

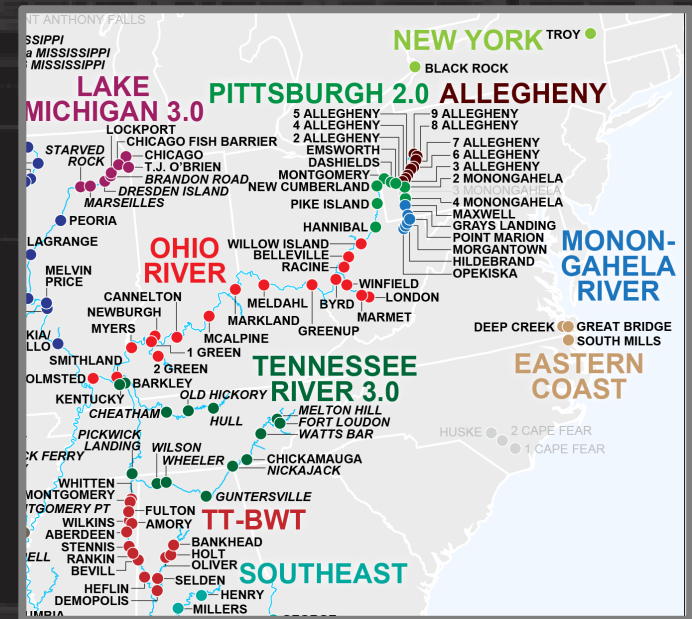
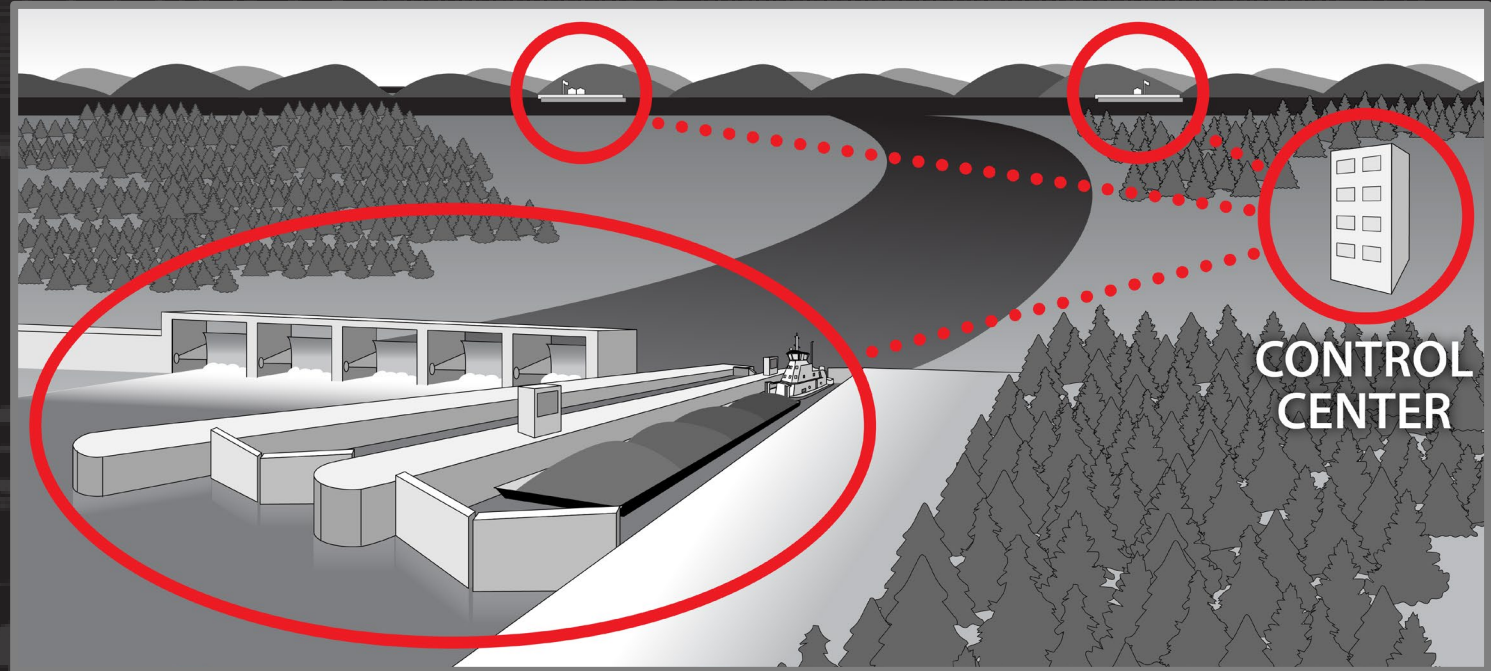
LOCK & DAM REMOTE OPERATIONS

Marine Transportation Board

November 13, 2023



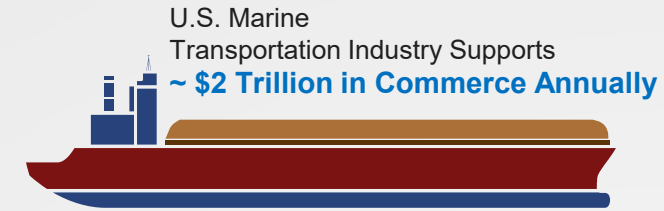
US Army Corps
of Engineers®





USACE NAVIGATION MISSION

Provide safe, reliable, efficient, and environmentally sustainable waterborne transportation systems for movement of commerce, national security needs, and recreation.



U.S. Marine
Transportation Industry Supports
~ \$2 Trillion in Commerce Annually

**15% of U.S.
Domestic Freight**
is carried by water

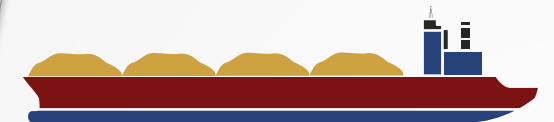


In 2021,
31 Million short tons of fertilizer
traveled on the
Mississippi River

**More than
48%
of goods
bought by
Americans**
passed through
harbors maintained by Corps



**Over 1.5 Billion
Short Tons**
of Foreign goods
traveled through U.S.
Ports/Waterways in 2021



In 2021, **176 Million short tons of ag products**
traveled on the Mississippi River



■ National Assessment

■ Program Delivery

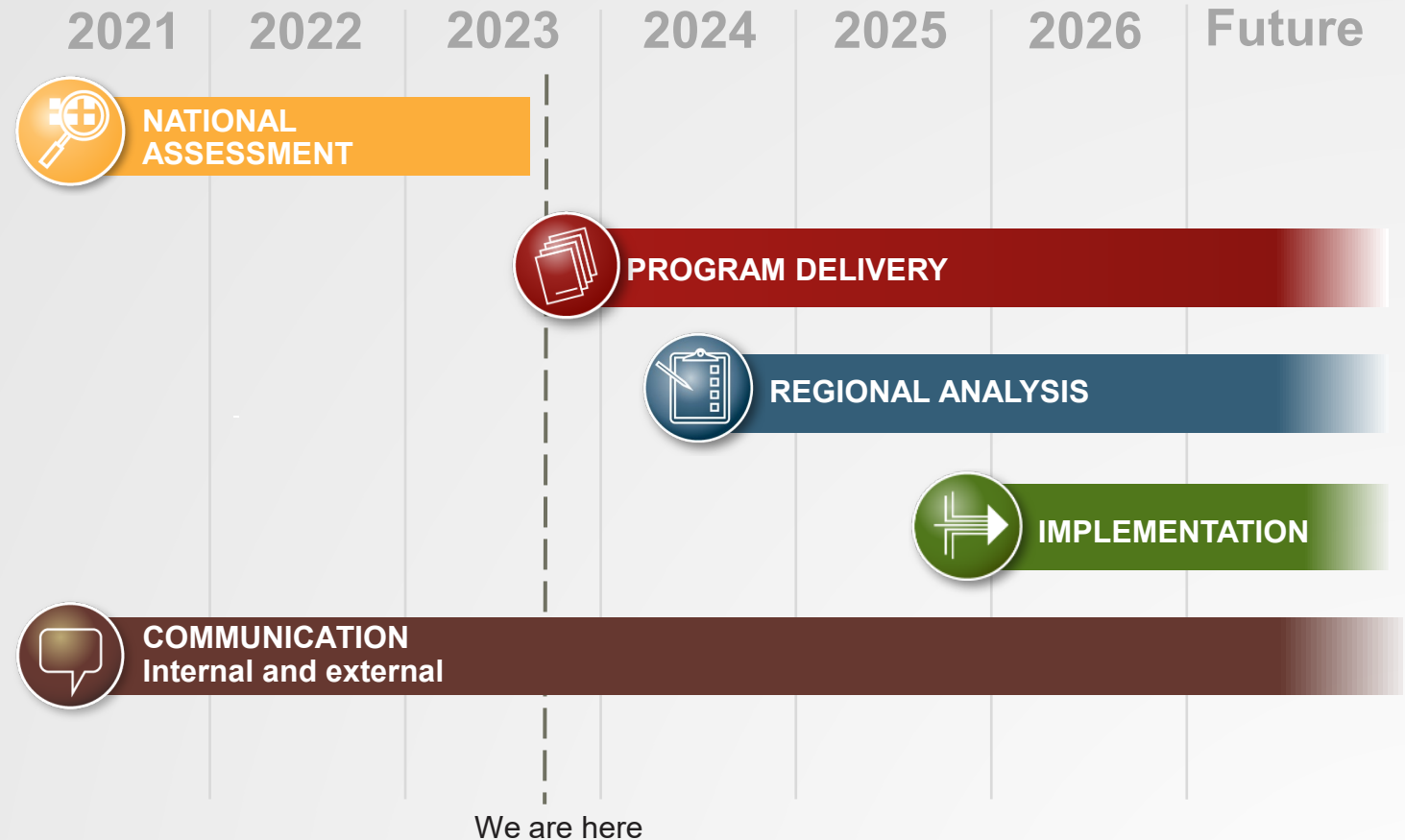
- Develop national standards, policies, and guidance
- Ensure consistent implementation

■ Regional Analysis

- Detailed site assessment & implementation decision

■ Implementation

- Project construction and operation transition





PRINCIPLES FOR REMOTE LOCK OPERATIONS

USACE commitment:

- **Safety**
- **Reliable & consistent** locking
- Maintain **public access** & assistance during recreational locking
- Protecting system – ensure physical & **cybersecurity**





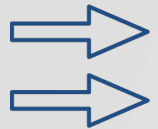
VISION & GOALS



VISION:

Implement lock & dam remote control to modernize operations for navigation in the future.

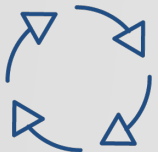
GOALS:



1. **Consistent national implementation.** Establish national policies to enable consistent implementation.



2. **Standardization.** Promote standardization / commonality through development of common operating procedures, staffing, design, and equipment / components.



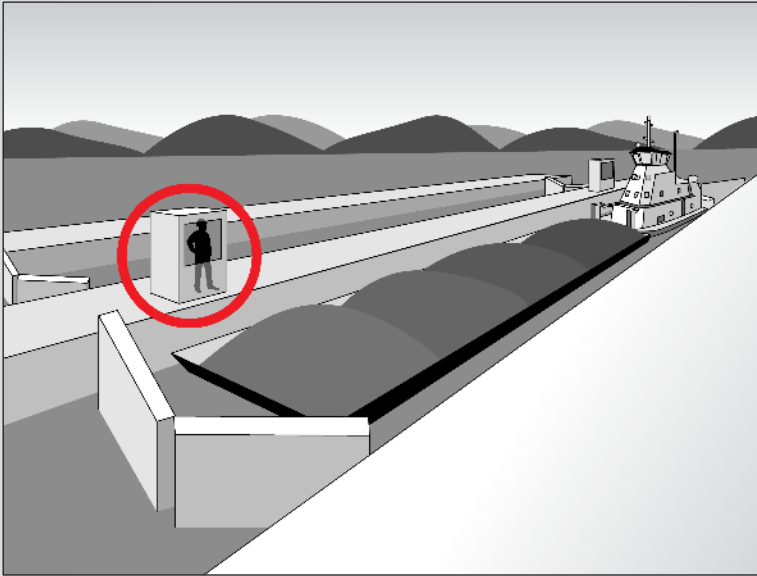
3. **Life cycle investment.** Develop a multi-year life cycle investment plan that is flexible and adaptable to each MSC, District, river, & L&D.



4. **Prioritized for people.** Take care of people. Implement staffing transition and training plan.



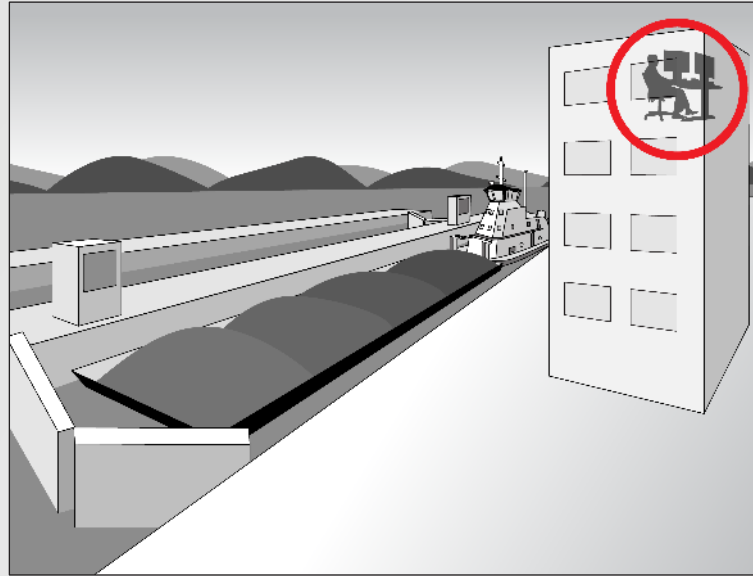
OPERATIONAL SCENARIOS



Local Operation

- Lock operated from lock wall
- Maintain capability to operate from lock wall.

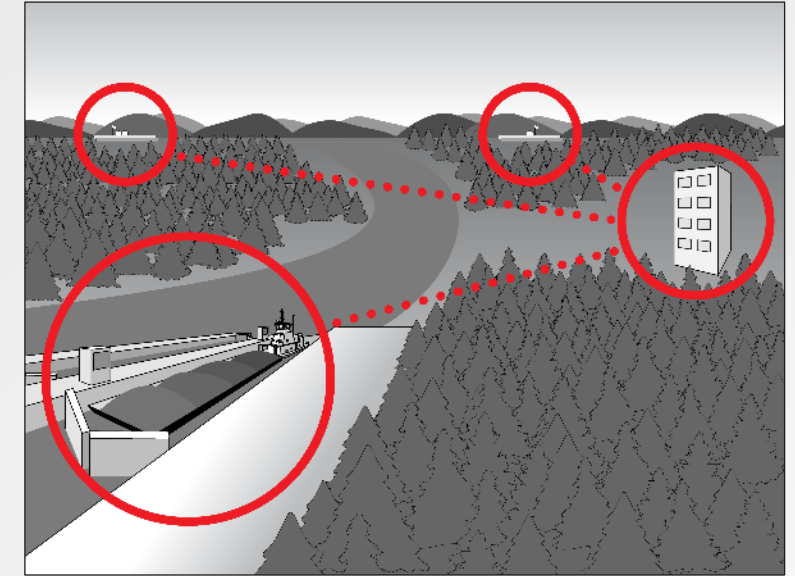
Majority of current portfolio



Control Room

- Lock operated from *local control room* using camera & sensors.
 - The Corps has 20+ years experience operating locks from a control room.
- Maintain capability to operate from lock wall.

Currently operating
at many of “new” locks



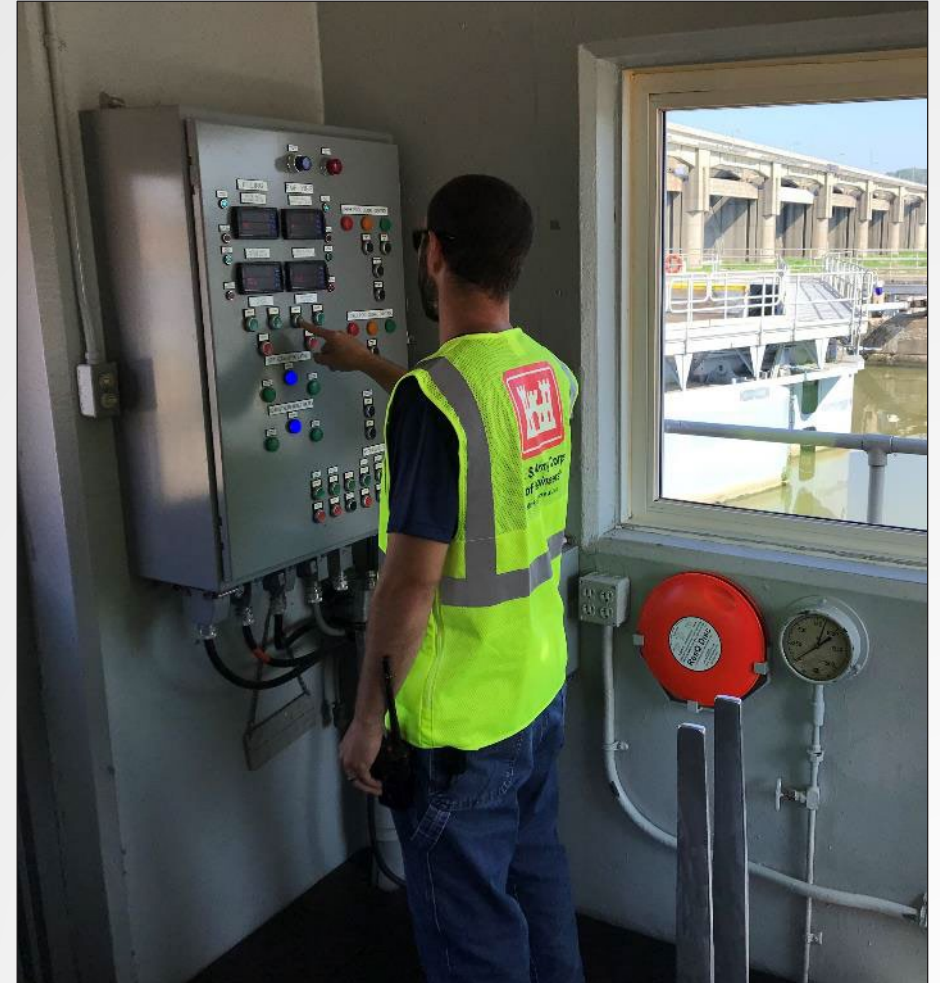
Remote Operation?

- Lock operated from *off-site control room* using camera & sensors.
- Remote Operation is ***not automated*** locking.
- Multiple locks operated from primary control center with alternate control center & standby local operation capabilities.

Future operations?

Command commitment: **FOCUS ON PEOPLE**

- No layoffs
- Cooperation & involvement of all employees
- Future staffing studies will inform the planning and execution of workforce transition strategy
 - Achieve efficiencies **without** involuntary separations or involuntary geographic moves
 - Follow previous successful workforce shaping efforts and tools
 - Voluntary workforce shaping tools are effective but need time to work; the longer the time, the better the results
- Close collaboration with unions
- Open communication



Lock operations today



NATIONAL ASSESSMENT



Circa 1943

Yesterday



Markland Lock and Dam (LRL)

Today



Remote operations, Zemst, Belgium

Tomorrow?



Benefits

- Modernize USACE locks
- Increase resiliency
- Continuity of operations
- Standardized components
- Workplace safety
- Reduced operating costs



Challenges

- Organizational implementation
- Staff & stakeholder acceptance
- Recreational lockages
- Cost (initial and recurring)
- Portfolio diversity
- Cyber & physical security
- Telecommunication



Opportunities

- System based operations
- Traffic coordination
- Align with AIS initiatives
- R&D opportunities



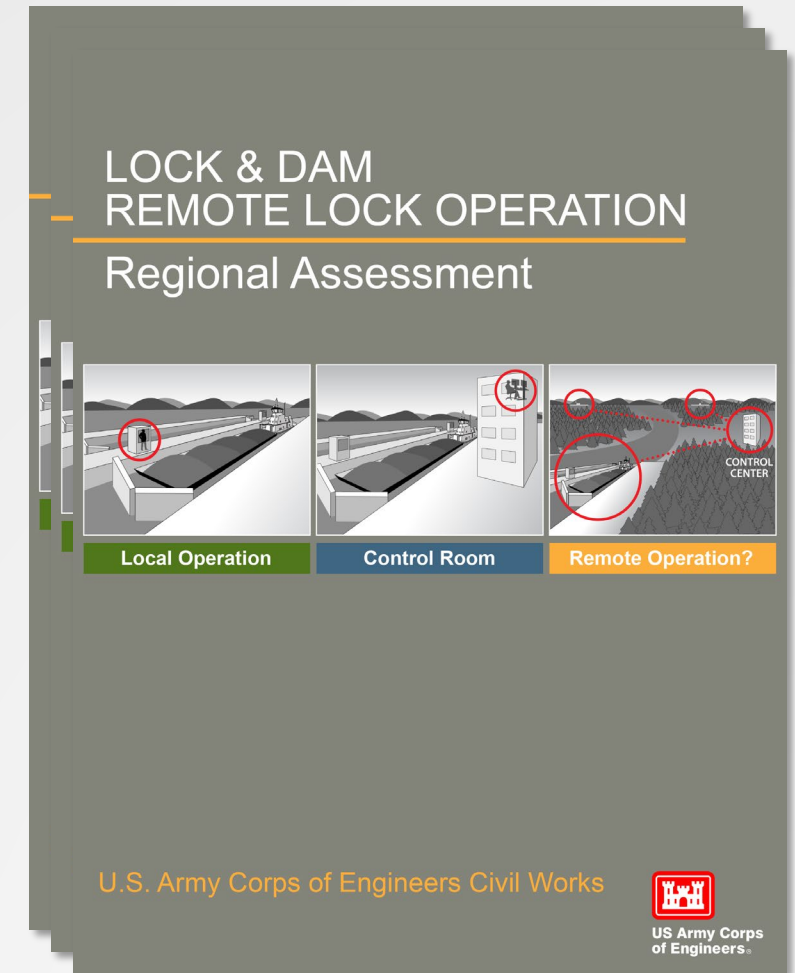
NATIONAL ASSESSMENT

KEY TAKEAWAYS

- Modernize waterway operation
- Maintain safety of workforce & users
- Proven technology exists
 - Over 50% of USACE hydropower is remote
 - USACE has been locking boats for 20+ years using camera & sensors
 - Other countries have successfully implemented locking remotely
- Cyber risks can be addressed

RECOMMENDATIONS

- Detailed site-specific assessment to determine viability
 - Purpose is to compare existing & remote
 - Infrastructure upgrades, revised operation procedures, costs, & staffing model
 - Recommendation to *implement* or *not implement*
- Adaptive management
- Establish national standards to ensure consistency





SUMMARY

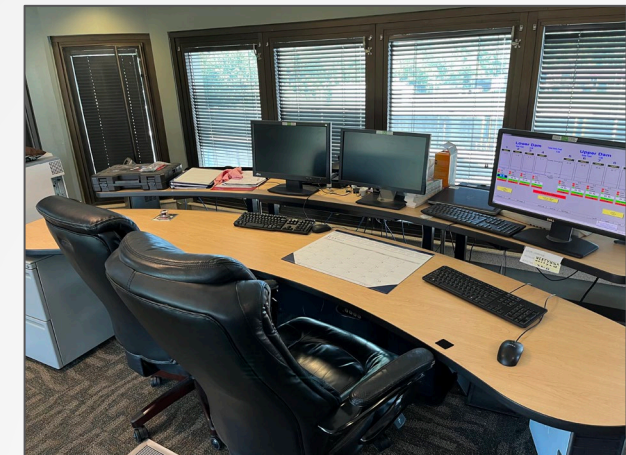
- Goal is to modernize operations to prepare for future navigation.
- USACE will ensure safe, reliable & consistent locking
- Recreational locking assistance
- Stakeholder outreach



Tow at Colorado River Locks (SWG)



Recreational vessels at Chicago Harbor Lock (LRC)



Operator station at McAlpine Locks & Dam (LRL)

For more information, visit <https://www.usace.army.mil/Missions/Civil-Works/Navigation/>