

Olmsted Locks & Dam Cost Growth

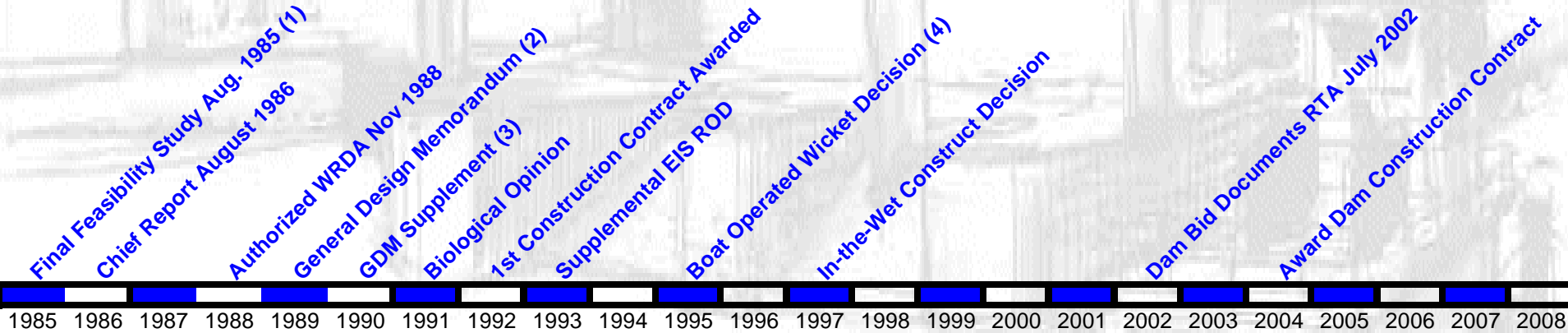


Inland Waterways User Board

Quincy, Illinois

2 November 2007

TIMELINE OF EVENTS



Phase

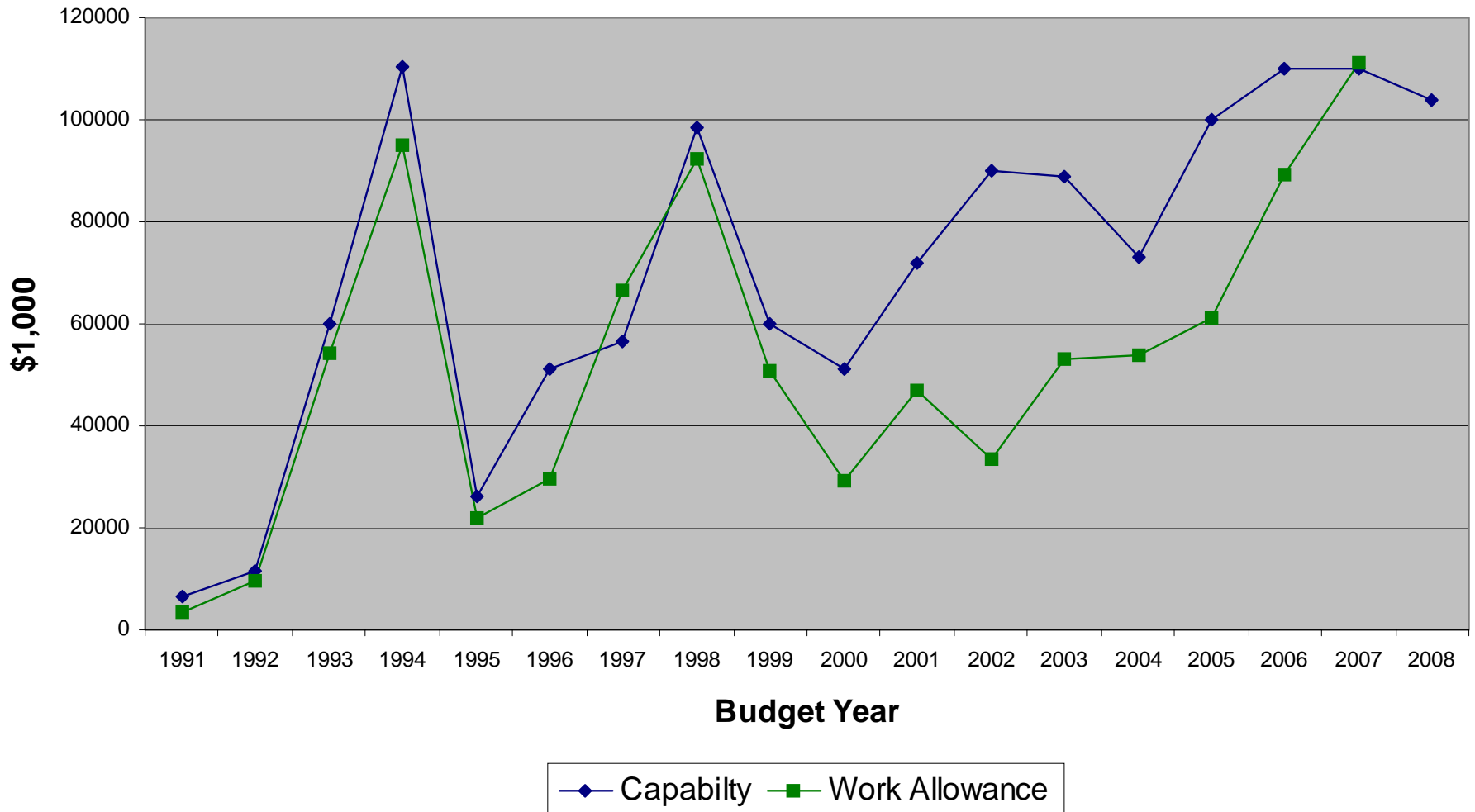
1. Feasibility Study
2. General Design Memorandum
3. General Design Memorandum Supplement
4. 1995 Joint Industry/COE Decision

Dam Configuration

- 6 Tainter Gates & 1,120' Navigable Pass (11 Drum Gates)
- 6 Tainter Gates & 1,125' Navigable Pass (75 Articulated Strut Gates)
- 2,200' Navigable Pass (220 Hydraulic Operated Wicket Gates)
- 5 Tainter Gates & 1,400' Boat Operated Wicket Navigable Pass

Olmsted L&D

Capability verses Work Allowance



Cost Increases

Price Level 1 Oct 2007

<u>Feature</u>	<u>Authorized</u>	<u>Current</u>	<u>Difference</u>
Lands	\$ 1,873.2	\$ 6,060.0	\$ 4,186.8
Relocations	\$ 3,822.6	\$ 1,594.0	\$ -2,228.6
Demolition L&D 52&53	\$ 13,772.4	\$ 13,290.0	\$ -482.4
Dam	\$ 500,807.0	\$ 1,156,319.0	\$ 655,512.0
Locks	\$ 437,303.4	\$ 449,282.0	\$ 11,978.6
Fish & Wildlife Facilities	\$ 0.0	\$ 11,714.0	\$ 11,714.0
Roads	\$ 1,235.5	\$ 3,284.0	\$ 2,048.5
Channels (river dikes)	\$ 12,260.8	\$ 28,394.0	\$ 16,133.2
Bank Stabilization	\$ 0.0	\$ 7,722.0	\$ 7,722.0
Cultural Resources	\$ 0.0	\$ 3,248.0	\$ 3,248.0
Building, Grounds & Utilities	\$ 5,569.5	\$ 36,138.0	\$ 30,568.5
Equipment	\$ 17,762.2	\$ 43,574.0	\$ 25,811.8
Planning, Engineering & Design	\$ 54,954.1	\$ 116,174.0	\$ 61,219.9
Construction Management	\$ 52,420.3	\$ 109,963.0	\$ 57,542.7
O&M	\$ 0.0	\$ 4,244.0	\$ 4,244.0
PROJECT TOTAL	\$1,101,781.0	\$1,991,000.0	\$ 889,219.0

Cost Increases

Price Level 1 Oct 2007

Land	18 acres boat ramp (safety) 116 acres spoil area (biological opinion) 2,081 acres mitigation (biological opinion)	\$ 4.2M
Locks	Floating approach walls (reduced maintenance) Increased 4 to 8 mooring cells	\$11.9M
Fish & Wildlife	Mussel Monitoring (biological opinion) BWMA Waterfowl Improvements (biological opinion)	\$11.7M
Channels	Additional River Dikes for sediment control (technical decision)	\$16.1M
Bank Stabilization	Hill side unstable removed 1.6 million cubic yards of material. (differing site condition)	\$ 7.7M

Cost Increases

Price Level 1 Oct 2007

Cultural Resources	Negotiating MOU with Illinois SHPO is not complete	\$ 3.2M
Building & Grounds	Gate Storage Facility (capable of quick change out) Boat Mooring Area (based on type of dam) Service Mound (differing site condition) Resident Engineer's Office (quality of life)	\$30.5M
Permanent Operating Equipment	Maintenance Bulkheads (increase maintenance efficiency) Towboat (based on type of dam) Wicket Lifter (based on type of dam) Washdown Barge (ability to clean lock walls faster & get lock back in service)	\$25.8M

Cost Increases

Price Level 1 Oct 2007

Planning, Engineering & Design	Multiple dam designs, 1:5 Model Construction modeling, seismic design, slope stability, F&W, Gate Storage Facility, EDC (associated with in-the- wet construction method.)	\$61.2M
Construction Management	The construction period has increased 18 years. Also managing a cost reimbursable contract requires more resources.	\$57.5M
Maintenance	Maintenance of completed work FY02 – FY11	\$4.2M

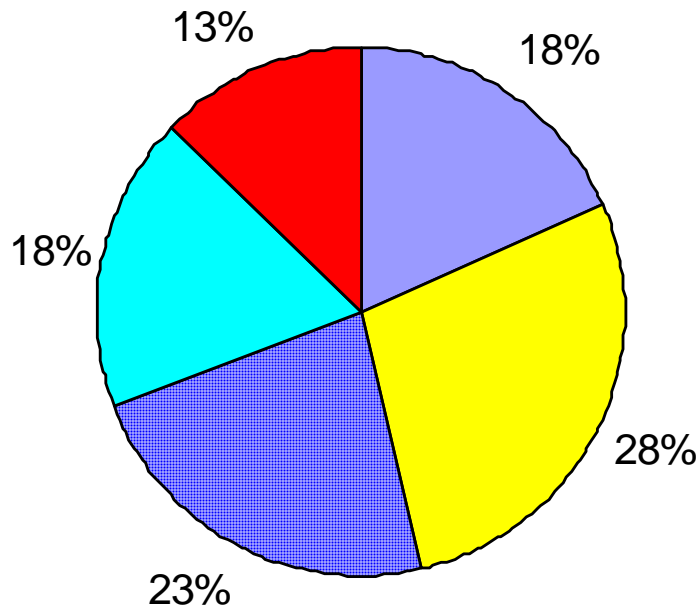
Cost Increases

Price Level 1 Oct 2007

Dam	Prototype (technical requirement) Award FY04 verses FY02 Inefficient funding Market Conditions Contractor Omissions Changes Salvage value of equipment	\$655.5M
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Dam Cost Growth

COST GROWTH AS PERCENTAGE OF TOTAL COST GROWTH



- Government Changes
- Inefficient Funding
- Market Influence
- Contractor Omissions/Reestimates
- Equipment Salvage

Cost Risk Assessment

- **Risk Management**

- Risk Management Guide for DOD Acquisition
- 60 Items reviewed
- Level of Likelihood (1-Not Likely thru 5-Near Certainty)
- Level Of Consequence (1-Minimal thru 5-Severe)
- Risk Level Rating (low, moderate or high)
- Mitigation Discount Factor
- Schedule Concurrence Discount Factor

**CONSTRUCTION OF OLMSTED DAM
RISK ITEM ASSESSMENT SUMMARY**

Item No.	Title	Date Initiated	WGA Lead	USACE Lead	Project Area	Level of Likelihood	Level Of Consequence	Risk Level Rating	Description/Risk Casual Factor/Future Root Cause
1	SAND WAVE	2/15/2007	B. Goreing	H. Weise	River	5	2	Y	Hydrographic surveys report significant "changes in the alluvial processes" (sediment transport) since 1992. An approaching "sand wave" feature could deposit an additional 6 ft of material in some places along the dam axis between August 2006 and August 2007 and another 10 ft by August 2008. Estimated cost impact is \$2,900,000. Added dredging would be concurrent with other activities. The current 18-step approach will reduce the impact of the shoaling. Much of the foundation stone (bedding and riprap) can be placed before the bulk of the first sand wave encroaches on the entire footprint of the dam. It is anticipated that this rock will cause an increase in velocities at depth and in the NP section so that shoaling after 2007 is minimal. With this approach, the estimated added cost is \$2,400,000, a savings of \$500,000.
2	AQUA-DIGGER DOWN	2/15/2007	B. Goreing	V. Rassavong	River	3	1	G	Mechanical failure or failure of boom from improper operation. Caused by lack of maintenance, operator error, or defect. Operators will be aware of the Operating restriction of the machine. Spare parts should be on hand. Requested spare part list from Manufacturer for 5 yrs. There are equipment that can be rented with minimal delivery time to replace equipment.
3	FUNDING	2/15/2007	P. Ryan	H. Weise	Entire	4	5	R	Lack of adequate funds to continue work. Could be caused by (a) cost-overruns consuming annual allotments before end of FY, (b) actual funding being less than promised, (c) delays incurred due to late budget approval. Revised Continuing Contract clause requires work to stop in advance of funds depletion.
4	SECURITY ON JOBSITE	2/15/2007	D. Durst	W. Hunter	Entire	3	1	G	Work is impacted by theft, vandalism, or terrorists acts.
5	INSURANCE DEDUCTIBLES	2/22/2007	V. Havens	J. Keen	Entire	3	2	G	Contract insurance requirements stipulate certain deductibles. Losses (claims under deductible amount) are not identified in current budget base. Therefore, such losses would mean additional contract cost (funds requirements).
6	EMERGENCY PROCUREMENTS	2/22/2007	J. Nichols	J. Lambert	Entire	2	2	G	Current acquisition plan does not have provisions for expediting procurements to meet emergencies. Typical time frame for new procurements is unacceptable, as entire job could be shut down awaiting award of subcontract.
7	STRIKES	2/22/2007	D. Durst	J. Keen	Entire	2	3	G	Strikes could stop all work on site for up to 3 months.
8	NATURAL DISASTERS	2/22/2007	T. Sandor	C. George	Entire	3	4	Y	This evaluation takes into consideration floods, earthquakes, tornados, hurricanes, lightning strikes, and fires. The worse case scenario was hurricanes. As we have already seen the affect of a hurricane can have on obtaining supplies and materials.

PACR Schedule

Modify Capacity Model	8 Oct 07
Complete Cost-Closure Matrices	15 Oct 07
Complete Capacity Analysis	1 Nov 07
Complete Economic Analysis	1 Dec 07
Complete Writing of PACR	15 Dec 07
Complete ITR	15 Jan 08
Submit PACR Report to LRD	30 Jan 08

STONE PLACEMENT



PRECAST YARD



CATAMARAN BARGE



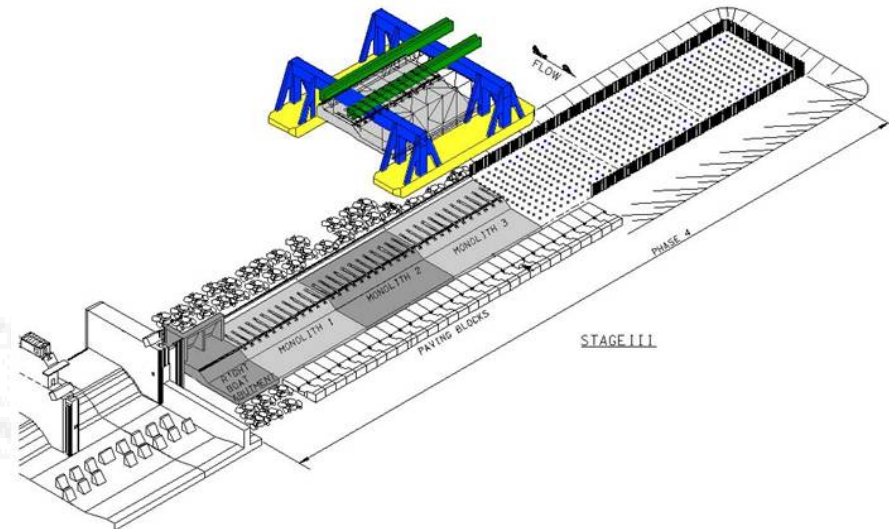
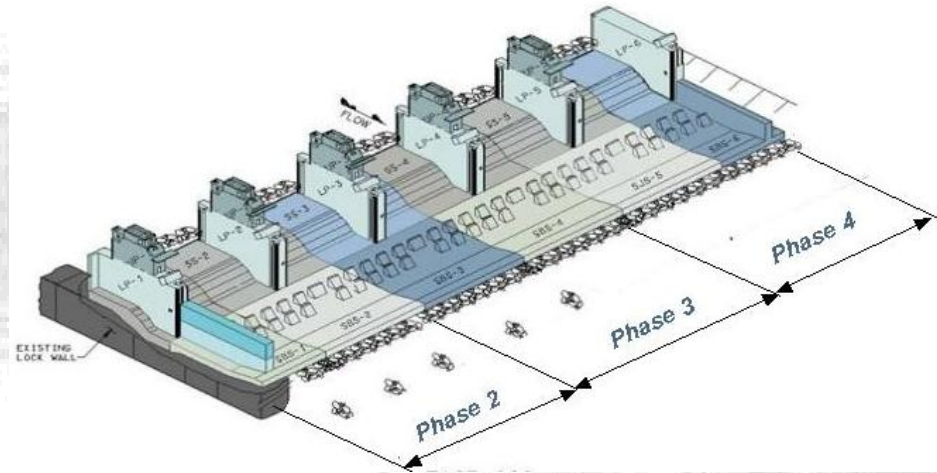
EXCAVATOR BARGE



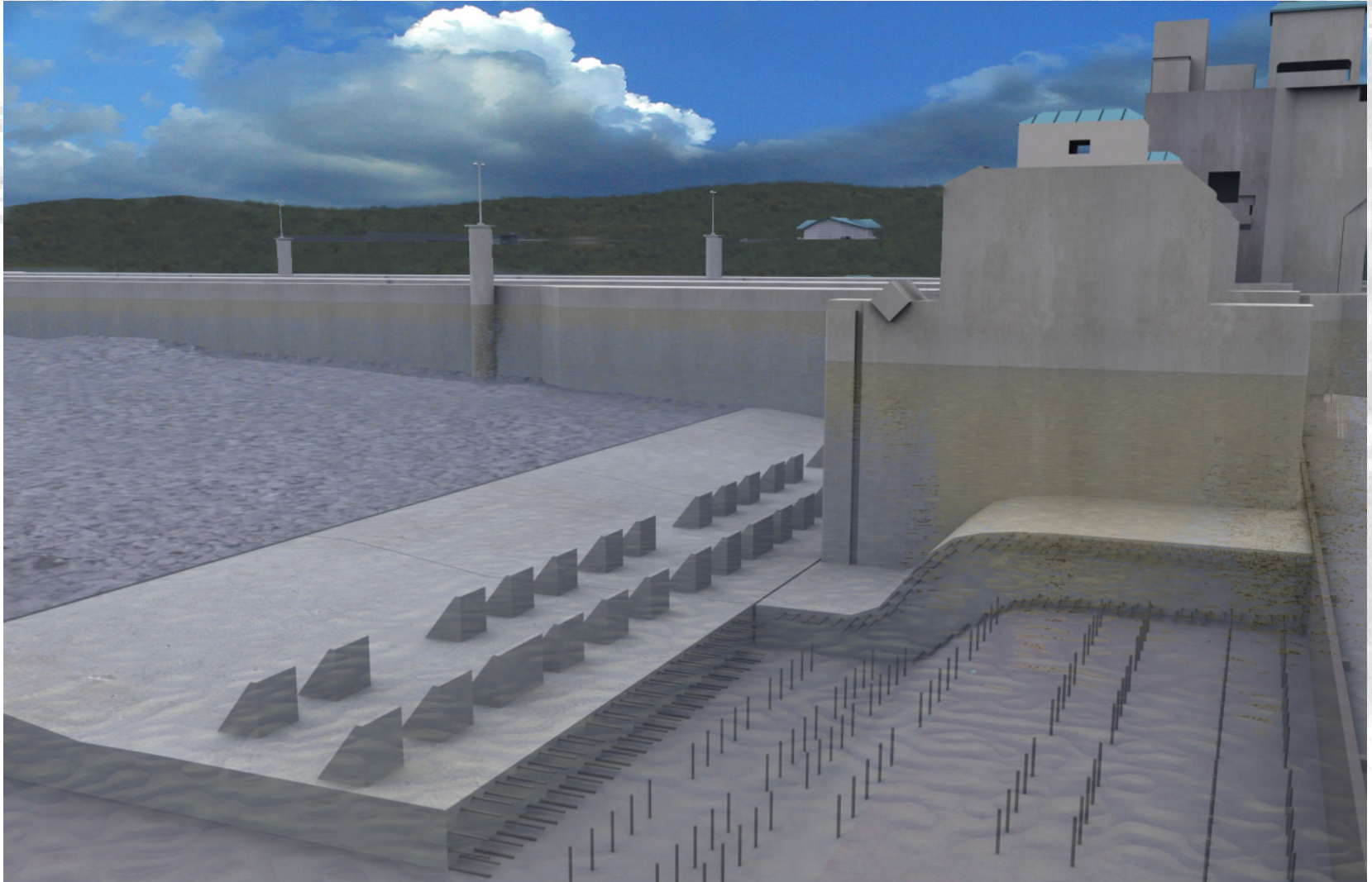
Dam Shell Fabrication & Setting

	<u>Fabrication</u> (by FY)	<u>Setting</u> (Low water)
2008	1	
2009	6	7
2010	6	6
2011	7	7
2012	5	5
2013	4	4
2014	5	5

Low Water Season: 15 June to 30 November



Exposed Rebar During Installation



Dam Animation

