bill@wrblc.com](mailto:Bill@wrblc.com). We will see that your views are shared with the group. An agenda for the meeting will be emailed to each of you shortly.

Please contact me should you have any questions.

Bill Balling  
847 863 7101

6/3/2010

Meeting Date: May 19, 2010

 Notes Date: June 1, 2010

 Place: Lake County Public Works Department Office

 Notes By: Frank Tiefert Project #: 4535

 Subject: North-West Lake County Lake Michigan Water Planning Group

Attendees:	Present	cc:	Present	cc:
	<input checked="" type="checkbox"/>	Barbara Adams, Holland & Knight	<input checked="" type="checkbox"/>	Jim Maiworm, Village of Hawthorn Woods
	<input checked="" type="checkbox"/>	Al Albrecht, Lake County PWD	<input checked="" type="checkbox"/>	Art Malm, Lake County PW
	<input type="checkbox"/>	Moses Amidei, Village of Wadsworth	<input checked="" type="checkbox"/>	Kevin McGanna, Speer Financial
	<input checked="" type="checkbox"/>	Bill Balling, Lake County	<input checked="" type="checkbox"/>	Glenn McCollum, Village of Lake Villa
	<input type="checkbox"/>	Roger Baske, Old Mill Creek	<input type="checkbox"/>	Amy McEwan, Lake County
	<input checked="" type="checkbox"/>	Robert G. Block, Village of Long Grove	<input checked="" type="checkbox"/>	Tim McGree, Chapman and Cutler
	<input type="checkbox"/>	Jim Bowles, Village of Lake Villa	<input type="checkbox"/>	Pam Newton, Village of Hawthorn Woods
	<input type="checkbox"/>	Barry Burton, Lake County	<input type="checkbox"/>	Dustin Nilsen, Village of Antioch
	<input checked="" type="checkbox"/>	Barbara Chevalier, Speer Financial	<input checked="" type="checkbox"/>	Phil Perna, Lake County PW
	<input type="checkbox"/>	Robert Doeringsfeld, Applied Technologies	<input checked="" type="checkbox"/>	Keith Peterson, Village of Fox Lake
	<input type="checkbox"/>	Robert Duprey, Village of Lake Zurich	<input type="checkbox"/>	Dan Quick, Village of Wauconda
	<input checked="" type="checkbox"/>	Victor Filippini, Village of Long Grove	<input checked="" type="checkbox"/>	Bud Reed, Manhard Consulting, Village of Volo
	<input checked="" type="checkbox"/>	Matt Formica, Village of Lindenhurst	<input checked="" type="checkbox"/>	Nancy J. Schuerr, Village of Fox Lake
	<input checked="" type="checkbox"/>	David Geary, Village of Wauconda	<input checked="" type="checkbox"/>	Jim Smith, Applied Technologies
	<input checked="" type="checkbox"/>	Karen Harms, Village of Lake Villa	<input checked="" type="checkbox"/>	Tim Smith, Old Mill Creek
	<input checked="" type="checkbox"/>	David Heyden, Village of Lake Zurich	<input type="checkbox"/>	Peter Stoehr, Village of Volo
	<input checked="" type="checkbox"/>	Jim Keim, Village of Antioch	<input checked="" type="checkbox"/>	Larry Thomas, Baxter and Woodman
	<input type="checkbox"/>	Jennie Khoen, Lake County	<input checked="" type="checkbox"/>	Frank Tiefert, Applied Technologies
	<input checked="" type="checkbox"/>	Peter Kolb, Lake County PW	<input type="checkbox"/>	Gerold L. Topcik, Lake County PWD
	<input type="checkbox"/>	Chris Liveris, Village of Antioch	<input checked="" type="checkbox"/>	Wes Welsh, Village of Lindenhurst
	<input checked="" type="checkbox"/>	David Lothspeich, Village of Long Grove	<input type="checkbox"/>	Donald White, Lake County PWD
			<input checked="" type="checkbox"/>	Gordon White, Lake County PW

The following meeting notes set forth our understanding of the discussions and decisions made at this meeting. If you have any questions, additions, or comments, please contact the writer immediately. If we do not hear from you, we will assume that our understandings are the same. We are proceeding based on the contents of these meeting notes.

1. There were no corrections noted to the previous meeting minutes.
2. Peter Kolb, Al Albrecht and Barbara Adams presented a summary of a meeting that was held with the Lake County Public Water District on April 27<sup>th</sup>. The District staff and 5 of 7 District Trustees attended, along with County Board Chair Suzi Schmidt, Board Member Brent Paxton, Barry Burton, Peter Kolb and Barbara Adams. The proposed relationship

between the proposed North-West Lake County JAWA and the Lake County Public Water District was discussed at that meeting, with a focus on the primary concepts stated in the 2/12/10 draft agreement between the proposed JAWA and the District. Those include the purchase of 4 to 5 acres of land from the District for the JAWA facilities, a purchase or lease of intake pipe capacity, and possible shared operation and similar options. The District trustees emphasized that they want involvement in the design and operation of the new facilities, and that they need assurance that their present customers will not be harmed. Among the ideas discussed is an agreement that the District staff will operate both the District facilities and the JAWA facilities. The meeting consensus on the main principles will be memorialized in the proposed revised Memorandum of Understanding (see Item 3, below). It was emphasized that working out agreement details will require further work for which funding is not yet available

3. Barbara Adams presented a proposed "Amended and Restated Memorandum of Understanding." A copy was distributed in advance of the meeting. This MOU will replace the existing MOU. The principal changes include an updated membership list, a description of additional work (Phase 2 work), additional financial commitment to fund the work, member withdrawal provisions, and an Exhibit stating the Lake County Public Water District's commitment. Options for various parts of the agreement are included in the text. It was noted that the new funds provided under the proposed MOU would be for the new work described in the MOU. The sense of the group was in favor of Option 3 in Section 2.C and Option 2 in Section 6.D. Members should review the document so that it can be finalized at the next meeting.
4. It was noted that final commitments by the communities to the proposed MOU would not occur until the allocations are awarded. Hawthorn Woods and Old Mill Creek will be on a later schedule since their applications are still in preparation.
5. Barbara Adams spoke with the IDNR regarding the allocation applications. Dan Injerd responded that he has completed his work on these applications. Robert Mool was not able to provide a date when he would complete his activities but did acknowledge that the working group's activities are continuing.
6. Phil Perna reported that Central Lake County JAWA has started a new sub-committee to consider extending service to potential new members. A meeting agenda and various memoranda on the issue are attached to these meeting minutes.
7. There was a discussion of the potential need to include in the Phase 2 work under the MOU a preliminary evaluation of water supply sources, including capacity and cost effectiveness, regarding alternative sources of Lake Michigan water, such as Central Lake County JAWA.
8. The project schedule was discussed, based on a schedule distributed with the meeting agenda. It was noted that the IDNR decisions regarding allocations are not expected before June, and that proposed MOU will probably be signed by the communities in June and July. The meeting for the public officials is shown on the schedule for July 8, however, this is being revised (see Item 11, below).

9. The MOU includes a significant financial commitment for each community. However, the final "Go" or "No Go" commitment will take place with the agreement forming the JAWA.
10. Tim McGree, along with Barbara Chevalier, led a discussion regarding bond options. Revenue bonds are expected to be used for 40% to 60% of the project funding. Property tax-based bonds are expected to provide the remaining funding. Three property tax-based bonding methods were discussed, based on memoranda distributed at the meeting (copy attached).
  - General Obligation Bonds. These bonds require a referendum. The present schedule shows a referendum on April 5, 2011. The next potential referendum date is in March, 2012.
  - County Special Service Area Bonds. These bonds do not require a referendum, however, they do require consent from the municipalities. The SSA areas must be contiguous, which will require multiple SSA's to accommodate the discontinuous nature of the proposed JAWA.
  - Alternate Bonds. These bonds do not require a referendum, but are similar to general obligation bonds. They use SSA bonds or SSA tax levies for coverage. Using tax levies, the coverage would be 10%, and the excess income from the 10% coverage would be available for paying the revenue bonds.
11. Bill Balling was introduced to the Planning Group, and shared his initial thoughts on the project. He recommended acceleration of the present schedule, particularly for the proposed financial concepts meeting for the elected officials of the member communities. Mr. Balling volunteered to schedule and organize the meeting. The meeting may be held as soon as the week of June 21<sup>st</sup>.

Post meeting update: The meeting has been scheduled for Tuesday, June 22, 2010, at 4:30 PM, at the Libertyville Township Hall.

12. The next Planning Group meeting is planned for 10:00 AM, Thursday, June 17, 2010. The meeting location is tentatively the new Lake County Central Permit Facility, 500 W. Winchester Road, Libertyville. The meeting location will be confirmed via e-mail.



**Membership Expansion Exploratory  
Subcommittee**

**April 22, 2010**

**8:30 a.m.**

**Agenda**

Central Lake County Joint Action Water Agency  
Paul M. Neal Water Treatment Facility  
200 Rockland Road  
Lake Bluff, IL 60044

1. Call To Order
2. Discussion: Pending Requests for Agency Membership and County Expansion Request.
  - A. How to best utilize the additional 10 MGD of capacity.
  - B. If necessary, determine a preferred infrastructure upgrade option.
  - C. If necessary, determine a methodology for financial contributions to join the Agency.
  - D. Determine a follow up meeting timeline with requesting communities.
5. Set Next Meeting Date
6. Adjourn



April 8, 2010  
 Executive Summary

**To:** Members of the Executive Committee  
**Staff:** Darrell Blenniss, Executive Director  
**Item:** Membership Expansion  
**Issue:** Review items related to membership expansion.  
**Timing:** Important.  
**Financial Impact:** None.  
**Overview:** See below.

We have been reviewing the request by several communities to join the Agency and the County's request to expand their service area. Provided below is a summary of the items to date.

**Water Demand: New Members & County Service Area Expansion**

The Agency has received requests for membership and service area expansions. The water demand impact is provided below.

	2005 Average Day Demand MGD	2030 Average Day Demand MGD	2030 Peak Day Demand MGD
Requesting Villages	5.19	7.96	13.93
County Service Area Expansion	0.122	N/A	N/A
Villages: Lake Villa, Lake Zurich, Lindenhurst, & Wauconda			

County Service Area Expansion: Portions of Mettawa & Long Grove

**Water System Capacities:**

The Agency had CDM review our system capacities in light of future demand and possible expansion.

2030 Existing Member Peak Demand = 46.4 MGD

Capacities by subsystem are as follows.

- Intake = 37.88 MGD
- Raw Water Pump Station = 44 MGD
- Water Treatment Plant = 50 MGD
- Finished Water Pumps = 48 MGD

- Booster Pumping Station = 50 MGD
- Transmission/Distribution System = 46 MGD

10 MGD additional capacity available in the transmission/distribution system with a second booster pumping station. All subsystems can be upgraded for greater capacity.

**Cost Estimates for System Improvements:**

After completion of the water system capacity assessment it was determined that cost estimates were needed for the necessary system improvements to utilize the additional 10 MGD.

	<b>Option 1</b>	<b>Option 2</b>	<b>Option 3</b>
System Improvements	\$25,100,000	\$32,200,000	\$42,900,000

**Financial Impact: New Water Sales**

Projected net income, assuming all potential membership and service area expansion requests, are detailed below.

New Revenues:	\$4,769,644
New Expenses:	\$814,329
Net Income:	\$3,955,315

Net income of \$3,955,315 is equal to about 58 cents on the water rate.

**Connection Fees**

The average connection fee of our members for residential single family or equivalent is \$2,424.

**Staff Recommendation:**

I recommend that we form a subcommittee to determine the best way to use the available 10 MGD, identify the preferred option for infrastructure improvements, and if necessary formulate a strategy and methodology for reimbursements and contributions for existing infrastructure and future capacity improvements.

Updated Demand #'s provided by  
the County of Lake 4/8/10

Water Demand by Community

	2005 Average Daily Demand MGD	2030 Avg Daily Demand MGD	Peak Day Demand MGD 2030
Lake Zurich	1.99	2.23	3.9
Lake Villa	0.72	1.57	2.75
Lindenhurst	1.2	1.67	2.92
Wauconda	1.28	2.49	4.36
Mettawa Request	0.079	0.079	0.157
Long Grove Request	0.043	0.043	0.085
	5.312	8.082	14.172
Available Demand	10	10	10
Surplus (Deficit)	4.69	1.92	(4.17)



Internal Correspondence

Memorandum

April 8, 2010

**To:** Members of the Executive Committee  
**From:** Darrell Blenniss, Executive Director  
**Subject:** Membership Expansion

Provided below is a summary of the membership expansion items to date.

**Membership Request/Expansion: Community Demand**

Several communities have formally requested consideration for membership into the Agency. These communities are: Lake Villa, Lake Zurich, Lindenhurst, and Wauconda. In addition, the County has requested to expand their service area to include the remainder of the Village of Mettawa and a subdivision in Long Grove. The water demand is summarized below.

New Member Requests:

Community	2005 Average Demand MGD	2030 Average Demand MGD	2030 Peak Demand MGD
Lake Villa	0.72	1.57	2.75
Lake Zurich	1.99	2.23	3.9
Lindenhurst	1.2	1.67	2.92
Wauconda	1.28	2.49	4.36
Total	5.19	7.96	13.93

These demand numbers were taken from the Lake Michigan Water Feasibility Studies performed by Applied Technologies.

County Service Area Expansion:

Location	Existing Demand MGD	2030 Average Demand MGD	2030 Peak Demand MGD
Mettawa	0.079	Not Available	Not Available
Long Grove	0.043	Not Available	Not Available
Total	0.122		

Data on the 2030 demand for these locations is being researched by County staff and was not available at the time the packet was distributed.

### Capacity Assessment: Summary

To determine if the Agency could take on new members additional research was performed (see attached) on the Agency's transmission system. Other subsystem capacities have been well documented in prior studies.

In summary, the existing distribution system without improvements would meet the anticipated 2030 demand of our existing membership (46.4 MGD). As such no additional capacity is available.

With the inclusion of a secondary booster pumping station the transmission system could handle an additional 10 MGD (Million Gallons per Day). This additional capacity could be used for additional membership or to provide additional capacity for existing membership.

Three key delivery points were examined to determine system capacity for expansion.

1. Northern expansion through the system with a connection to the 24" watermain on Route 83 currently terminating south of Rollins Road can handle an additional 4 MGD.
2. Western expansion through the system with a connection to the 30" watermain just east of the intersection of Route 176 and Hawley can handle an additional 10 MGD.
3. Southwestern expansion through the system with a connection to the 24" watermain at the south end of the Agency's system near the delivery point to the Vernon Hills system by Route 45 can handle an additional 6 MGD.

Capacities by subsystem are as follows.

- Intake = 37.88 MGD
- Raw Water Pump Station = 44 MGD
- Water Treatment Plant = 50 MGD
- Finished Water Pumps = 48 MGD
- Booster Pumping Station = 50 MGD
- Transmission/Distribution System = 46 MGD

### Cost Estimates: Infrastructure Upgrades - Summary

Based on the findings of the recent capacity assessment it was determined that cost estimates on needed system improvements were needed. Three options (see attached) were explored on how to upgrade the current systems to meet the additional 10 MGD demand. A summary of the findings are provided below.

System Element	Option 1	Option 2	Option 3
Intake	\$6,900,000	\$6,900,000	\$6,900,000
Raw Water Pump Station	\$400,000	\$400,000	\$400,000
Raw Water Transmission Main	\$0	\$0	\$0
Water Treatment Plant	\$3,300,000	\$10,400,000	\$21,100,000
Filter Clearwell Capacity	\$3,600,000	\$3,600,000	\$3,600,000
Finish Water Pump Station	\$0	\$0	\$0

Finish Water Transmission Main	\$2,100,000	\$2,100,000	\$2,100,000
Intermediate Booster Pump Station	\$8,300,000	\$8,300,000	\$8,300,000
Booster Pump Station	\$500,000	\$500,000	\$500,000
<b>Total</b>	<b>\$25,100,000</b>	<b>\$32,200,000</b>	<b>\$42,900,000</b>

Water Treatment Plant Option 1: Stress Existing 4 Trains

Water Treatment Plant Option 2: New 10 MGD Membrane Plan

Water Treatment Plant Option 3: New 5th Treatment Train

**Financial Impact - New Water Sales:**

The inclusion of new members or the expansion in the service area by the County is being explored because of the belief that it may be beneficial to our existing members. The following table illustrates the potential net income that could be generated from these additional water sales if they could occur next year.

Total New Demand MGD	5.312 MGD
Average Daily Demand in Millions of Gallons	5,312,000
No Days Year	365
Total Gallons per Year	1,938,880,000
Per 1000 Gallons	1,938,880
FYE 2011 Rate per 1000 gallons	\$2.46
<b>Projected Additional Revenues</b>	<b>\$4,769,644</b>
Projected New Expenses	
Operating Expenses	\$814,329
Additional Debt Service	\$0
<b>Total New Expenses</b>	<b>\$814,329</b>
<b>Net Income</b>	<b>\$3,955,315</b>
# Cents on the Water Rate	58

**Assumptions:**

- Includes: Lake Villa, Lake Zurich, Lindenhurst, Wauconda, and Mettawa/Long Grove. New water demand is based on Lake Michigan Water Feasibility Study and County projections for Mettawa and Long Grove.
- Water Rate = budgeted water rate for FYE 2011.
- Operating expenses determined using an average cost per 1000 gallons for commodities and contractual services determined over the past five years converted into 2010 constant dollars. No new employees assumed.
- No new debt service would be incurred by the existing membership for expansion.

### Connection Fees:

Connection Fees are a tool used by many utilities to recover certain capital costs associated with serving new customers. Connection fees were assessed to the County when it expanded its service area in 2005.

Existing connection fees charged by our member communities are provided below.

Member	Residential Connection Fee*	Notes
County of Lake	\$1,500	General Service Areas. (County has many connection fees. These seem to be associated with a certain area served.)
Grayslake	\$3,263	Basic Fee + Equalization Fee + Lake Michigan Water Improvement Fee
Gurnee	\$4,480	\$1,600 + \$48 per foot frontage fee (Assumed 60 Feet for a typical lot)
Lake Bluff	\$3,200	\$400 per 1/8 inch
Libertyville	\$2,020	1 inch line + tap fee
Mundelein	\$750.75	\$250.75 + \$500 Water Expansion Fee
Round Lake	\$2,500	1 inch service line
Round Lake Beach	\$2,500	Residential flat fee
Round Lake Park	\$1,600	1 inch service line
Average	\$2,424	

\*Data taken from ordinances and other data supplied by member communities.

### Next Steps:

Should the Agency wish to continue to explore the idea of adding new customers or expanding the County service area, a couple of items need to be resolved.

- Which communities to include. Total 2030 (13.93 MGD) demand by these communities exceeds the 10 MGD available.
- Which of the three infrastructure upgrade options is the most preferred.
- What connection fee methodology should be used to offset capital costs.

To help address these issues and to help formulate other strategies, I recommend the formation of a subcommittee. In addition, these communities are actively in pursuit of other opportunities for Lake Michigan water. Therefore, I also recommend that we follow up with them in the next 30 days.



## Memorandum

To: CLCJAWA

From: CDM

Date: December 21, 2009

Subject: CLCJAWA Water Transmission System Capacity Assessment

The Central Lake County Joint Action Water Agency (Agency) retained CDM to evaluate the capacity of the Agency's existing finished water transmission system. Three different locations were identified as potential connection points that can supply water to additional customers using available transmission system capacity, as follows:

- 24-inch pipeline leading to Round Lake Beach
- 30-inch pipeline before branching to Vernon Hills and Mundelein
- 24-inch pipeline leading to Vernon Hills

The above three connections points superimposed on CLCJAWA's water transmission system are shown on Figure 1.

### Basis of Analysis/Assumptions

The following summarizes the assumptions made for this analysis:

- The CH2M Hill model provided by the Agency was used with no modifications, and the C-values were assumed to be valid for 2030 planning (i.e. no adjustments to the C-values were made)
- Existing communities 2030 maximum day demands as provided by the Agency were used in the analysis (see Table 1)
- Minimum allowable residual pressure of 25 psi - Based on the contractual minimum residual pressure to be supplied by the Agency to their existing customer communities.
- Maximum allowable system pressure of 135 psi - Based on the pipeline pressure rating of 150 psi minus 10% as a safety factor (135 psi was also used in previous capacity assessments).

- Maximum velocity in mains of 7 feet per second (fps) – As discussed/agreed to at the kickoff meeting with the Agency and as used in previous capacity assessment studies.
- Raw water pump station, WTP and finished water pump station can be upgraded to supply the additional flows

**Table 1 - 2030 Demands for Existing Agency Customers Based on IDNR Allocations**

<b>Community</b>	<b>2030 Average Day Demand (MGD)</b>	<b>2030 Max Day Demand (MGD)</b>
Grayslake	2.11	3.56
Gurnee	5.46	9.23
Knollwood, Roundout, Countryside	0.89	1.51
Lake Bluff	0.94	1.60
Libertyville	3.28	5.54
Mundelein	3.49	5.89
Round Lake	3.01	5.09
Round Lake Beach/Heights	2.74	4.63
Round Lake Park	0.63	1.06
Vernon Hills	3.50	5.92
Wildwood	1.41	2.38
<b>TOTAL</b>	<b>27.5</b>	<b>46.4</b>

**Results**

***Existing Transmission System Capacity with no Improvements:***

Using the CH2M Hill hydraulic model (WaterCAD) the capacity of the existing system is approximately 46 MGD, which is very close to the projected 2030 maximum day demand. The capacity of the existing transmission system is limited by the 48-inch pipeline reaching the maximum allowable pressure of 135 psi. Thus, it appears that there is no additional available capacity for new customers.

***Existing Transmission System Capacity with Addition of Intermediate Booster Pump Station (BPS):***

With the addition of a new intermediate booster pump station along the 48-inch pipeline, the finished water transmission system capacity can be increased by up to 10 MGD, without exceeding the maximum pressure criteria of 135 psi. The additional 10 MGD capacity is restricted by the 48-inch transmission pipeline velocity reaching 7 fps. The additional 10 MGD capacity can be supplied as discussed below and as shown on Figure 1.

- **Potential Connection Point # 1 - 24-inch pipeline leading to Round Lake Beach:**

Water demand was placed at the end of the 24-inch pipeline leading to Round Lake Beach to determine how much extra capacity can be delivered to the north. The modeling results show that up to an additional 4 MGD of capacity can be provided. At this flow, the 36-inch inlet pipe to the standpipes and the 36-inch outlet of the existing booster pump station velocity will reach 7 fps. If both pipes were upsized to 42-inch pipelines, then the available capacity at that point would increase from 4 MGD to 6 MGD.

- **Potential Connection Point # 2 - 30-inch pipeline before branching to Vernon Hills and Mundelein:**

Water demand was placed at the end of the 30-inch pipeline before it branches to Mundelein and Vernon Hills to determine available capacity that can be delivered to the south. The modeling results show that this connection point can take all of the 10 MGD of available additional capacity. This flow is again limited by the velocity in the 48-inch pipe reaching 7 fps, as discussed above.

- **Potential Connection Point # 3 - 24-inch pipeline leading to Vernon Hills:**

Water demand was placed at the end of the 24-inch pipeline leading to Vernon Hills to determine how much extra capacity can be delivered to the south. The modeling results show that up to an additional 6 MGD of capacity is available. The limiting factor is the 24-inch pipeline velocity reaching 7 fps.

### Considerations

The following bullets provide the Agency with issues to be considered or discussed for future planning:

- Existing Gurnee and Vernon hills delivery pipes will exceed 7 fps at 2030 maximum day flows due to 2030 IDNR projections for those communities.
- The analysis does not take into consideration system losses (leaks, etc.) nor does it take into consideration any contingency flows for existing communities beyond the 2030 projected flows.

### Conclusions

The capacity analysis conducted for the Agency's finished water transmission system showed that an additional 10 MGD of capacity is available with the addition of a new intermediate booster pump station along the 48-inch pipeline.

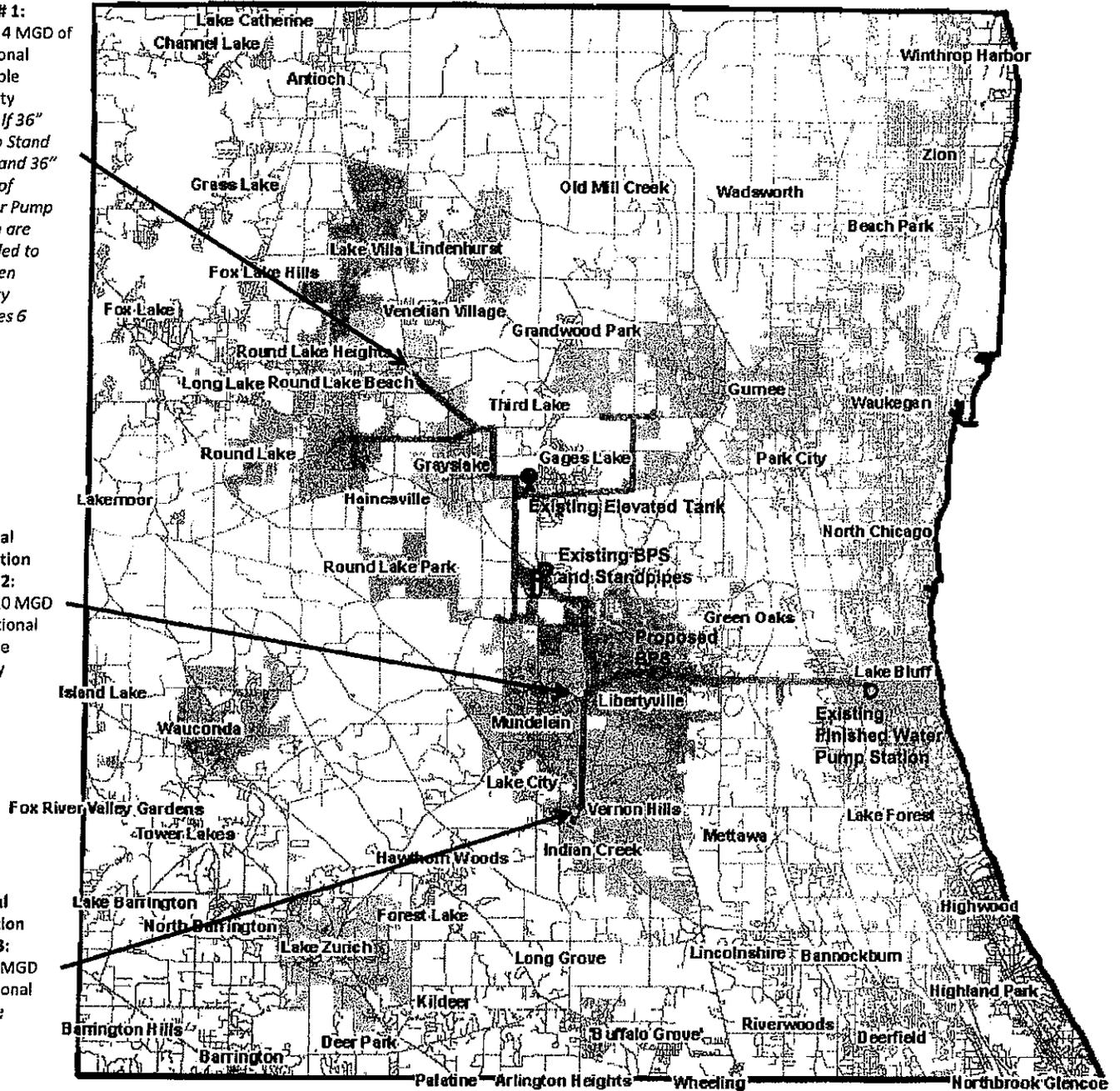
**FIGURE 1 – Maximum Available Capacity at Potential Connection Points**

CLCIAWA Water System Map

Potential Connection Point # 1:  
Up to 4 MGD of Additional Available Capacity  
*(Note: If 36" inlet to Stand pipes, and 36" outlet of Booster Pump Station are upgraded to 42" then capacity becomes 6 MGD)*

Potential Connection Point # 2:  
Up to 10 MGD of Additional Available Capacity

Potential Connection Point # 3:  
Up to 6 MGD of Additional Available Capacity





125 South Wacker Drive, Suite 600  
Chicago, Illinois 60606  
tel: 312 346 5000  
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March 12, 2010

Burr Koepsel  
Director of Operations  
Central Lake County Joint Action Water Agency  
200 Rockland Road  
Lake Bluff, IL 60044 USA

Subject: 10 MGD Expansion Cost Estimate

Dear Mr. Koepsel:

Recent investigations by Camp Dresser & McKee Inc. (CDM) indicated that the Central Lake County Joint Action Water Agency (Agency) transmission system, with some minor improvements, could accommodate approximately 10 million gallons per day of additional flows. In response to your request, we have examined the extent, nature and construction cost of system wide improvements to realize the capability of supplying this additional 10 million gallons per day.

This memorandum addresses the results of our assessment of the cost for the Agency to make system wide upgrades to obtain an additional 10 MGD of capacity. CDM is pleased to provide you with a description of the required system upgrades and estimated implementation cost.

At this very conceptual level of assessment, significant assumptions were made to define the type of improvements that may be required to achieve the desired capacity increase. As you recall we held an abbreviated workshop to develop a consensus on the type and nature of the improvements. A description of our consensus on required improvements is presented below as forming the basis for the conceptual cost estimating effort.

#### Description of System Upgrades

**Intake:** The existing capacity for the intake is 40 MGD. To achieve an additional 10 MGD, a second intake would be required. Although a smaller diameter intake could accommodate the additional 10 MGD flow, a 54" concrete intake is recommended to provide significantly more flow and also to provide the Agency with intake redundancy which it does not currently have. The new intake would be 5,000 feet long with Zebra Mussel control and increase the intake capacity to between 70 and 80 MGD.

**Raw Water Pump Station:** The existing raw water pump station capacity is 44 MGD. The station was planned to accommodate adding a fifth pump in the future. To achieve a firm pumping capacity of 60 MGD, it is proposed to install a fifth pump identical to the existing



Mr. Burr Koepsel  
March 12, 2010  
Page 2

four units, with a variable frequency drive. It was assumed that no modifications to the 480 volt power system were required to incorporate this fifth pump. It is also assumed that the ComEd primary power feeder to the pump station has adequate capacity.

**Raw Water Transmission Main:** No improvements required if allowed to increase velocity in the pipe. The maximum velocity would be set at 7.5 feet per second.

**Water Treatment Plant:** The existing water treatment plant capacity is 50 MGD. Three (3) options were evaluated to achieve an additional 10 MGD of capacity.

*Option 1, Stress Existing 4 Trains:* Each train would be operated at a greater flow. It is assumed that one year of full scale stress testing of one of the four existing process trains would be required to confirm performance at elevated flows and to obtain IEPA approval of the higher rated capacity. Replacement of chemical metering pumps, re-ranging of the filter effluent meters, hydraulic profile adjustments and other enhancements to process monitoring and control would be required. One additional UV reactor would be added in the space reserved for a future unit in the residual solids building.

There is no assurance that the IEPA will approve of this change. Thus alternative improvement options are presented below.

*Option 2, 10 MGD Membrane Plant:* A new 10 MGD capacity low pressure membrane treatment system would be built in a separate facility on the water treatment plant site. Based on local membrane performance on Lake Michigan water, direct membrane filtration is considered feasible. This system would have three parallel treatment trains at 3.33 MGD each (having similar capacity to each existing gravity filter). All necessary pumps, controls, chemical systems and membrane cleaning systems would be included in the new facility. Water quality would be similar to that of the existing plant. It is assumed that membrane treated water could bypass the UV reactors.

For this option, no additional standby power is proposed and it is assumed that the existing primary power utility feeders are sufficient for additional power needs.

*Option 3, New 5th Train:* A fifth treatment process train would be added to the existing four trains. It is assumed this fifth train would be identical to the existing four in size of tankage, piping equipment and performance. Space constraints adjacent to the clearwells would require offsetting the fifth train to the East to avoid conflicts with existing structures and underground piping. A fourth 25 MGD rated UV Reactor would be installed to meet the increased capacity.

The approach for the new fifth train is based on the fourth train. The cost for the fifth train is the escalated cost of the fourth train.



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**Filter Clearwell Capacity:** Additional clearwell capacity will be provided proportional to the increase in plant production capacity. An additional 1.5 MG of storage would be provided. Because of the congested nature of the water plant site, it was assumed that this new clearwell capacity would be located at new site, most likely at the same location of the new intermediate booster pump station. This new finished water storage is assumed to be a cast in place concrete structure below grade due to aesthetic considerations at the intermediate booster station site.

**Finished Water Pump Station:** Under existing conditions the finished water pump station operates at 46 MGD capacity. No improvements would be required to reach a proposed capacity of 56 MGD with the installation of a new intermediate booster pump station.

**Finished Water Transmission Mains:** The existing transmission mains have a 2030 max day demand of 46 MGD. The addition of the new intermediate booster pump station will allow up to a 10 MGD increase in capacity. The transmission mains could operate at a 56 MGD capacity with an acceptable velocity in the pipes and without exceeding the maximum pressure criteria. Improvements to the standpipe manifolds and booster pump station suction piping would be required. A parallel 42" pipeline is proposed. No other improvements to increase the capacity of the transmission mains are anticipated.

**Intermediate Booster Pump Station:** A new intermediate booster pump station would be installed, at a site in Libertyville alongside the 48-inch finished water transmission main. This proposed booster pump station site was purchased by the Agency several years ago, anticipating the eventual need for future capacity. The pump station would include four pumps with a firm capacity of 55 MGD and standby power to meet average day flows. The layout for the new station is based on previous building layouts done by CDM for this location.

**Booster Pump Station:** Add a fourth vertical turbine pump to meet maximum day flow. No additional modifications to the station are anticipated. It is assumed that the primary utility power feed is adequate for the fourth pump and no expansion of the standby power system is required.



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### Conceptual Cost Estimate Summary

Based on the assumptions and descriptions presented herein, conceptual level estimates of probable construction costs were developed for each of the components of the proposed improvements.

The following table presents a summary of the estimates developed for the proposed system upgrades. The cost basis includes cost markups at varying percentages of estimated costs for: general conditions, contractor overhead and profit, undeveloped design details, engineering and change orders commensurate with the level of definition of the project work.

Table 1 - Water System Upgrade Capital Costs

System Element	Option 1	Option 2	Option 3
Intake	\$6,900,000	\$6,900,000	\$6,900,000
Raw Water Pump Station	\$400,000	\$400,000	\$400,000
Raw Water Transmission Main	\$0	\$0	\$0
Water Treatment Plant	\$3,300,000	\$10,400,000	\$21,100,000
Filter Clearwell Capacity	\$3,600,000	\$3,600,000	\$3,600,000
Finish Water Pump Station	\$0	\$0	\$0
Finish Water Transmission Main	\$2,100,000	\$2,100,000	\$2,100,000
Intermediate Booster Pump Station	\$8,300,000	\$8,300,000	\$8,300,000
Booster Pump Station	\$500,000	\$500,000	\$500,000
<b>TOTAL</b>	<b>\$25,100,000</b>	<b>\$32,200,000</b>	<b>\$42,900,000</b>

*WTP Option 1 - Stress Existing 4 Trains*

*WTP Option 2 - New 10 MGD Membrane Plant*

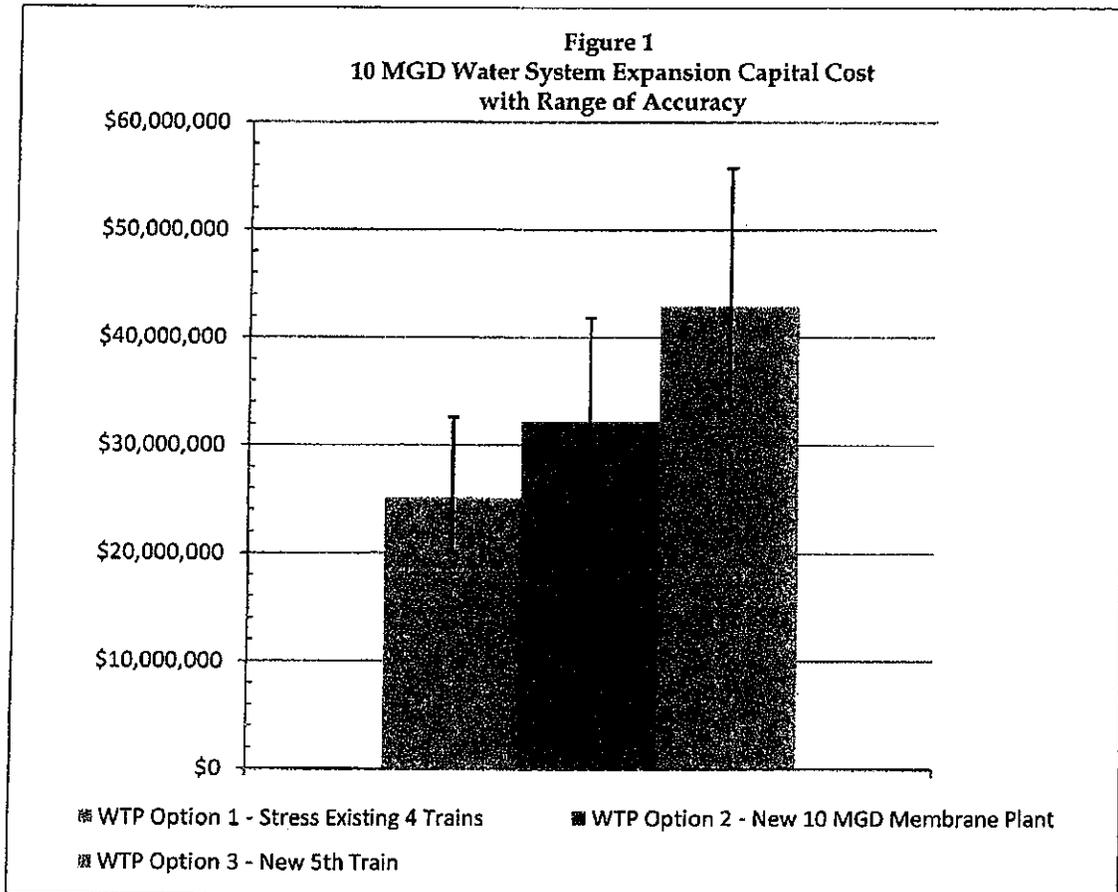
*WTP Option 3 - New 5th Train*

The cost development basis for each system upgrade used a CSI 16 Division approach and is presented in the Appendix. The cost data and markups in these breakdowns are based on cost estimates for similar work, escalation of previous work done by the Agency, and manufacturer quotes. All cost data has been prepared as present day worth using the ENR's Construction Cost Index History.

Caution should be used in interpreting these estimates. Note that these conceptual cost estimates have an expected accuracy of -20% to +30% reflective of the level of detail and development of the concepts. This range of accuracy is based on RSMeans definition of a conceptual design and cost estimate. The following figure presents the capital cost estimate and range of accuracy of each option as defined in Table 1.



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If you have any questions regarding this scope of work, please do not hesitate to contact me at (312) 346-5000.

Sincerely,

CAMP DRESSER & MCKEE INC.

Leonard M. Rago, P.E.  
Vice President

Brandon J. Celaya  
Project Engineer

May 18, 2010

## NORTH-WEST LAKE COUNTY WATER PLANNING GROUP

### Tax Based Bonds — Financing Option Pros and Cons

#### I. General Obligation Bonds – Referendum Authorized

Pros:

If passed, demonstrates broad consensus and community support  
Payable from ad valorem taxes levied on all taxable property within the agency, which would have an equalized assessed valuation based on the total JAWA service area  
Strongest security  
Lowest borrowing costs

Cons:

Referendum authorization is needed, which could be compromised by non-project considerations  
Referenda dates are limited — next three dates are — November 2, 2010 (General Election); February 22, 2011 (Consolidated Primary); April 5, 2011 (Consolidated Election). The election following the Consolidated Election is the General Primary in 2012. Note that Board action by a duly organized board of the Agency must precede these dates. For example, the latest date for board action for the April 5, 2011, election is Monday, January 31, 2011.  
If referendum fails the project collapses

#### II. County Special Service Areas

Pros:

No vote required by populace.  
Back door referendum (Petition) of 51% of property owners and 51% of registered voters (both sets of petitioners are required) needed to stop it  
Lesser probability of successful petition drive than referendum failure

Cons:

Higher borrowing costs  
Greater need to explain purpose as special service areas are sometimes negatively affiliated with subdivision financing  
More difficult to sell in bond market than referendum authorized GO Bonds  
  
May require several (as many as 10) separate areas  
Consolidating separate areas into one bond issue imposes some complexity  
May have need for equalization between areas over time to do equity

**III. Alternate Bonds Using Special Service Area Bonds  
or Tax Levy as the Revenue Source**

Pros:

See pros for special service areas as above  
Strongest Security  
Lowest Borrowing Costs  
Could be issued by County or Agency (pursuant to intergovernmental agreement)

Cons:

See cons for special service areas as above  
Backdoor referendum required for bonds (in addition to special service area  
backdoor referenda)  
"Coverage" required (either 110% or 125% depending on structure used)

Submitted By:           Speer Financial, Inc.  
                                  Chapman and Cutler LLP

May 18, 2010

## North Lake County JAWA – Borrowing Option Discussion

### Special Service Area Bonds And General Obligation Alternate Bonds

#### Special Service Area Bonds

1. SSA bonds would be issued by the County with the consent of each member community.
2. Several SSA's are required due to contiguity requirement. Minimizing the number of SSA's would help the financing process.
3. Each SSA must have a fixed boundary, although for internal sub-areas that are not served, there could be designated territory that is excluded from the SSA (like the holes in Swiss cheese).
4. Each SSA needs to have a known financial obligation; there is no cross-collateralization among SSAs.
5. Each SSA would require the following: (a) establish a boundary, (b) legal description, (c) map, (d) cost allocation and (e) legal process such as hearings and passage of the required legal documents and ordinances. The legal description describes the boundary and will need to site street locations, if possible. See attached timeline.
6. Fox Lake would need to establish a separate SSA for the property in the Village located in McHenry County as Lake County can only form SSAs within its own territory.
7. Equity issue – Three alternative criteria for maintaining equity are: equalized assessed valuation, water usage and capital need. However, first a decision will be needed as to whether all customers should be treated evenly (a so-called "postage stamp" basis), or if some should pay more because of higher cost of service. With respect to the equalized assessed valuation criteria, rates could be uniform or not, depending on structure of financing and policy directives.
8. Combined Financing Vehicle for SSA's - (a) A tax exempt pass-through trust could be established. The bonds of each SSA would be placed in the trust and certificates of participation of the trust would be issued. This would dilute the bondholder risk of default that could occur in one SSA. (b) Public Act 96-0884 permits County to issue one bond issue which pledges all the SSA's. This is preferable to the trust solution.

#### Alternate Bonds

1. The Agency could issue alternate bonds and use SSA bonds and/or tax levies for coverage. The SSA tax receipts representing the 10% coverage factor could then be passed through to the enterprise fund for use in paying debt service on the revenue bonds, providing special water supply services or operating the system.

#### Necessary Steps

1. Village board votes
2. Organizing agency
3. Negotiate SSAs, descriptions, procedures, value assigned to each
4. Successful water supply contracts between agency and members
5. Water contract with Lake County Public Water District
6. Lake Michigan water allocations

Submitted By:           Speer Financial, Inc.  
                                  Chapman and Cutler LLP

**PROCEEDINGS NECESSARY TO CREATE  
A SPECIAL SERVICE AREA AND ISSUE  
BONDS AND/OR LEVY SPECIAL TAXES THEREFOR**

REQUIREMENTS	TIMING
<p>1. Proposing Ordinance</p> <p>Describes the special services, the legal description (must be contiguous), amount of Bonds to be issued, and/or maximum rate of taxes to be levied; may (should) fix hearing date</p>	<p>Can not be passed within two years of a previously unsuccessful establishment proceeding</p>
<p>2. Notice of Public Hearing</p> <p>Notifies all interested persons of time and place of Hearing; boundaries of proposed area; permanent tax index numbers of parcels; nature of the services; maximum amount of Bonds to be issued, along with maximum interest rate and term of Bonds; special statement if services are to be "maintained" by other than municipality after the life of the bonds; and/or maximum rate of taxes to be levied, along with maximum years for taxes; and of right to be heard</p>	
<p>A. Published in newspaper of general circulation</p> <p style="text-align:center">and</p>	<p>Not less than 15 days prior to Hearing</p>
<p>B. Mailed to persons who paid general taxes for the preceding year or if taxes not paid, to person last listed on tax rolls as owner</p>	<p>Not less than 10 days prior to Hearing</p>
<p>3. Public Hearing</p> <p>Open to all interested persons; may have both written and oral objections</p>	<p>Must take place prior to or within 60 days after adoption of Proposing Ordinance; may be adjourned without notice to another fixed time and place</p>

## REQUIREMENTS

## TIMING

- |    |  |  |
|----|--|--|
| 4. | Petition Period<br><br>No Area established, bonds issued, and/or taxes levied if petition signed by 51% of electors <i>and</i> 51% of the owners of record within the proposed area  | For 60 days following final adjournment of Hearing   |
| 5. | Establishing Ordinance<br><br>Establishes boundaries, special services, amount of bonds, and/or tax rates  | Typically passed after Petition Period expires, but can be passed immediately after public Hearing with effective date following Petition Period |
| 6. | Filing of certified copy of Establishing Ordinance, which should contain (by inclusion or exhibit) a description of the services to be provided, legal description, and permanent tax index numbers; an accurate map; and a copy of the notice of public hearing with County Recorder(s) and County Clerk(s) | Immediately upon effectiveness of Establishing Ordinance; Filing with County Recorder(s) must occur within 60 days of effectiveness              |
| 7. | Bond Ordinance   | Passed after effective date of Establishing Ordinance  |
| 8. | Filing of certified copy of the Bond Ordinance with the County Clerk   |  |
| 9. | Tax Levy   | May be passed along with Bond Ordinance  |

Note: Tax extensions for special service areas are exempt from the provisions of the Property Tax Extension Limitation Act and the Bond Issue Notification Act.