



**Little McDonald, Kerbs & Paul
Lake Improvement District
Pump Station Outlet to Otter Tail
River- North Route Alternative**

**LMKP LID Membership Meeting
November 1, 2014**



Little McDonald, Kerbs & Paul LID Board

- Roger Neitzke- Chair
- Joe Esser- Vice Chair
- Bill Putnam- Treasury
- Sue Meyhuber- Secretary
- Ardell Wiegandt
- Glenn Schreier
- Dan Gleason
- Les Konley
- Mark Plencer



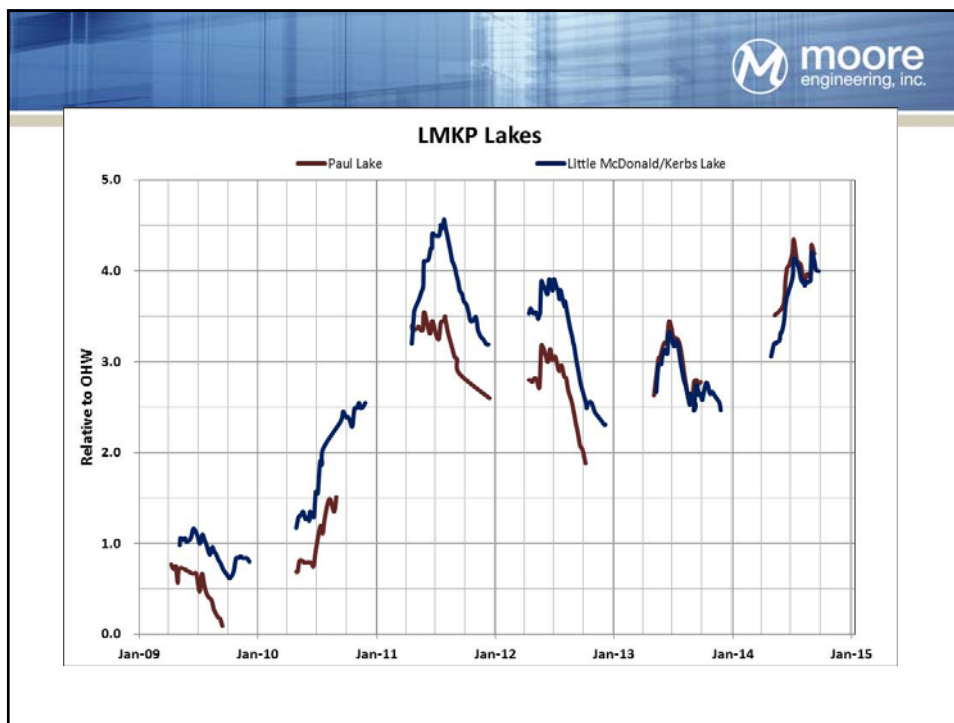
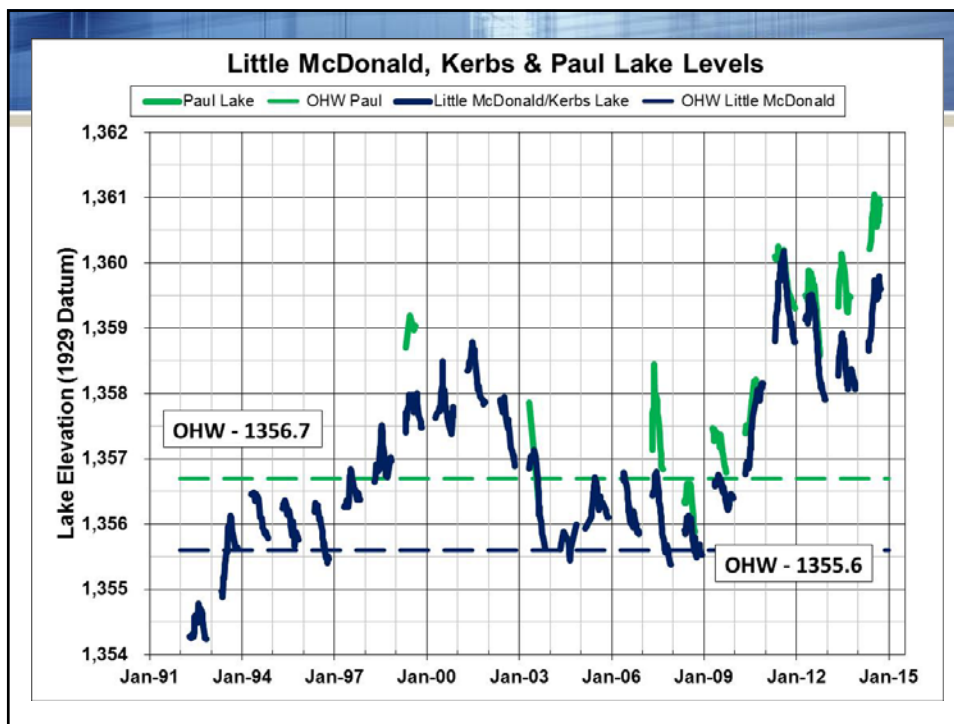
Consultants:

- Engineers: Moore Engineering, Inc.
 - Jeff Volk, PE
 - Mike Opat, PE
- Attorney: Ohnstad Twichell, P.C.
 - John Shockley



Meeting purpose...

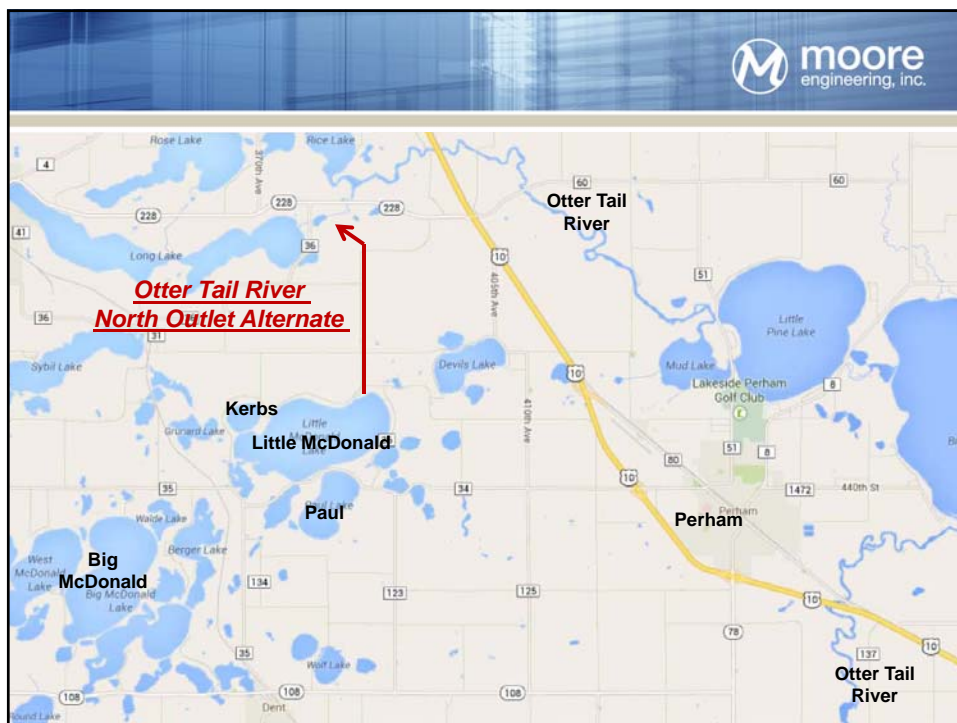
- Inform the LID membership on project development since July meeting.
- Request approval from the LID membership to approve the construction of an outlet to the Otter Tail River.
- Discuss potential schedule





Recent history...

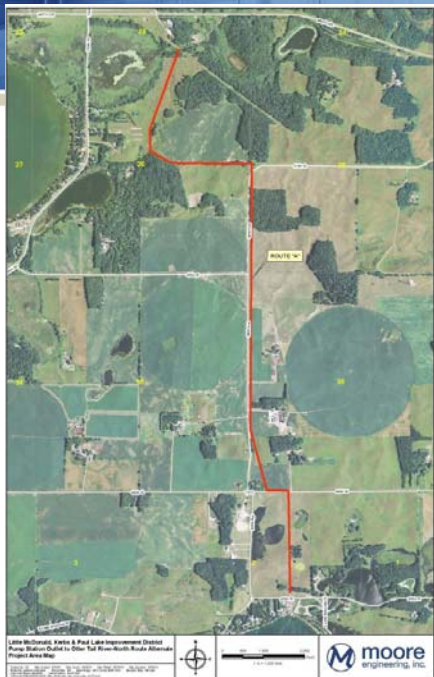
- **July 12, 2014** – LMKP LID membership meeting
 - Board authorized to study north outlet to Otter Tail River
- **July 18, 2014** – Moore Engineering hired
- **August 20, 2014**– Report on downstream impacts presented to Pine Lakes LID
- **September 5, 2014**– LMKP LID Board authorized soil borings
- **September 23, 2014**– LMKP LID Board meeting; considered preliminary findings
- **October 2014**– Multiple LMKP LID Board meetings
- **November 1, 2014**– LMKP LID membership meeting





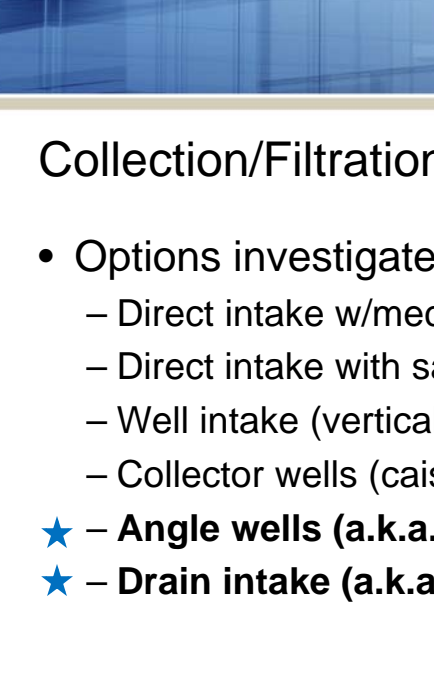
North Outlet Project:

- Goal= Lower LMKP Lakes to OHWs
 - Approximately 4 feet based on current levels
- Water Collection & Filtration
- Water Transfer
- Paul Lake Connection
- Systems studied for range of discharges
 - 10, 15, 20 & 25 cubic feet per second (cfs)



Water Transfer

- 30-inch diameter PVC pipe
- Pressurized force main
- 20-25 cfs capacity (depends on pump)
- Buried below frost line
- Alignment utilizes existing public ROW where possible
- Landowners favorable to route
- Discharges into tributary of the Otter Tail River downstream of Long Lake
- Pump station
 - Multiple pumps
 - 250 Hp
 - Dependent upon collection/filtration



Collection/Filtration

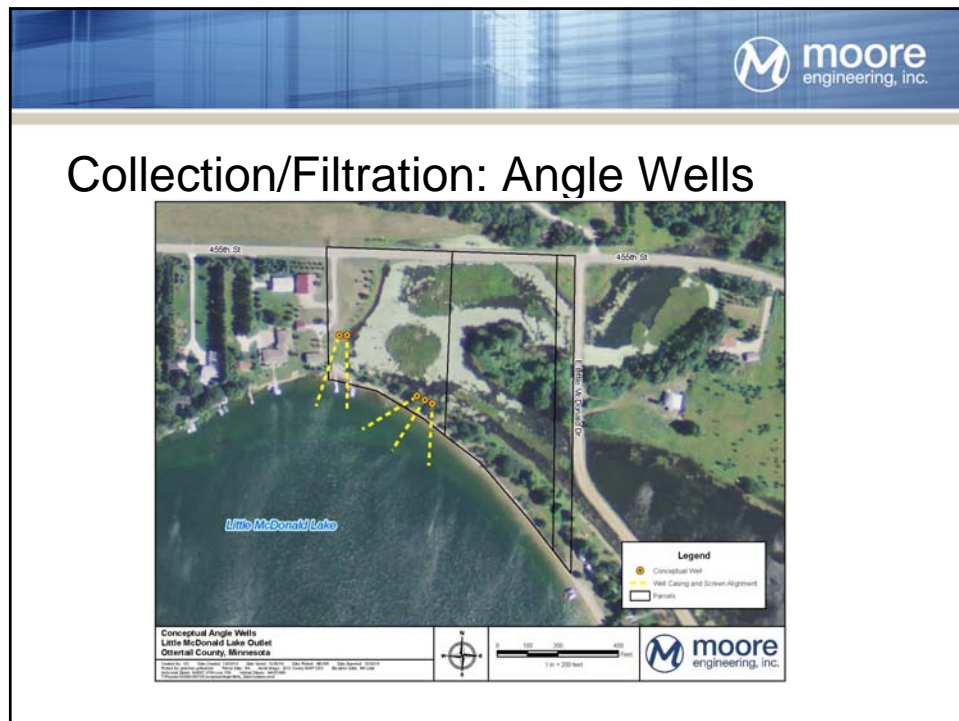
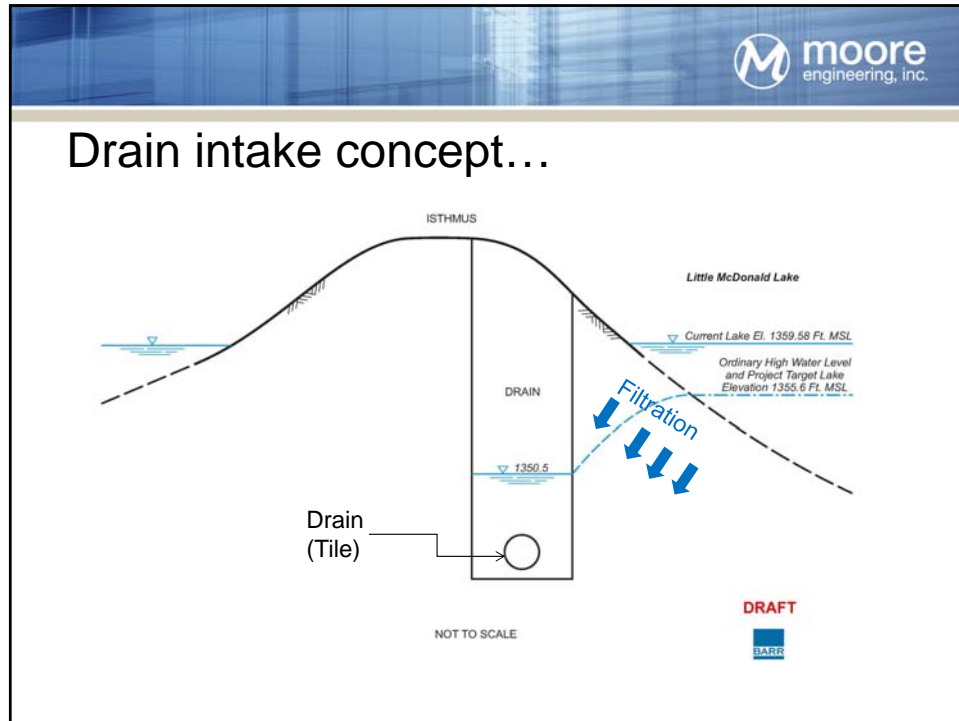
- Options investigated:
 - Direct intake w/mechanical filters
 - Direct intake with sand filter
 - Well intake (vertical wells)
 - Collector wells (caissons)
 - ★ – **Angle wells (a.k.a. slant wells)**
 - ★ – **Drain intake (a.k.a. tile drain)**

Soil Boring & Testing

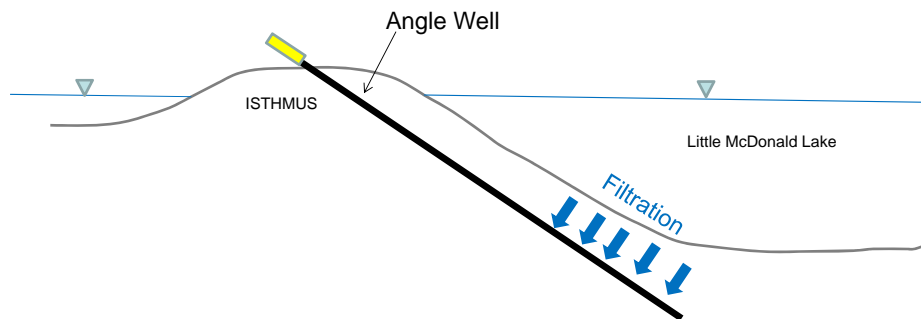
- Completed in October
 - Reduced risk and unknowns
 - Verified vertical well capacity
 - Verified lake/groundwater connectivity
 - Better defined horizontal drain capacity
 - Particle size → filtration capabilities

Collection/Filtration: Horizontal Drain

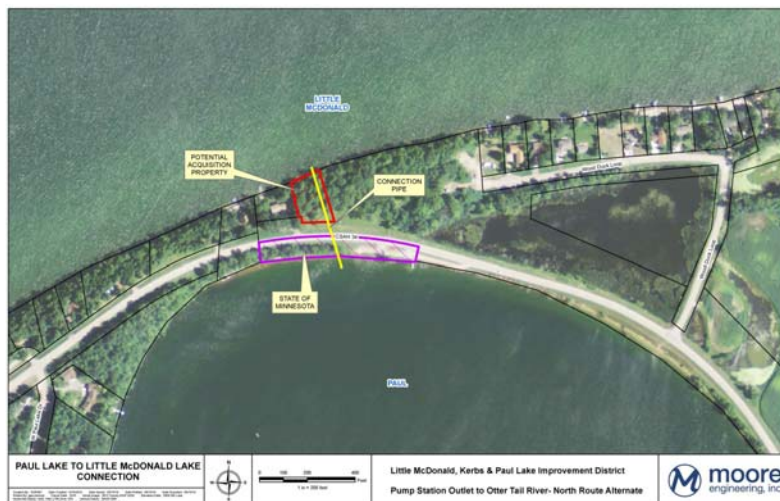




Angle well concept...



Paul Lake Connection





Potential Drawdown Scenarios & Costs

Depth of Water Pumped (ft)			9-Month Drawdown (ft)			
			Outlet System Discharge Rate (cfs)			
LMKP	Groundwater	Combined	10	15	20	25
1	0	1	3.0	4.5	5.9	7.4
1	1	2	1.5	2.2	3.0	3.7
1	2	3	1.0	1.5	2.0	2.5
Collection/Filtration Option			10 cfs	15 cfs	20 cfs	25 cfs
Drain (Tile) System			\$5.9MM	\$6.1MM	\$6.4MM	\$6.5MM
Angle Well System			\$6.1MM	\$6.9MM	\$7.6MM	\$8.3MM

Note: Estimates assume higher capacity transfer pipe for all options

- Assumptions:
 - 9 month operation (permitting, weather, maintenance, etc.)
 - Precipitation & evaporation not included
 - Surface area and volume are constant at each elev.
 - Total lake area=2,095 acres
 - “Ratio”= Depth of water pumped to yield 1’ drop
 - Actual results dependent upon many factors, including groundwater inflow rates which have not been extensively studied.



Operating Costs

- Electricity:
 - Varies depending on pump size, operating time, off-peak, etc.
 - \$0-\$300,000/yr
- General maintenance
 - Varies depending on system
 - Pump replacement
 - Filter maintenance



Estimated Project Costs

- Reasons for cost increases:
 - Higher level of design (time, soil borings, testing)
 - Construction costs escalated
 - Materials (concrete, pipe, etc.)
 - Labor shortage
 - Unknown bidding market for 2015
 - Filtration costs

Estimated Project Costs w/o Filtration (\$ million)				
Collection System	Collection Capacity			
	10 cfs	15 cfs	20 cfs	25 cfs
Direct Intake w/o Filtration	\$5.0MM	\$5.1MM	\$5.2MM	\$5.3MM

Note: Estimates assume higher capacity transfer pipe for all options



Board Recommendation

Estimated Project Costs (\$ million)		
Collection/Filtration Option	Collection/Filtration Capacity	
	20 cfs	25 cfs
Drain (Tile) System	\$6.4MM	\$6.5MM
Angle Well System	\$7.6MM	\$8.3MM

- Board recommendation based on inclusion of higher capacity (20-25 cfs) transfer system for all collection/filtration options
- Board will pursue least expensive alternative
 - Permitting may dictate which alternative is constructed



Regulatory & Permitting

- EAW
 - Downstream impacts
 - Aquatic invasive species
- State permits
 - DNR
- Local permits
 - OTC zoning
- Federal permits



Potential Schedule

- November 2014:
 - Authorization to proceed
 - Begin EAW process
 - Start design
- May 2015:
 - EAW completed (?)
 - Chapter 429 assessment process
 - Start permitting & land acquisition
- July 2015: Bidding
- July-December 2015(?): Construction



Preliminary assessment discussion...

- Chapter 429 process will be followed (MN law)
 - Likely to start next spring
- Assessment methodology not finalized
 - Following examples represent one possibility



Estimated Total Project Cost - \$6,400,000

Estimated Total Assessment Examples

EMV	Lake Frontage						
	0	50	75	100	150	200	250
\$100,000	\$13,800	\$14,900	\$15,450	\$16,000	\$17,100	\$18,200	\$19,300
\$300,000	\$15,800	\$16,900	\$17,450	\$18,000	\$19,100	\$20,200	\$21,300
\$500,000	\$17,800	\$18,900	\$19,450	\$20,000	\$21,100	\$22,200	\$23,300

Estimated Annual Payment Examples
Term Years= 10 Interest Rate= 5.0%

EMV	Lake Frontage						
	0	50	75	100	150	200	250
\$100,000	\$1,787	\$1,930	\$2,001	\$2,072	\$2,215	\$2,357	\$2,499
\$300,000	\$2,046	\$2,189	\$2,260	\$2,331	\$2,474	\$2,616	\$2,758
\$500,000	\$2,305	\$2,448	\$2,519	\$2,590	\$2,733	\$2,875	\$3,017



Estimated Total Project Cost - \$6,400,000

Estimated Total Assessment Examples

	Lake Frontage						
EMV	0	50	75	100	150	200	250
\$100,000	\$13,800	\$14,900	\$15,450	\$16,000	\$17,100	\$18,200	\$19,300
\$300,000	\$15,800	\$16,900	\$17,450	\$18,000	\$19,100	\$20,200	\$21,300
\$500,000	\$17,800	\$18,900	\$19,450	\$20,000	\$21,100	\$22,200	\$23,300

Estimated Annual Payment Examples Term Years= 15 Interest Rate= 5.0%

	Lake Frontage						
EMV	0	50	75	100	150	200	250
\$100,000	\$1,330	\$1,436	\$1,488	\$1,541	\$1,647	\$1,753	\$1,859
\$300,000	\$1,522	\$1,628	\$1,681	\$1,734	\$1,840	\$1,946	\$2,052
\$500,000	\$1,715	\$1,821	\$1,874	\$1,927	\$2,033	\$2,139	\$2,245



Estimated Total Project Cost - \$8,300,000

Estimated Total Assessment Examples

	Lake Frontage						
EMV	0	50	75	100	150	200	250
\$100,000	\$17,900	\$19,325	\$20,038	\$20,750	\$22,175	\$23,600	\$25,025
\$300,000	\$20,500	\$21,925	\$22,638	\$23,350	\$24,775	\$26,200	\$27,625
\$500,000	\$23,100	\$24,525	\$25,238	\$25,950	\$27,375	\$28,800	\$30,225

Estimated Annual Payment Examples Term Years= 10 Interest Rate= 5.0%

	Lake Frontage						
EMV	0	50	75	100	150	200	250
\$100,000	\$2,318	\$2,503	\$2,595	\$2,687	\$2,872	\$3,056	\$3,241
\$300,000	\$2,655	\$2,839	\$2,932	\$3,024	\$3,208	\$3,393	\$3,578
\$500,000	\$2,992	\$3,176	\$3,268	\$3,361	\$3,545	\$3,730	\$3,914



Estimated Total Project Cost - \$8,300,000

Estimated Total Assessment Examples

	Lake Frontage						
EMV	0	50	75	100	150	200	250
\$100,000	\$17,900	\$19,325	\$20,038	\$20,750	\$22,175	\$23,600	\$25,025
\$300,000	\$20,500	\$21,925	\$22,638	\$23,350	\$24,775	\$26,200	\$27,625
\$500,000	\$23,100	\$24,525	\$25,238	\$25,950	\$27,375	\$28,800	\$30,225

Estimated Annual Payment Examples Term Years= 15 Interest Rate= 5.0%

	Lake Frontage						
EMV	0	50	75	100	150	200	250
\$100,000	\$1,725	\$1,862	\$1,930	\$1,999	\$2,136	\$2,274	\$2,411
\$300,000	\$1,975	\$2,112	\$2,181	\$2,250	\$2,387	\$2,524	\$2,661
\$500,000	\$2,226	\$2,363	\$2,431	\$2,500	\$2,637	\$2,775	\$2,912



Chapter 429 Assessment Process...

- Engineer's Report
- Project hearing
 - Maximum project cost must be known
- LID Board decision to proceed
- County Commission must pass resolution
- Project proceeds → financing, bidding, construction
- Assessment hearing
 - Determine methodology and set assessments
 - Hire independent appraiser