

COLUMBIA LOCK AND DAM OUACHITA-BLACK RIVER

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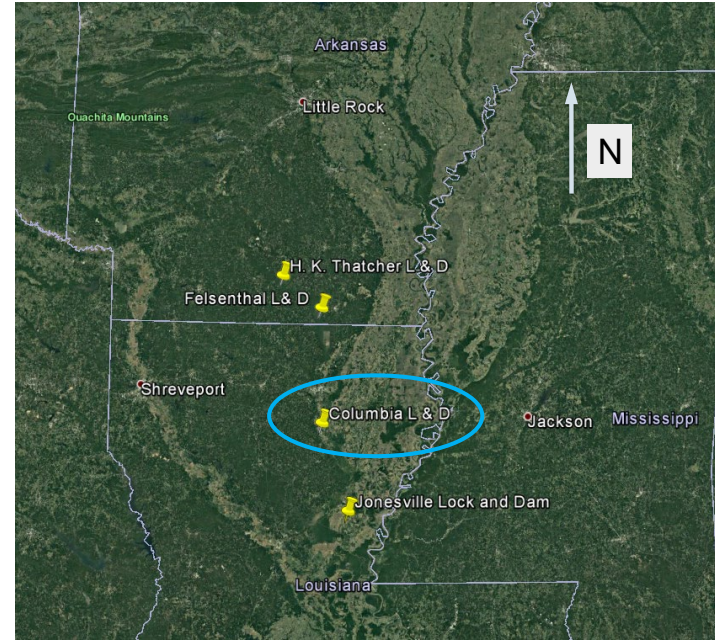


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PROJECT INFORMATION



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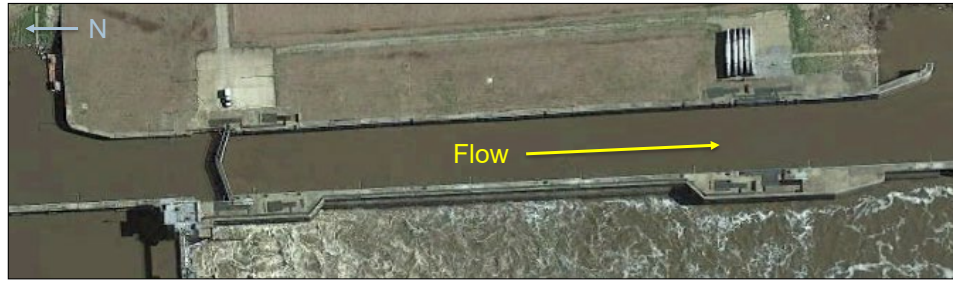


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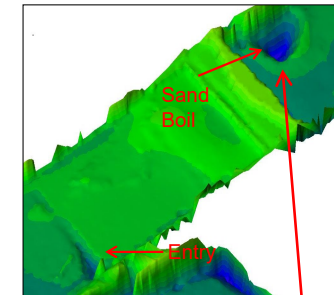
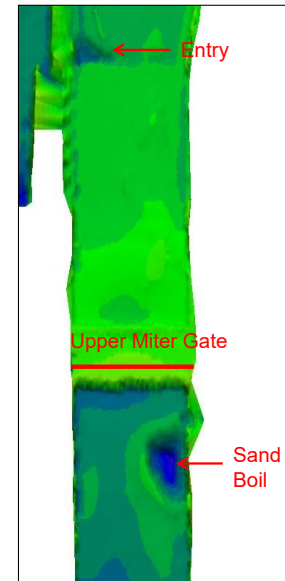
PROJECT INFORMATION



- Lock width: 84 ft.
- Useable length: 600 ft.
- Provides 18 ft. of lift
- Normal upper pool elevation is 52.0 ft. (NGVD)
- Normal lower pool elevation is 34.0 ft. (NGVD)



2015 ISSUES

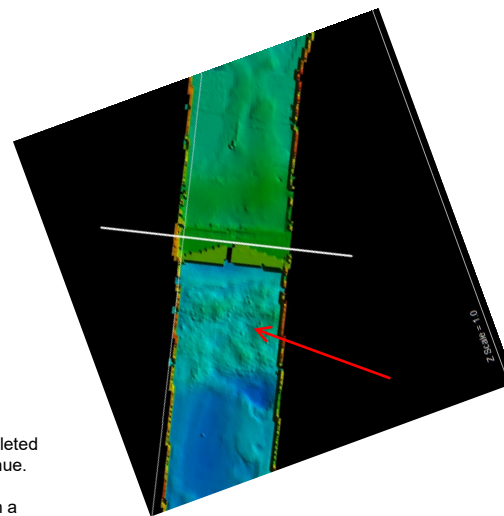
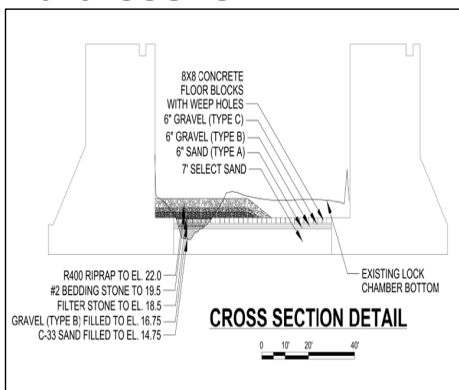


- Issue first discovered November 2015.
- Lock master saw a plume of material inside the lock chamber.
- Performed multi-beam survey of the project.
- Lock closed to navigation for repairs

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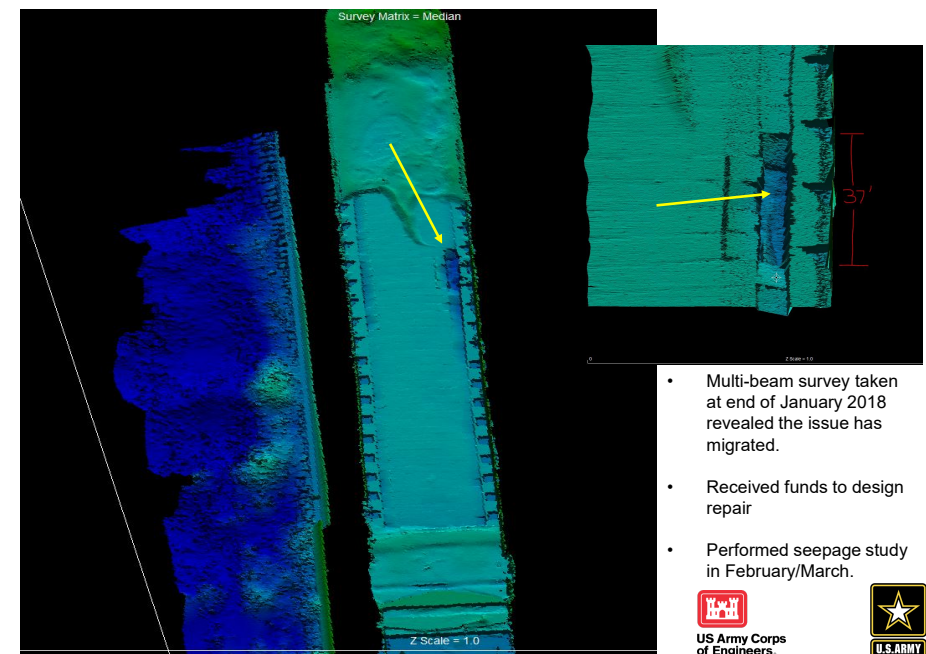
2015 ISSUES



- Temporary repair designed, installed, and completed by December 2015 allowing navigation to continue.
- District budgeted and requested funds to design a permanent repair.
- Request included funds for:
 - Seepage study
 - Drilling / installation of relief wells



2018 MULTI-BEAM SURVEYS



- Multi-beam survey taken at end of January 2018 revealed the issue has migrated.
- Received funds to design repair
- Performed seepage study in February/March.



EXPLORATORY DRILLING

- Seepage study is completed.
- June 2018 Incorporating findings from study, preparing to perform exploratory drilling in advance of installing relief wells.

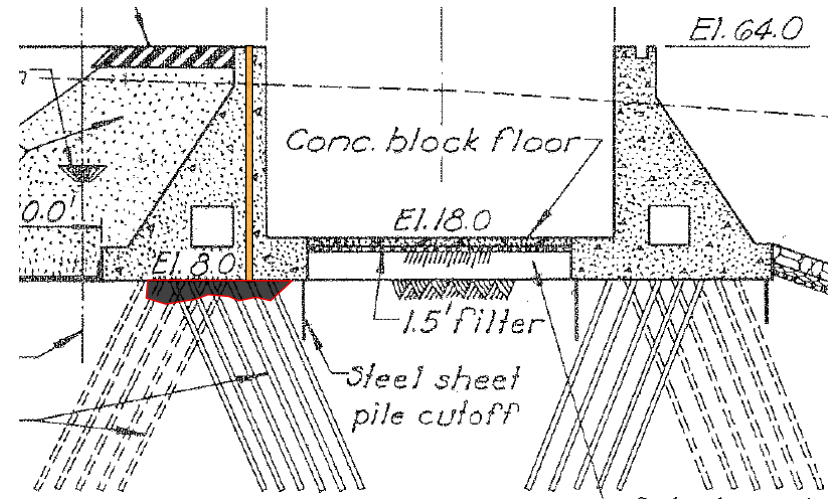


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PROJECT INFORMATION



Lock cross-section

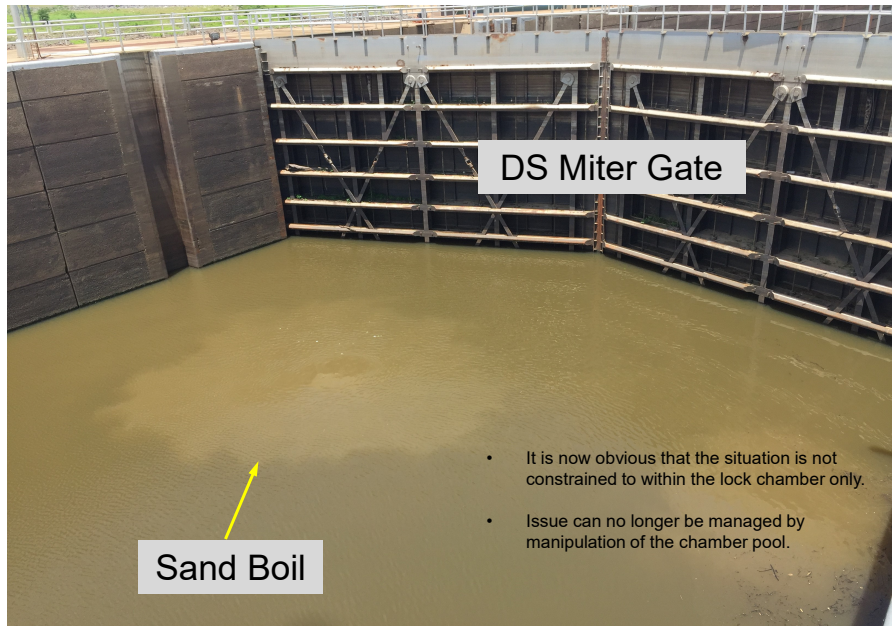
- These voids are not supposed to be here.
- Completely changed our understanding of the progression of the situation.

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DS SAND BOIL



DS Miter Gate

Sand Boil

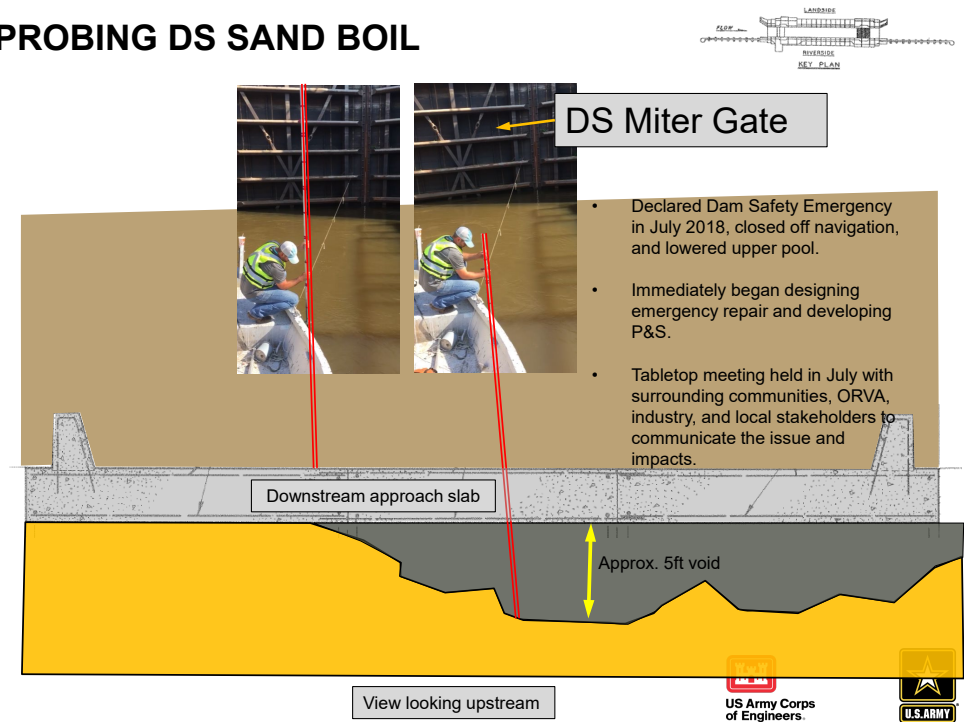
- It is now obvious that the situation is not constrained to within the lock chamber only.
- Issue can no longer be managed by manipulation of the chamber pool.

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PROBING DS SAND BOIL



DS Miter Gate

- Declared Dam Safety Emergency in July 2018, closed off navigation, and lowered upper pool.
- Immediately began designing emergency repair and developing P&S.
- Tabletop meeting held in July with surrounding communities, ORVA, industry, and local stakeholders to communicate the issue and impacts.

Downstream approach slab

Approx. 5ft void

View looking upstream

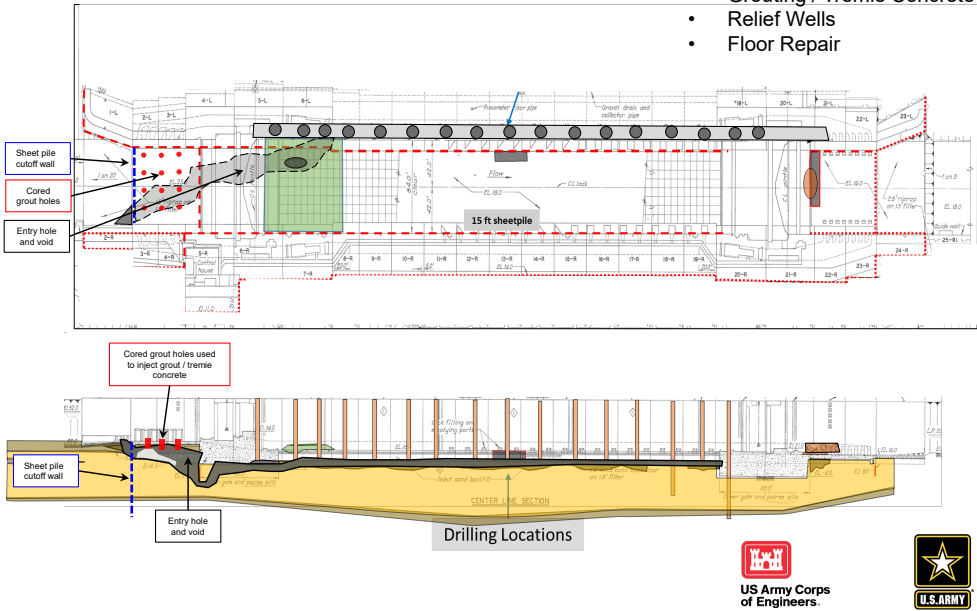
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ISSUES / REPAIRS

- Sand Boils
- Voids Under Wall
- Void in Chamber Floor
- Exploratory Drilling
- Sheet Pile
- Coring
- Grouting / Tremie Concrete
- Relief Wells
- Floor Repair



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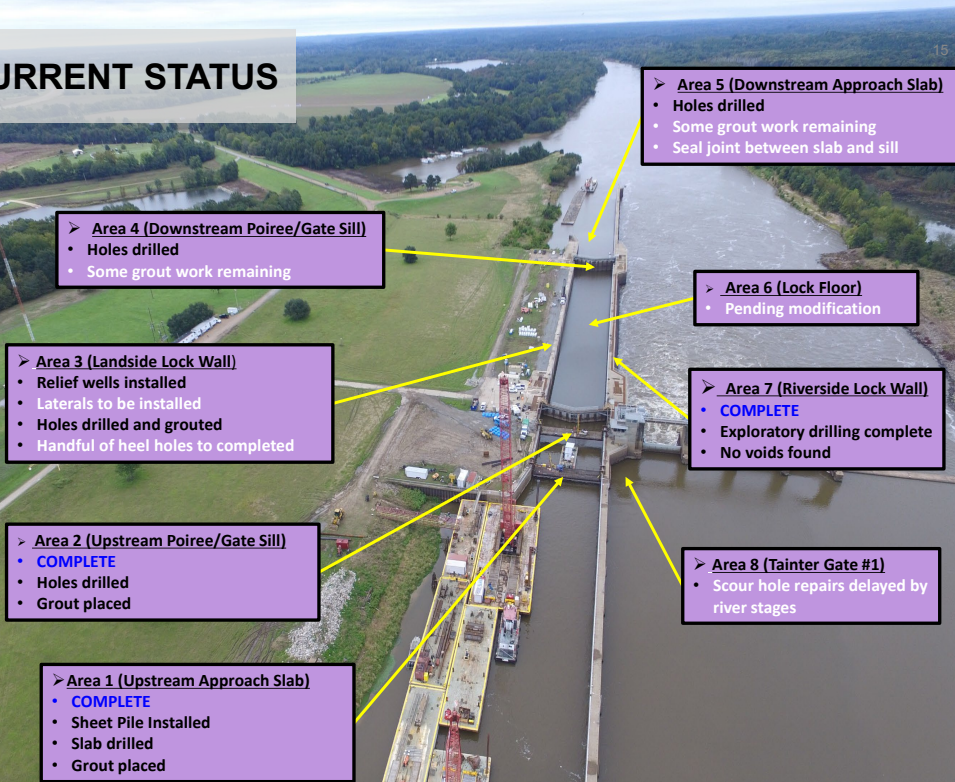
FINDING A CONTRACTOR

- Market research identified 6 technically capable contractors.
- Many of the prime contractors were not interested in the work due to:
 - **Complexity** of work
 - **Uncertainty** of work in underwater conditions
 - Need for a **quick turn-around** to open project back for navigation
 - Engineering During Construction (EDC) **flexibility** to modify plans/specs in the midst of changing conditions
- Massman Construction Co. won the bid as the general contractor



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CURRENT STATUS



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WHEN WILL IT BE COMPLETE?

- **End of April** is targeted for completion.
 - High river could push completion in **early to mid May**.
- Final grout quantities and lock floor repairs will drive final completion date.
- Relief well lateral drain installation and repair in front of tainter gate are water level dependent.

WHEN WILL PROJECT BE OPEN?

- Opening for navigation could be as early as end of May.
- Drain installation and repair in front of tainter gate not expected to delay opening the project.



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