GLMRIS BRANDON ROAD UPDATE-

TO CHICAGO AREA WATERWAY SYSTEM ADVISORY GROUP

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STUDY SCOPE

2014 GLMRIS Report provided basis for this study

GLMRIS-BR Study Goal

- ❑ Reduce the risk of one-way aquatic nuisance species transfer to Great Lakes Basin
- ❑ Minimize impacts to multiple waterway users

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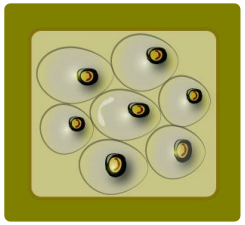
AQUATIC NUISANCE SPECIES

Alternatives adaptable for future species

Modes of Transport:

Swimming



Floating

Hitchhiking

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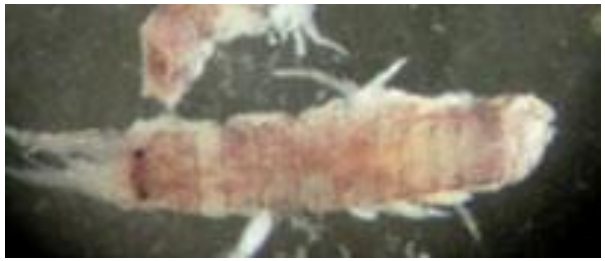
- Bighead and Silver Carp

- *Fresh Water Crustacean (Apocorophium lacustre)*



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WHY BRANDON ROAD?

- **Effective**
  - ~ 34 foot high dam
  - Upstream movement through lock
  - Avoids flood bypass via Upper Des Plaines
- **Relevant**
  - Identified in 3 of 6 structural alternatives (GLMRIS Report)
- **Responsive**
  - Stakeholder input
  - Upstream of leading edge of Asian Carp population
- **Valuable**
  - Enhance effectiveness of existing technologies
- **Minimizes Impacts**
  - Location seeks to minimize impacts to current waterway uses.

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LEVERAGED EXPERTISE & SHARED RESPONSIBILITY

Executive Steering Committee

USACE ● USFWS ● USCG ● NOAA ● USEPA ●USDOT

- Great Lakes Commission
- International Joint Commission
- Great Lakes Fisheries Commission
- Metro WRD of Greater Chicago
- State DNRs

Senior Executive Review Group

USACE HQ ● LRD ● MVD ● SERG Co-chairs
LRD & MVD CGs, SES
Chicago & Rock Island Commanders & DPMs
Regional Integration Team Deputies
Laboratory and CX Leadership

Stakeholders

NEPA Scoping Interest Groups:
Navigation &
Environmental
Communities

Non-Governmental Organizations
(CAWS Advisory Committee)

Brandon Road Work Group

Congressional Engagements

GLMRIS Program Management
LRC

Brandon Road Project Management
MVR

Planning
MVP/MVR
LRC

Real Estate MVR	**Communications** MVR, LRC	**Economics** LRC, PCXIN
Nat Res & NEPA MVR, LRC	**ANS Risk & Tech** Eco-PCX, LRC, MVR, ERDC	**Engineering** Inland Navigation Design Center & LRC

Argonne NATIONAL LABORATORY
LOYOLA UNIVERSITY CHICAGO
NOTRE DAME OF MARYLAND UNIVERSITY
ERDC
MICHIGAN STATE UNIVERSITY
The University of Georgia
Canada Department of Fisheries & Oceans

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USGS science for a changing world
Great Lakes Commission des Grands Lacs
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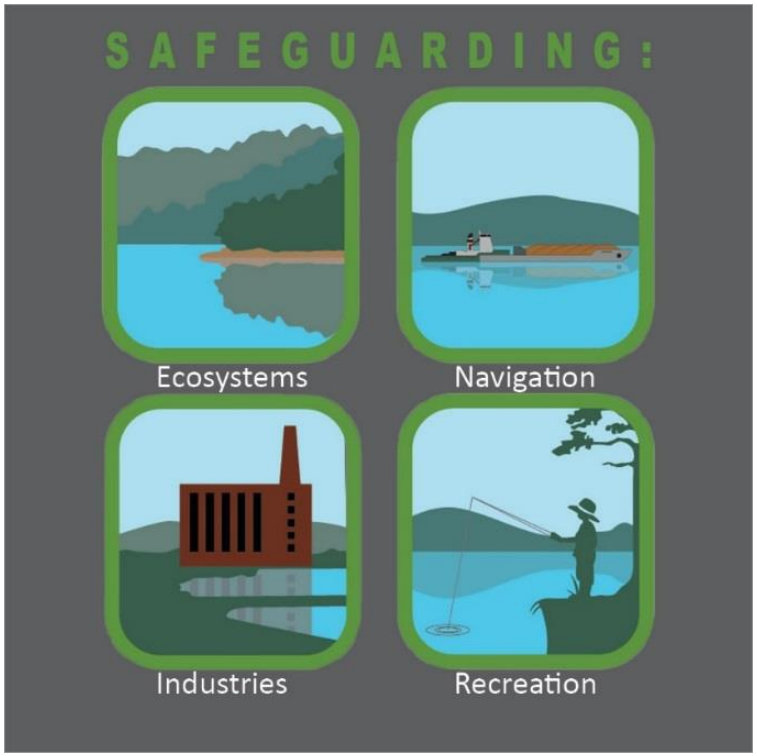
SAFEGUARDING NATION'S ECONOMIC INTERESTS IN THE GREAT LAKES BASIN AND NATION'S INLAND WATERWAYS

Brandon Road Lock

- Highly utilized for commercial navigation
- 11.3M tons of cargo transit each year
- $319M in annual transportation benefits
- Link between Great Lakes and Gulf of Mexico

Great Lakes Basin

- 63M recreational fishing trips annually with about $1.3B in net economic value
- Commercial fishing generates about $20M in revenue



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WHAT ARE WE TRYING TO PROTECT?

- 20% of the world's fresh water resource
- Over 5,000 Great Lakes tributaries
- 41% Great Lakes Basin is governed by Canada

- >60 fish species are special status
- 10 Threatened & endangered mussel species

- ~ **$1.8B** GLRI & Great Lakes Legacy Act (2010-present)

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CONSEQUENCES OF ANS ESTABLISHMENT

Bighead and Silver Carp

NOAA modeling – Lake Erie

- Asian Carp biomass could range 10% to 34%

Great Lakes Consequences:

- Substantial economic impacts
- Management actions would be in multiple locations
- Perception of quality decreased
- Safety

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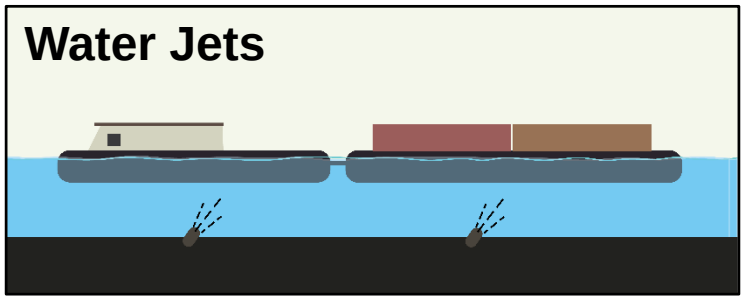
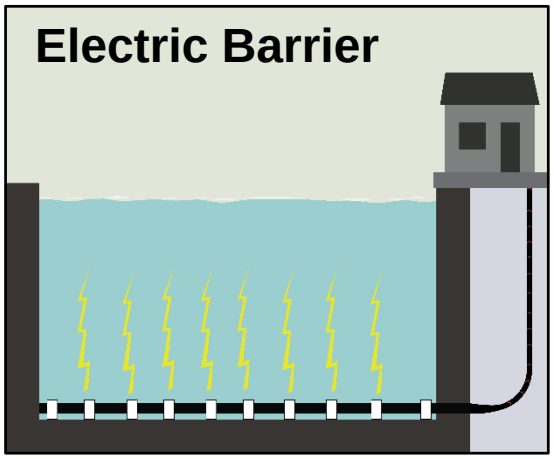
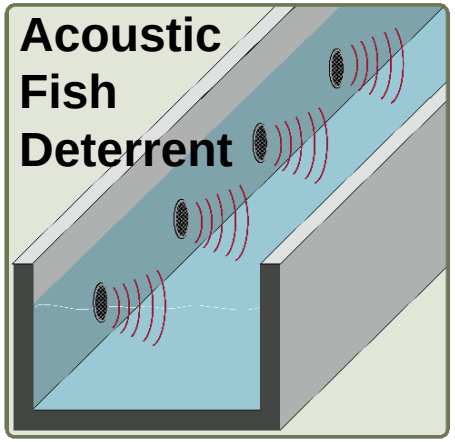
ANS CONTROLS

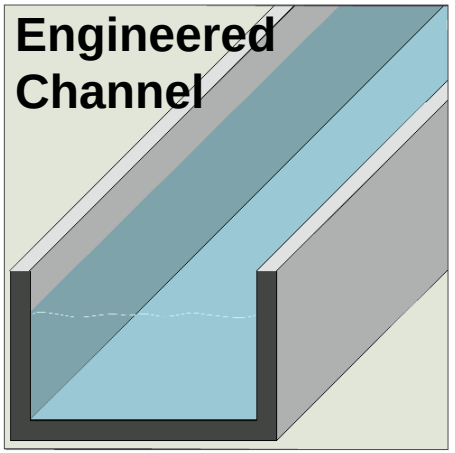
Modes of Transport:

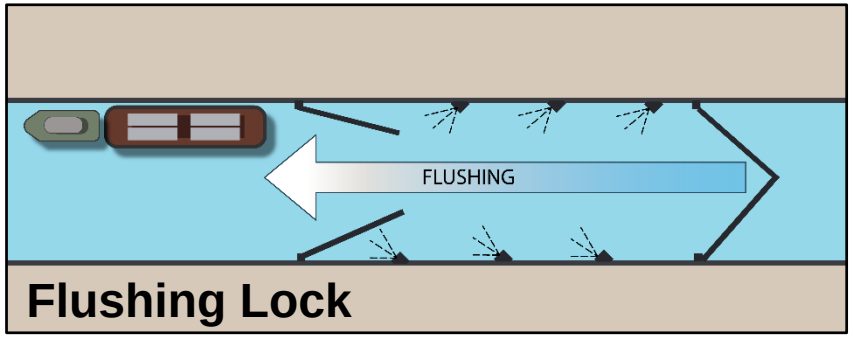
- Swimmers
- Floaters
- Hitchhikers











Nonstructural Measures

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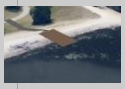
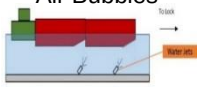
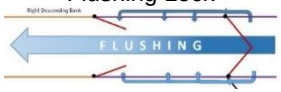
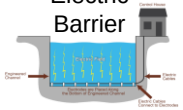
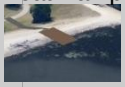
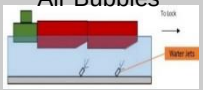
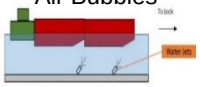
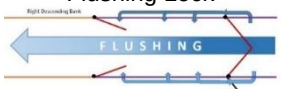
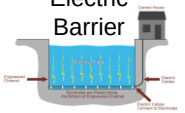
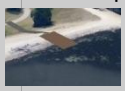
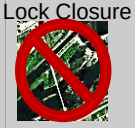
ALTERNATIVES

Alternative	ANS Control Measures/Features
No New Action (No Action)	FWOP   Public Education and Outreach Monitoring Overfishing/Removal
Nonstructural Alternative	FWOP  Nonstructural  Boat Ramp 
Technology Alternative – Electric Barrier	FWOP  Nonstructural  Boat Ramp  Engineered Channel  Air Bubbles  Flushing Lock  Electric Barrier  Mooring Area 
Technology Alternative – Acoustic Fish Deterrent	FWOP  Nonstructural  Boat Ramp  Engineered Channel  Air Bubbles  Flushing Lock  Acoustic Fish Deterrent 
Technology Alternative – Acoustic Fish Deterrent with Electric Barrier	FWOP  Nonstructural  Boat Ramp  Engineered Channel  Air Bubbles  Flushing Lock  Acoustic Fish Deterrent  Electric Barrier  Mooring Area 
Lock Closure	FWOP  Nonstructural  Boat Ramp  Lock Closure 

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EVALUATION CRITERIA

- Effectiveness
- Relative Life Safety
- Impacts to Navigation (NED Costs)
- Costs
  - Construction
  - Operation, and Maintenance, Rehabilitation,
    - Repair and Replacement
  - Mitigation
- Ability to cycle in new
  - Nonstructural ANS Controls
  - Structural ANS Controls
- Number of Structural Control Points in the CAWS
- Modes of Transport

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TENTATIVELY SELECTED PLAN (TSP)

Overview:

- ❑ Reduces risk of Mississippi River Basin ANS establishment in Great Lakes Basin
- ❑ Allows for continued navigation
- ❑ Nonstructural measures
- ❑ Mitigation required to address impacts to connectivity

Estimated Cost to Construct: **$275.4M**
Estimated Cost to Operate and Maintain: **$8.2M/yr**
Estimated Nonstructural Measures: **$11.3M/yr**
Estimated Time to Construct: **5 yr**

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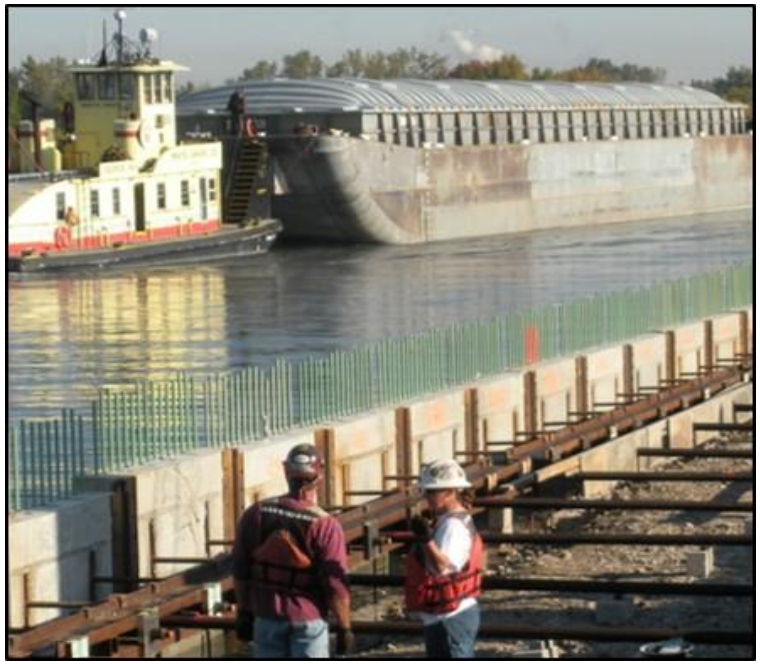
TSP IMPLEMENTATION

- Life safety primary consideration
- Safety evaluation of constructed project
  - USCG, USACE and Navigation Community
- Assumed Operations:
  - Electric Barrier: When **no** vessels are immediately downstream of barrier, within channel or lock
  - Complex noise on when electric barrier off
- Seek to operate as effectively as possible within acceptable safety parameters
- Nonstructural measures begin as soon as project funded



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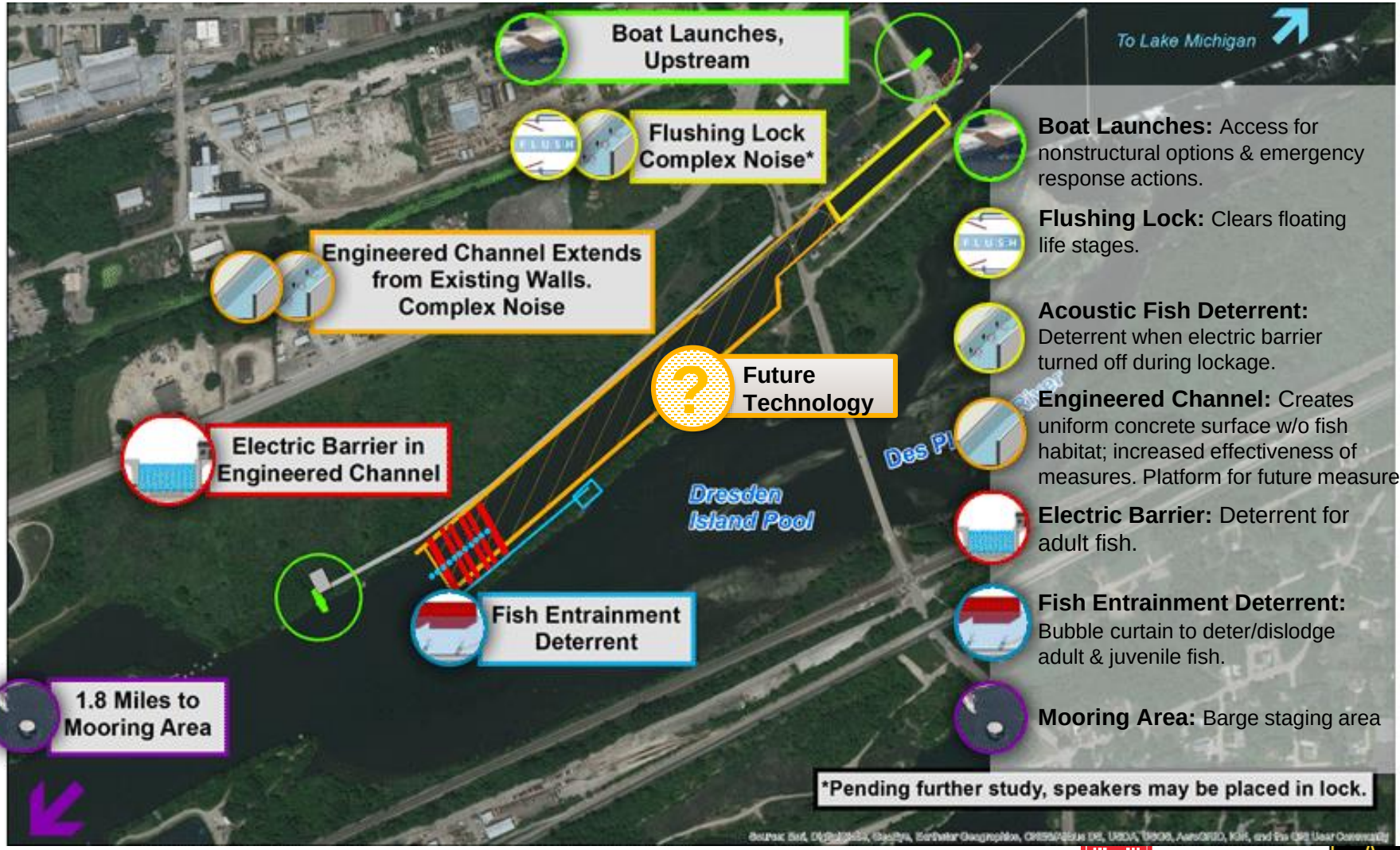
BRANDON ROAD STUDY TENTATIVELY SELECTED PLAN (TSP)



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BRANDON ROAD
WHAT HAS CHANGED SINCE PUBLIC REVIEW

- Cost
- Des Plaines River Mitigation Plan
- Non-Federal Sponsor
- Replacing Water Jets with Air Bubble Curtain
- Schedule

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BRANDON ROAD
KEY STAKEHOLDER CONCERNS

- Navigation Impacts
- Effectiveness of Preventing Passage
- Safety
- O&M Responsibilities

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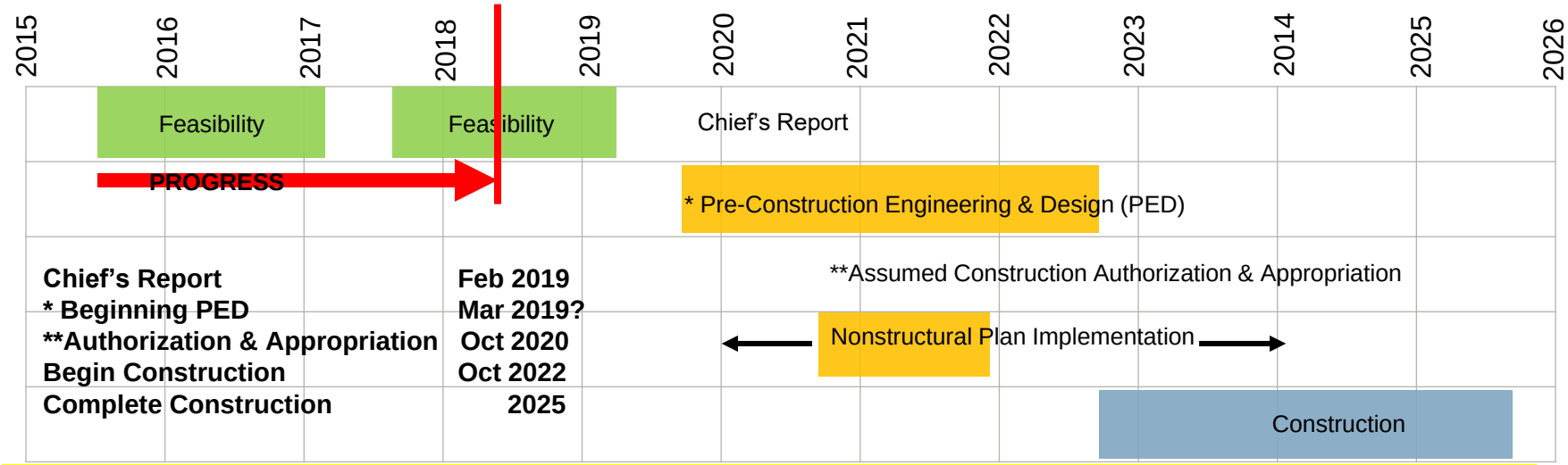
PROJECT SCHEDULE



***** PED is able to begin after submittal of Chief's Report to ASA(CW) and Design Agreement is signed pending funding

Key Schedule Drivers

- Completion of Chief's Report
  - Non-federal sponsor
  - Internal & external reviews
- Non-federal sponsor/cost share agreements (DA/PPA)
- Availability of PED funds in FY19/20
- Complex innovative designs increase PED duration
- Construction authorization & appropriation
- Maintaining navigation during construction extends duration

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