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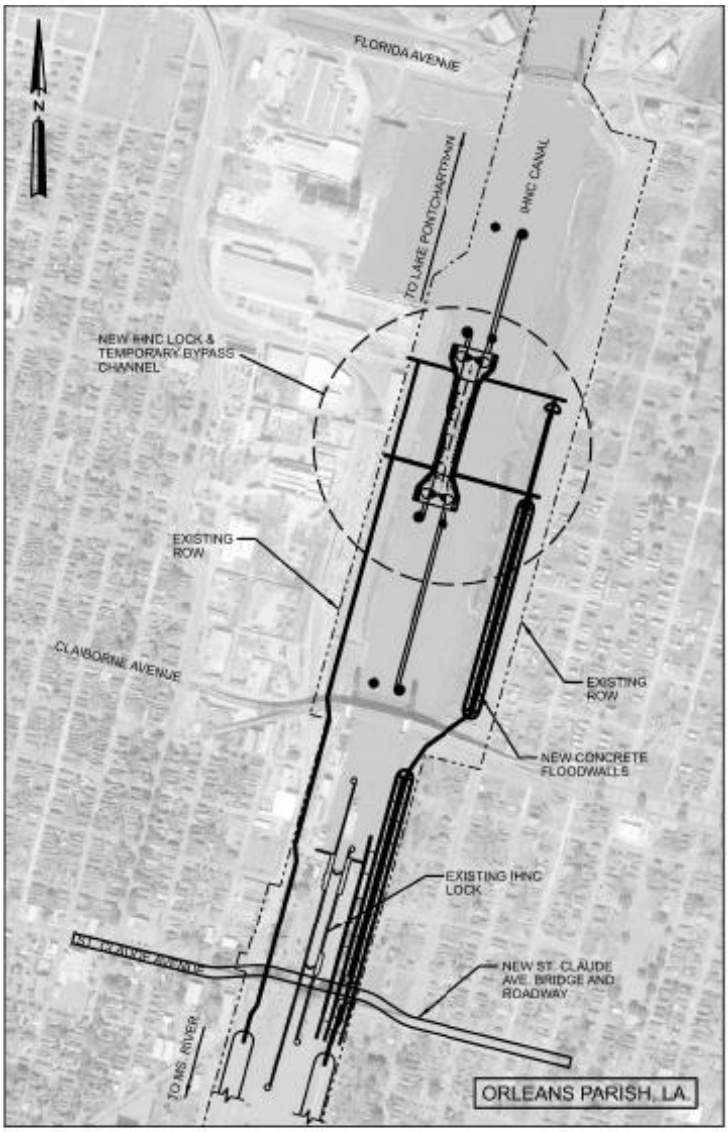
The existing lock is located along the Inner Harbor Navigation Canal (IHNC), also sometimes referred to as the Industrial Canal in New Orleans, Louisiana in Orleans Parish. The IHNC is a man-made canal, originally constructed by non-Federal interests, that serves as a major navigation artery linking the Mississippi River, the Gulf Intracoastal Waterway (GIWW), and Lake Pontchartrain. The canal commences at Mississippi River Mile (RM) 92.6 Above Head of Passes (AHP) and extends 5.0 miles to the north to its terminus at Lake Pontchartrain. Refer to Figure 1 for project location map.

1.2. New Lock

Although the lock is located in a polder perimeter with other flood risk reduction features, the lock itself is not considered a flood risk reduction structure. The new lock would be located approximately 2,400 ft north of the existing lock, and north of Claiborne Avenue Bridge.



LOCATION MAP
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Starting on the southwest side of the project, the new floodwall will tie-in into the existing wall on the west of the existing IHNC Lock. The new floodwall will tie to the new lock on the west side. Starting on the

southeast side of the project, the new levee will tie into the existing MRL levee on the east side of the existing IHNC Lock and travel to the new lock tie-in wall on the east side. The new floodwall segments under the St. Claude and North Claiborne Ave bridges will tie to the new levees on the east side.

The proposed lock will be a concrete cast-in-place lock with sector gates, a pile foundation and side port culvert filling and emptying system. The dimensions of the new lock chamber for the recommended plan (RP) will be 900 ft long by 110 ft wide. It will be a shallow draft lock with a sill elevation of (-) 22.0 ft.

A box culvert size of 14.5 ft x14.5 ft was selected for the 900-ft long chamber. In addition to the sector gate and lock, a bypass channel, cofferdam, 3 pile dolphins, timber and floating guide walls, and concrete floodwalls will be constructed at this location.

Although the lock's authorized purpose is not flood risk reduction, the river side gate bay provides a continuous line of risk reduction between upstream and downstream MRL features. The shift in location of the new lock necessitates adjustment of both LPV and MRL project features to tie into the new lock. Phasing of construction activities and temporary risk reduction measures will be utilized to minimize any impacts on the MRL and LPV Projects with respect to the authorized levels of risk reduction during and after construction of the new lock.

The location of the proposed lock was primarily chosen due to its ease of access and little to no obstructions located near the open channel.

The physical features associated with the construction of the new lock structure are:

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Two control houses, a maintenance and administration building, a machinery building, a parking lot, a paint shed, an access road and other associated structures and facilities determined to be necessary during PED.

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While constructing the cast-in-place lock structure, a 3-sided cofferdam will be required to excavate the existing IHNC channel to required grade El (-) 33. The east-to-west section of cofferdam cells will tie-into the existing levee on the west side of the channel. Upon completion of the lock and sector gate, the inside of the cofferdam will be backfilled, and the cofferdam removed.

The size of the cellular cofferdam will be approximately 1,452 feet long on the east side and 553 feet on the north and south sides. The top of the cofferdam cells will be El. 5.0. The cofferdam will be removed once the new lock and floodwalls are constructed. Foundational support is required for the cofferdam; therefore, jet grouting of the canal bottom sediments utilizing barge-mounted equipment would be performed to strengthen the sediments. The soil improvements would occur prior to placement of sheeting for the cofferdam. The required sheet pile tip elevation for the cofferdam is El. -90.0. The sheet pilings would be placed using a barge-mounted vibratory hammer to form cell walls, and the interior of the cofferdam cells would be filled with sand to El. 3.5. Cofferdam cell design will be further developed in later design phases.

Jet grout columns will be required at the bottom of the cellular cofferdam to provide adequate stability of the structure. Approximately, a total of thirty-four (34) circular cofferdam cells will be used for this project.

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The lock sector gates consist of two steel gate leaves on each end of the new lock. The sector gate monolith includes the navigation opening and the gate bay recesses. The sector gate leaves are steel space frames constructed from pipe sections with wide flange girders supporting the skin plate. The final member design and skin plate configuration will be optimized during PED.

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1.5. New Floodwalls

The floodwalls for this project will be constructed to El 24.5 to match the required top of wall (TOW) for the lock. Since the floodwalls will be constructed along the IHNC channel, which is subject to high barge traffic, a 500-kip barge impact force will be used for design.

The new IHNC floodwalls will extend from the Mississippi River on the west side of the IHNC channel, and tie into the new lock. The length of floodwall assumed was approximately 5,200 ft on the west side of the IHNC Channel. On the east side, there will be two small segments of floodwall under the St. Claude and North Claiborne Ave. bridges, as well as a small segment from the new lock tying into the levee on the east

side. Typical floodwall monoliths will be constructed of cast-in-place concrete and will be roughly 60 feet in length, connected with a joint containing a Waterstop. Each monolith will be supported with steel piles driven with batters.

Portions of the existing I-wall and T-wall sections along the IHNC channel require demolition as part of this project. In addition, the existing concrete scour protection will be demolished and replaced with compacted fill embankment. New concrete scour protection will be added after re-grading of this area. The total cubic yards (CY) for demolition of both existing floodwall and scour protection is approximately 13,000 CY.

As part of the new floodwall construction, new T-wall monoliths are required underneath the existing St. Claude Avenue and Claiborne Avenue bridges.

The T-walls required under the St. Claude Avenue Bridge will be coordinated with the new bridge construction. To further note, T-walls can be constructed up to the proposed bridge location, prior to removal of the existing bridge. After the existing bridge has been removed, the T-walls can be tied into the new line of protection.

1.6. HTRW Sites

At a property previously owned by the Port of New Orleans and previously occupied by the U.S. Coast Guard located on the west side of the IHNC channel, there are two sites that have been identified through prior HTRW environmental site assessment investigations where contamination is known to exist. Sampling at these two sites indicated that total petroleum hydrocarbons as diesel, total petroleum hydrocarbons as oil, and some polycyclic aromatic hydrocarbons (benz(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, and benzo(a)pyrene) remained at elevated concentrations in both areas (including under a diesel aboveground storage tank). The property was acquired in fee by USACE for the lock replacement project in 2001. The Louisiana Department of Environmental Quality (LADEQ) has determined that these sites must be remediated.

While the actual construction of the IHNC lock replacement facilities will not disturb these areas, the realignment of the MR&T and LPV floodwalls on the west side could possibly disturb the sub-surface contaminated material that is situated beneath approximately 900 ft of existing LPV floodwall located west of and adjacent to the previous U.S. Coast Guard facility. That section of LPV floodwall likely would be removed in order to extend the MR&T to tie-in to the southward face of the replacement lock.

USACE ER 1165-2-132 dated, June 26, 1992, titled, “Hazardous, Toxic and Radioactive Waste (HTRW) Guidance for Civil Works Projects” provides that construction of Civil Works projects in HTRW-contaminated areas should be avoided where practicable. Where HTRW contaminated areas or impacts cannot be avoided, response actions must be acceptable to EPA and applicable state regulatory agencies (i.e., LADEQ). For non-cost-shared projects where Federal funds are spent for HTRW response actions, the cost of response actions will be a project cost to be borne by the Department of the Army. MVN has performed a preliminary examination of the physical constraints of the HTRW sites as it relates to the floodwall realignment. During PED, MVN will re-examine the plan of construction to determine if there is a practicable, cost-effective way to avoid disturbance of the affected section of LPV floodwall.

As it would be the lock replacement project that would require alteration of the existing LPV alignment in order to tie-in the MR&T floodwall to the replacement lock, if alteration of the present LPV floodwall in the vicinity of HTRW materials were required, that cost would be borne by the lock replacement project.

During PED, if it is determined that there is no practicable, cost-effective way to avoid disturbance of the affected section of LPV floodwall, then MVN would perform additional coordination with LADEQ and a Corrective Action Plan would be prepared for LADEQ approval to determine the appropriate remediation actions.

1.7. New Levee

The new levees for this project will be constructed to El 24.5 to match the required top of wall (TOW) for the lock. The new levee will extend mainly on the east side from the MRL Levee north to the new lock tie-in floodwall, except for the portions of floodwall beneath the St. Claude and North Claiborne Ave. bridges. The footprint of the levee will extend roughly 300 feet, with a 10-foot crown and 1 foot vertical to 3 feet horizontal side slopes. The new levee will be constructed in two phases, a temporary levee to El. 17.5, and then the final levee to El. 24.5.

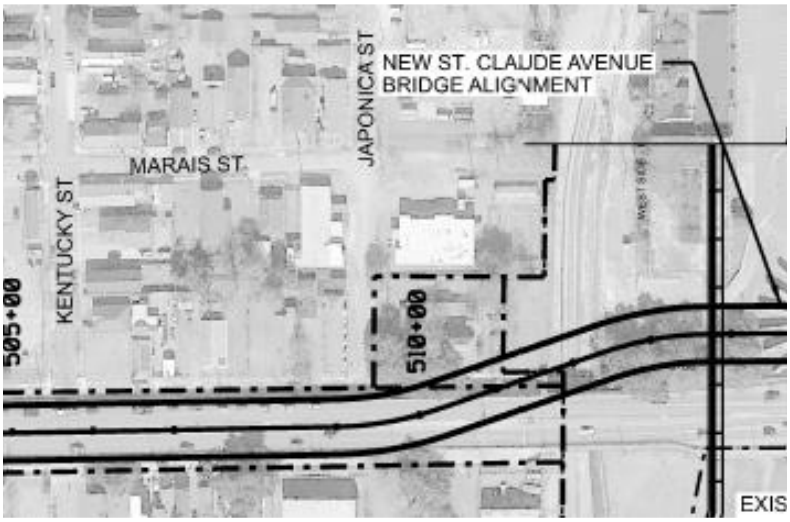
1.8. St Claude Bridge

The new bridge is 70 ft wide with two (2), 12 ft wide eastbound lanes and two (2), 12 ft wide westbound lanes. Four (4) foot shoulders are provided on the outside and minimum one-foot shoulders are provided on the inside. A 6-ft wide pedestrian/bicycle lane is provided on the outside edge of the eastbound lanes, separated by traffic with a concrete barrier. A 7-inch reinforced concrete slab/deck was preliminary sized for the bridge approaches. Based on a proposed 7-ft 3-inch spacing between girders and typical 80-ft span between approach pier bents, an AASHTO Type III precast prestressed concrete girder was selected to support the approach decks. Eighteen-inch steel pipe piles were assumed to support the approach piers. Pile capacity curves used for the floodwalls were utilized for the pile tip selection. Initial design and quantities are based on a similar bascule bridge design constructed in another location. The foundation design will be site adapted for this project (pile design, bridge pier design, etc.). Bascule spans were selected to span the existing/future channel alignment and the demolition bypass channel alignment during demolition of the existing lock.

Construction of the new St Claude Avenue Bridge will be phased such that thru traffic along the existing St. Claude Avenue Bridge will be maintained, with the exception of any typical bridge closures to pass navigation, for the entire construction duration. In the event that restriction of thru traffic is required for construction of tie-ins; closures will be minimized to nights and weekends during low traffic volume periods. Additional details regarding traffic control will be developed with the Port of New Orleans, Louisiana Department of Transportation and Development (LA-DOTD) and the City of New Orleans during PED.

Because it is a low-speed urban street, the design speed along St. Claude Avenue is 35 MPH. The speed limit across the proposed bridge is to remain the same. The new bridge is proposed to be placed north of the existing bridge deck, due to the necessity of keeping the existing bridge open during construction. Therefore, a series of horizontal curves will be needed to tie into the existing approach ramps to the proposed bridge deck. From the AASHTO Green Book, the minimum radius of curve at 35 MPH is 419 ft at the centerline, which is the radius of all four horizontal curves.

The proposed bridge deck elevation is (+) 39 ft, whereas the existing bridge deck elevation is approximately (+) 20 ft. However, the approach ramps have to tie back to the existing tie-ins along St. Claude Avenue at both Poland Avenue and Raynes Street. The approach ramps are steeper in grade than the existing ramps, but with the addition of longer vertical curves, still suitable for traffic. Three existing homes along the west side will require demolition in order to construct the new St. Claude bridge.



1.9. Bypass Channel

Construction of a Bypass Navigation Channel near the new lock will occur to the east of the existing navigation channel. The Bypass Navigation Channel will be dredged to a width of 110-feet and depth of El. -17.0, which includes a 3-foot advanced dredging for advanced maintenance during construction. Navigation traffic will utilize this Bypass Channel for the entire phase on the new lock construction. Tugboats will be utilized to assist vessels throughout the construction duration.

Construction of a Temporary Demolition Bypass Channel near the existing lock will occur to aid the passing of traffic once the existing east lock wall is demolished. Navigation will be shifted to the east as the existing west lock wall is demolished. The Temporary Demolition Bypass Channel will be dredged to a width of 95-feet and a depth of El. -14.0 initially. After the demolition of the existing lock walls is completed, the Temporary Demolition Bypass Channel will be transitioned to the remaining lock sill depth of El. -22.0 and incorporated into the final navigation channel in this area.

1.10. Utilities

1.11. The MVN EDD Design Services, Relocations Team performed an investigation of the existing public utilities and facilities located within the proposed project area, while considering the current design requirements for the RP. The limits within the IHNC corridor were from the Florida Avenue Bridge, extending south of the St. Claude Avenue Bridge where it ties to the existing MR&T features.

The Relocations Team used U.S. Pipelines and Facilities (IHS, Inc.), Louisiana Department of Natural Resources (LA-DNR), and National Pipeline Mapping System (NPMS) pipeline databases, along with the USACE's permit tracking system called Pipeline Location Observation & Verification Enterprise Repository (PLOVER), to locate utilities within the proposed project area. The PLOVER system was cross-referenced with the other pipeline databases to provide approximate locations of existing utilities and to reveal any new utilities placed since Hurricane Katrina in 2005. In-house investigations and facility owner notifications were also used to verify the location of current utilities within the IHNC canal.

It was confirmed that several utilities were removed between the North Claiborne Bridge and Florida Avenue Bridge. These utilities were in the batture area along the eastside of the IHNC prior to award of construction projects to rebuild and reinforce the HSDRRS features in the area. These utilities were flushed, cut, and capped before the construction of a new floodwall after Hurricane Katrina. The discarded remaining portion of these utilities may still be located within the channel portion of the IHNC. These utilities are now discontinued and no longer in use.

Facility owners that were identified by the pipeline databases, permits, and construction activities, were contacted by the Relocations Team. The contacted facility owners: New Orleans Sewerage and Water Board (NOSWB), Cox Communications, and Entergy Gas and Entergy Distribution provided drawings or notations of their utilities crossing the IHNC.

The following utilities were identified but appear not to be impacted by the proposed project. Using utility drawings provided by NOSWB and Google Earth, the NOSWB's utilities (Siphon, 54-inch SMF, 48-inch Waterline, and the 66-inch SFM) confirmed that these utilities located just south of Florida Avenue appear not to be impacted by the proposed lock location and mooring cells. However, there is no conclusive evidence that the two 6-inch conduits on the drawings submitted by Entergy Distribution to verify their exact locations. Also, a 5-inch cable from Cox Communications, identified via PLOVER, only gives an approximate location within the vicinity of the Florida Avenue Bridge.

The proposed relocation for these impacted utilities will be performed by directional drilling. For feasibility level purposes, it is assumed that no new Right of Way will be needed during the directional drilling operations of the utilities; no temporary construction easement will be needed for directional drill purposes.

Note the area immediately south of the St. Claude Avenue Bridge, where the project ties into the existing levee, does not currently have any utilities in place. Also, the RP design will not impact the New Orleans Public Belt Railroad.

Embankment, Compacted Fill

For backfill at the new lock, semi-compacted fill (granular sand fill) will be placed in the dry within the cofferdam cell up to 3 ft below El 5.0. After this elevation has been achieved, the granular fill will be capped with 3 ft of clay embankment, compacted fill.

Excavated Material

A portion of the excavated material may be stockpiled for use as backfill once construction is complete. The remainder of the material suitable for aquatic disposal may be disposed in the Mississippi River. Material that is not suitable for aquatic disposal will be disposed in an approved solid waste landfill site outside of the project area. Areas were designated depending on the nature of the sediment and were defined as Dredged Material Management Units (DMMU).

The required excavation depth for the structure within the channel is El (-) 33.0, which includes the extra 1ft for the stabilization slab. The channel will be dredged to El (-) 22.0, and the bypass channel will be dredged to El (-) 17.0.

Disposal of Material not Suitable for Aquatic Disposal

Due to the required shallow draft lock, the amount of the material to be disposed of has been reduced when compared to the previous deep draft design. Based upon guidance from MVN, Environmental, DMMU 5 and 7 were not suitable for aquatic disposal. Two alternatives were considered for the disposal material

not suitable for aquatic disposal: a confined disposal facility (CDF) and an approved solid waste landfill site outside of the project area. The PDT decided to proceed with the approved solid waste landfill only. The cost of the approved solid waste landfill alternative was over $10 million less than the CDF alternative. In addition, by not considering the CDF alternative any longer, mitigation, real estate, and future maintenance costs were eliminated. Overall, the landfill alternative offers less risks to the Government.

1.12. Environmental dredging techniques aim **to achieve a higher concentration of dredged sediment with the lowest possible turbidity. The technique is optimized via the precision with which dredging operations are performed. For instance, accurately removing thin layers of material, so that the least possible quantity of material is dredged, during removal of contamination. Therefore, less overall material is removed, as secure disposal sites for material not suitable for aquatic disposal can be a challenge to obtain.**

Assumptions for the Approved Solid Waste Landfill

The analysis of the approved solid waste landfill alternative assumed the following:

a. An Environmental Bucket Dredge will be used to excavate DMMUs 5 and 7. This material will become the property of the contractor and hauled by barge to an approved solid waste landfill.

1.13. b. Material **suitable for aquatic disposal (within DMMUs 3, 4, and 6), will be dredged via cutterhead dredge (hydraulic dredge).**

c. The DMMU areas near the existing lock will be excavated via the environmental bucket dredge. Due to current construction sequencing, the bucket dredge is assumed to require a mobilization and demobilization twice.

6) Key Assumptions. Recommend listing anything that could drastically affect the analysis such as: concerns, inclusions, exclusions, geotechnical analysis, H&H analysis, surveying, acquisition strategy, funding, etc. If contingencies were provided by others, recommend documenting that information as well. This information is highlighted yellow.

7) In Section 5, Cost & Schedule Risk Analysis Process, delete the CSRA guidance that does not apply to the project (Civil Works = Civil Works Processes for Cost & Schedule Risk Analysis whereas MILCON = UFC 3-740-05). This information is highlighted yellow.

8) Update the cost & schedule values, contingencies, price levels, etc. in Section 8.1; information is highlighted yellow.

9) Update top cost risk item bullets in Section 8.2.2; information is highlighted yellow.

10) Update top schedule risk item bullets in Section 8.3.2; information is highlighted yellow.

11) Update all figures and tables throughout the document as they relate to your project.

12) For Appendixes A & B, recommend providing a short 1-2 page summary of the base estimate and high-level 1-2 page summary of the base schedule which supports this CSRA.

13) Update Table of Contents & page number references. ***Tip to update entire document → Press 'Ctrl + A', Press 'F9", Select "Update entire table" (multiple times for TOC, figures, & tables).***

14) Print this report to PDF. From the MS Excel CSRA file, print the risk dashboards (Appendix C-1), contingency summary (Appendix C-2), sensitivity charts (Appendix C-3), risk register (Appendix C-4), CSRA assumptions (Appendix C-5), risk register attendance (Appendix C-6), and risk details (Appendix C-7) to PDF and append the information to the report PDF document.

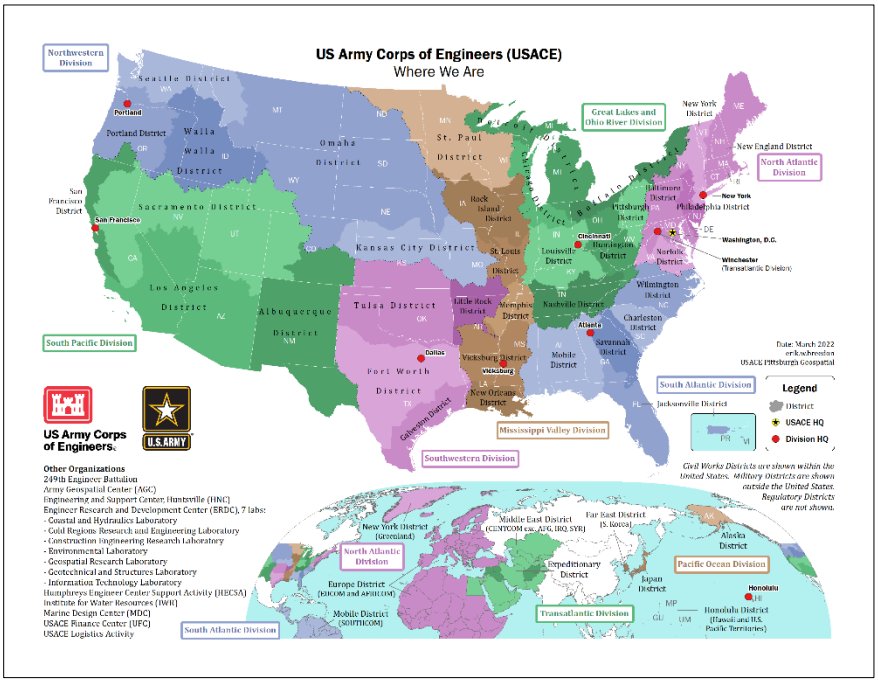
US Army Corps of Engineers

Prepared for:
U.S. Army Corps of Engineers
New Orleans District

Inner Harbor Navigation Canal

New Orleans, LA

CSRA for 2025 Baseline Cost Estimate



Prepared by:
USACE INDC

November 2025

Table of Contents

Figures

Tables

Appendixes

2. Purpose

The U.S. Army Corps of Engineers (USACE), New Orleans District, presents this Cost and Schedule Risk Analysis (CSRA) report regarding the risk findings and recommended contingencies for the Inner Harbor Navigation Canal 2025 Baseline Cost Estimate . A *Monte-Carlo* based risk analysis was conducted by the Project Development Team (PDT) on remaining costs in compliance with Engineer Regulation (ER) 1110-2-1302, CIVIL WORKS COST ENGINEERING (for Civil Works projects) ***OR*** UFC 3-740-05, Construction Cost Estimating (for MILCON projects). The purpose of this risk analysis study is to present the cost and schedule risks considered and respective project contingencies at a recommended 80% confidence level of successful execution to project completion.

3. Project Scope

The project is in New Orleans and St. Bernard Parishes in southeastern Louisiana. The project is generally bounded by Lake Pontchartrain on the north, the Mississippi River on the south and west, and Lake Borgne, Breton Sound, and the Gulf of Mexico on the east and south. Areas potentially affected by changes in vessel traffic include the navigation channels and related lands in the study area, the inland waterway system on the Gulf Intracoastal Waterway (GIWW), and the Mississippi River.

All elevations (EL) are referenced to NAVD88 (epoch 2004.65) vertical datum, unless otherwise noted.

The purpose of the project is to replace the aging lock, and in doing so, to improve navigation vessel transit times in a manner that is environmentally acceptable and economically justified, without inducing a negative impact to the existing flood risk reduction and hurricane storm damage risk reduction structures and their respective authorized levels of risk reduction.

3.1. Existing Lock

The existing lock is located along the Inner Harbor Navigation Canal (IHNC), also sometimes referred to as the Industrial Canal in New Orleans, Louisiana in Orleans Parish. The IHNC is a man-made canal, originally constructed by non-Federal interests, that serves as a major navigation artery linking the Mississippi River, the Gulf Intracoastal Waterway (GIWW), and Lake Pontchartrain. The canal commences at Mississippi River Mile (RM) 92.6 Above Head of Passes (AHP) and extends 5.0 miles to the north to its terminus at Lake Pontchartrain. Refer to Figure 1 for project location map.

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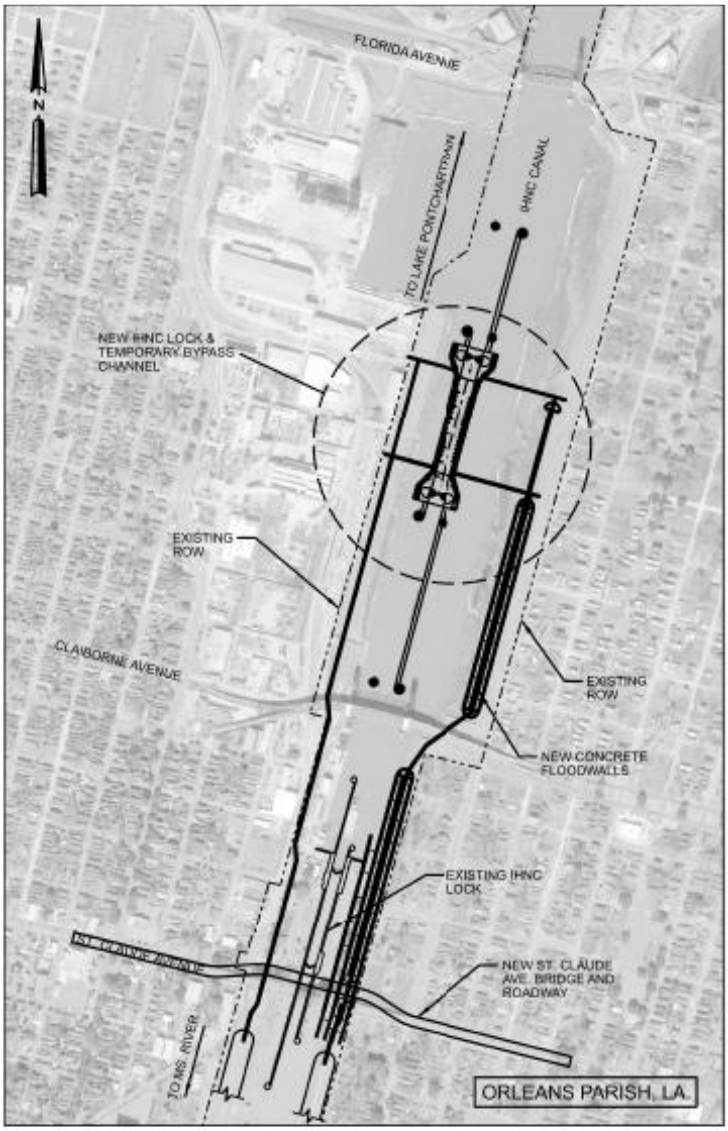

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The T-walls required under the St. Claude Avenue Bridge will be coordinated with the new bridge construction. To further note, T-walls can be constructed up to the proposed bridge location, prior to removal of the existing bridge. After the existing bridge has been removed, the T-walls can be tied into the new line of protection.

3.6. HTRW Sites

At a property previously owned by the Port of New Orleans and previously occupied by the U.S. Coast Guard located on the west side of the IHNC channel, there are two sites that have been identified through prior HTRW environmental site assessment investigations where contamination is known to exist. Sampling at these two sites indicated that total petroleum hydrocarbons as diesel, total petroleum hydrocarbons as oil, and some polycyclic aromatic hydrocarbons (benz(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, and benzo(a)pyrene) remained at elevated concentrations in both areas (including under a diesel aboveground storage tank). The property was acquired in fee by USACE for the lock replacement project in 2001. The Louisiana Department of Environmental Quality (LADEQ) has determined that these sites must be remediated.

While the actual construction of the IHNC lock replacement facilities will not disturb these areas, the realignment of the MR&T and LPV floodwalls on the west side could possibly disturb the sub-surface contaminated material that is situated beneath approximately 900 ft of existing LPV floodwall located west of and adjacent to the previous U.S. Coast Guard facility. That section of LPV floodwall likely would be removed in order to extend the MR&T to tie-in to the southward face of the replacement lock.

USACE ER 1165-2-132 dated, June 26, 1992, titled, “Hazardous, Toxic and Radioactive Waste (HTRW) Guidance for Civil Works Projects” provides that construction of Civil Works projects in HTRW-contaminated areas should be avoided where practicable. Where HTRW contaminated areas or impacts cannot be avoided, response actions must be acceptable to EPA and applicable state regulatory agencies (i.e., LADEQ). For non-cost-shared projects where Federal funds are spent for HTRW response actions, the cost of response actions will be a project cost to be borne by the Department of the Army. MVN has performed a preliminary examination of the physical constraints of the HTRW sites as it relates to the floodwall realignment. During PED, MVN will re-examine the plan of construction to determine if there is a practicable, cost-effective way to avoid disturbance of the affected section of LPV floodwall.

As it would be the lock replacement project that would require alteration of the existing LPV alignment in order to tie-in the MR&T floodwall to the replacement lock, if alteration of the present LPV floodwall in the vicinity of HTRW materials were required, that cost would be borne by the lock replacement project.

During PED, if it is determined that there is no practicable, cost-effective way to avoid disturbance of the affected section of LPV floodwall, then MVN would perform additional coordination with LADEQ and a Corrective Action Plan would be prepared for LADEQ approval to determine the appropriate remediation actions.

3.7. New Levee

The new levees for this project will be constructed to El 24.5 to match the required top of wall (TOW) for the lock. The new levee will extend mainly on the east side from the MRL Levee north to the new lock tie-in floodwall, except for the portions of floodwall beneath the St. Claude and North Claiborne Ave. bridges. The footprint of the levee will extend roughly 300 feet, with a 10-foot crown and 1 foot vertical to 3 feet horizontal side slopes. The new levee will be constructed in two phases, a temporary levee to El. 17.5, and then the final levee to El. 24.5.

3.8. St Claude Bridge

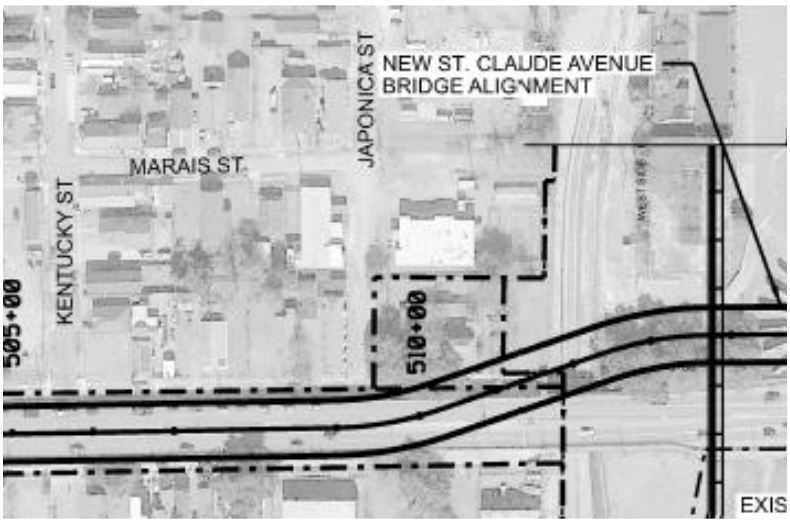
The new bridge is 70 ft wide with two (2), 12 ft wide eastbound lanes and two (2), 12 ft wide westbound lanes. Four (4) foot shoulders are provided on the outside and minimum one-foot shoulders are provided on the inside. A 6-ft wide pedestrian/bicycle lane is provided on the outside edge of the eastbound lanes, separated by traffic with a concrete barrier. A 7-inch reinforced concrete slab/deck was preliminary sized for the bridge approaches. Based on a proposed 7-ft 3-inch spacing between girders and typical 80-ft span between approach pier bents, an AASHTO Type III precast prestressed concrete girder was selected to support the approach decks. Eighteen-inch steel pipe piles were assumed to support the approach piers. Pile capacity curves used for the floodwalls were utilized for the pile tip selection. Initial design and quantities are based on a similar bascule bridge design constructed in another location. The foundation design will be site adapted for this project (pile design, bridge pier design, etc.). Bascule spans were selected to span the existing/future channel alignment and the demolition bypass channel alignment during demolition of the existing lock.

Construction of the new St Claude Avenue Bridge will be phased such that thru traffic along the existing St. Claude Avenue Bridge will be maintained, with the exception of any typical bridge closures to pass navigation, for the entire construction duration. In the event that restriction of thru traffic is required for construction of tie-ins; closures will be minimized to nights and weekends during low traffic volume periods. Additional details regarding traffic control will be developed with the Port of New Orleans, Louisiana Department of Transportation and Development (LA-DOTD) and the City of New Orleans during PED.

Because it is a low-speed urban street, the design speed along St. Claude Avenue is 35 MPH. The speed limit across the proposed bridge is to remain the same. The new bridge is proposed to be placed north of the existing bridge deck, due to the necessity of keeping the existing bridge open during construction. Therefore, a series of horizontal curves will be needed to tie into the existing approach ramps to the proposed bridge deck. From the AASHTO Green Book, the minimum radius of curve at 35 MPH is 419 ft at the centerline, which is the radius of all four horizontal curves.

The proposed bridge deck elevation is (+) 39 ft, whereas the existing bridge deck elevation is approximately (+) 20 ft. However, the approach ramps have to tie back to the existing tie-ins along St. Claude Avenue at both Poland Avenue and Raynes Street. The approach ramps are steeper in grade than the existing ramps,

but with the addition of longer vertical curves, still suitable for traffic. Three existing homes along the west side will require demolition in order to construct the new St. Claude bridge.



3.9. Bypass Channel

Construction of a Bypass Navigation Channel near the new lock will occur to the east of the existing navigation channel. The Bypass Navigation Channel will be dredged to a width of 110-feet and depth of El. -17.0, which includes a 3-foot advanced dredging for advanced maintenance during construction. Navigation traffic will utilize this Bypass Channel for the entire phase on the new lock construction. Tugboats will be utilized to assist vessels throughout the construction duration.

Construction of a Temporary Demolition Bypass Channel near the existing lock will occur to aid the passing of traffic once the existing east lock wall is demolished. Navigation will be shifted to the east as the existing west lock wall is demolished. The Temporary Demolition Bypass Channel will be dredged to a width of 95-feet and a depth of El. -14.0 initially. After the demolition of the existing lock walls is completed, the Temporary Demolition Bypass Channel will be transitioned to the remaining lock sill depth of El. -22.0 and incorporated into the final navigation channel in this area.

3.10. Utilities

The MVN EDD Design Services, Relocations Team performed an investigation of the existing public utilities and facilities located within the proposed project area, while considering the current design requirements for the RP. The limits within the IHNC corridor were from the Florida Avenue Bridge, extending south of the St. Claude Avenue Bridge where it ties to the existing MR&T features.

The Relocations Team used U.S. Pipelines and Facilities (IHS, Inc.), Louisiana Department of Natural Resources (LA-DNR), and National Pipeline Mapping System (NPMS) pipeline databases, along with the USACE's permit tracking system called Pipeline Location Observation & Verification Enterprise Repository (PLOVER), to locate utilities within the proposed project area. The PLOVER system was cross-referenced with the other pipeline databases to provide approximate locations of existing utilities and to reveal any new utilities placed since Hurricane Katrina in 2005. In-house investigations and facility owner notifications were also used to verify the location of current utilities within the IHNC canal.

It was confirmed that several utilities were removed between the North Claiborne Bridge and Florida Avenue Bridge. These utilities were in the batture area along the eastside of the IHNC prior to award of construction projects to rebuild and reinforce the HSDRRS features in the area. These utilities were flushed, cut, and capped before the construction of a new floodwall after Hurricane Katrina. The discarded remaining portion of these utilities may still be located within the channel portion of the IHNC. These utilities are now discontinued and no longer in use.

Facility owners that were identified by the pipeline databases, permits, and construction activities, were contacted by the Relocations Team. The contacted facility owners: New Orleans Sewerage and Water

Board (NOSWB), Cox Communications, and Entergy Gas and Entergy Distribution provided drawings or notations of their utilities crossing the IHNC.

The following utilities were identified but appear not to be impacted by the proposed project. Using utility drawings provided by NOSWB and Google Earth, the NOSWB's utilities (Siphon, 54-inch SMF, 48-inch Waterline, and the 66-inch SFM) confirmed that these utilities located just south of Florida Avenue appear not to be impacted by the proposed lock location and mooring cells. However, there is no conclusive evidence that the two 6-inch conduits on the drawings submitted by Entergy Distribution to verify their exact locations. Also, a 5-inch cable from Cox Communications, identified via PLOVER, only gives an approximate location within the vicinity of the Florida Avenue Bridge.

The proposed relocation for these impacted utilities will be performed by directional drilling. For feasibility level purposes, it is assumed that no new Right of Way will be needed during the directional drilling operations of the utilities; no temporary construction easement will be needed for directional drill purposes.

Note the area immediately south of the St. Claude Avenue Bridge, where the project ties into the existing levee, does not currently have any utilities in place. Also, the RP design will not impact the New Orleans Public Belt Railroad.

3.11. Embankment, Compacted Fill

For backfill at the new lock, semi-compacted fill (granular sand fill) will be placed in the dry within the cofferdam cell up to 3 ft below El 5.0. After this elevation has been achieved, the granular fill will be capped with 3 ft of clay embankment, compacted fill.

3.12. Excavated Material

A portion of the excavated material may be stockpiled for use as backfill once construction is complete. The remainder of the material suitable for aquatic disposal may be disposed in the Mississippi River. Material that is not suitable for aquatic disposal will be disposed in an approved solid waste landfill site outside of the project area. Areas were designated depending on the nature of the sediment and were defined as Dredged Material Management Units (DMMU).

The required excavation depth for the structure within the channel is El (-) 33.0, which includes the extra 1ft for the stabilization slab. The channel will be dredged to El (-) 22.0, and the bypass channel will be dredged to El (-) 17.0.

3.13. Disposal of Material not Suitable for Aquatic Disposal

Due to the required shallow draft lock, the amount of the material to be disposed of has been reduced when compared to the previous deep draft design. Based upon guidance from MVN, Environmental, DMMU 5 and 7 were not suitable for aquatic disposal. Two alternatives were considered for the disposal material not suitable for aquatic disposal: a confined disposal facility (CDF) and an approved solid waste landfill site outside of the project area. The PDT decided to proceed with the approved solid waste landfill only. The cost of the approved solid waste landfill alternative was over $10 million less than the CDF alternative. In addition, by not considering the CDF alternative any longer, mitigation, real estate, and future maintenance costs were eliminated. Overall, the landfill alternative offers less risks to the Government.

Environmental dredging techniques aim to achieve a higher concentration of dredged sediment with the lowest possible turbidity. The technique is optimized via the precision with which dredging operations are performed. For instance, accurately removing thin layers of material, so that the least possible quantity of material is dredged, during removal of contamination. Therefore, less overall material is removed, as secure disposal sites for material not suitable for aquatic disposal can be a challenge to obtain.

3.14. Assumptions for the Approved Solid Waste Landfill

The analysis of the approved solid waste landfill alternative assumed the following:

a. An Environmental Bucket Dredge will be used to excavate DMMUs 5 and 7. This material will become the property of the contractor and hauled by barge to an approved solid waste landfill.

b. Material suitable for aquatic disposal (within DMMUs 3, 4, and 6), will be dredged via cutterhead dredge (hydraulic dredge).

c. The DMMU areas near the existing lock will be excavated via the environmental bucket dredge. Due to current construction sequencing, the bucket dredge is assumed to require a mobilization and demobilization twice.

4. Key Assumptions

- Funding. The district assumes efficient funding to compile with regulations, However CIS will be a significant impact to the schedule and cost.
- Sponsor. Federal with Inland Waterway User Board 75%/25%.
- Contract Acquisition Strategy. The current assumption is one large contract.
- Real estate. The current plan is to purchase three houses in the way of the constructing the ramp to the Sain Claude Bridge.
- Contingency Sources.
    - Design of the New Lock & Saint Claude Bridge.
    - Lawsuits: The IHNC project has a history of lawsuits and is currently under an injunction since 2006 from the United States District Court, eastern District of Louisiana. The Corps is required to prepare and supplemental Environmental Impact Statement (SEIS), which was completed in 2009. In 2011 the Corps was enjoined again in the same court as the previous injunction. The court required the Corps to compile with NEPA and the CWA.
    - Weather impacts from hurricanes are part of the CSRA.
    - CIMP and TIMP implementations and possible delays due to lawsuits.
    - The MII assumes an onsite Batch plant as a mitigation measure. The project is in a high population area this will greatly reduce heavy truck traffic and the risk for additional lawsuits.
- Construction Schedule. The construction is in the city of New Orleans and would be considered idea working weather for year-round work. There are no requirements for long periods of shutdowns due to annual weather patterns. The schedule was recreated from the 2019 Certified Cost. A standard work with holidays is applied to try to recreate the original schedule length. Lead times have been shown for all major fabricated items.

5. Cost & Schedule Risk Analysis Process

Refer to the “Civil Works Processes for Cost & Schedule Risk Analysis” ***OR*** Chapter 14 of the UFC 3-740-05, Construction Cost Estimating, for guidance and details on the CSRA process.

6. Base Estimate

See Appendix A for a summary of the base cost estimate from which this CSRA was conducted.

7. Base Schedule

See Appendix B for a summary of the base schedule from which this CSRA was conducted.

8. Cost & Schedule Risk Analysis

The CSRA results are provided in the following sections. In addition to contingency calculation results, the top cost and schedule risks were identified, and sensitivity analyses are presented to provide decision makers with:

- An understanding of variability and the key contributors,
- Contingency information for scheduling, budgeting, and project control purposes, and
- Provide tools to support decision making and risk management as projects progress through planning and implementation.

Additional information and details can be found in various Appendix C subsections which are described below.

- **Appendix C-1: Risk Dashboards.** Summary of the top cost & schedule risk items, confidence levels, and suggested risk reduction measures.
- **Appendix C-2: Contingency Summary.** Summary of the various contingency values for cost & schedule by confidence level.
- **Appendix C-3: Sensitivity Charts.** Summary of the major cost & schedule risk items along with a graphical representation of their potential range of impacts at the 50%, 80%, and 90% confidence levels.
- **Appendix C-4: Risk Register.** Summary of the risk register documenting risk type, risk details, likelihood, impact ratings, responsibility, suggested risk reduction measures, etc.
- **Appendix C-5: CSRA Assumptions.** Summary of the risk matrix, likelihood of occurrence definition, impact or consequence definitions for cost / schedule, and cost / schedule impact ranges as they relate to this project.
- **Appendix C-6: Risk Register Attendance.** Summary of the participants of the risk register meeting which was conducted on 7/31/2024.
- **Appendix C-7: Risk Details (if applicable).** Some projects and their risk items could require more complex calculations to determine their risk impact ranges. This is not a mandatory requirement, but risk detail sheets are sometimes developed to help document these assumptions and calculations. These risk detail sheets are typically not included by default but can be available upon request.

8.1. Summary of Results

The base estimate is approximately $2,645M escalated to the mid-point of construction excluding contingency. Based on the results of the analysis, the CSRA recommends a contingency value of $2,195M, or approximately 80% of base estimate at the 80% confidence level of successful execution. The base schedule is approximately 168.9 months excluding contingency. Based on the results of the analysis, the CSRA recommends a contingency value of almost 384.2 months, or approximately 228% of base schedule at the 80% confidence level of successful execution. See Table 1 below for a more detailed summary and Appendix C for additional details regarding risk-based contingency development.

Table 1. Summary of CSRA Results

Contingency on Base Estimate	80% Confidence Project Cost	
Base Estimate	$2,645,284,990	
Estimate Contingency	$2,195,586,542	83%
Base Estimate w/ Contingency (80% Confidence)	$4,840,871,532	

Contingency on Base Schedule	80% Confidence Project Schedule	
Base Schedule Start Date	October 4, 2032	
Base Schedule Finish Date	October 31, 2046	
Base Schedule Duration	168.9 Months	
Schedule Contingency Duration	384.2 Months	228%
Base Schedule w/ Contingency (80% Confidence)	553.1 Months	
Base Finish Date w/ Contingency (80% Confidence)	November 8, 2078	

8.2. Cost Risk Analysis

8.2.1. Cost Confidence Levels

The result of risk or uncertainty analysis is quantification of the cumulative impact of all analyzed risks or uncertainties as compared to probability of occurrence. These results, as applied to the analysis herein, depict the overall base estimate with contingency at intervals of confidence (probability). Table 2 provides the cost contingencies calculated for the various confidence levels with the 80% confidence level highlighted. Figure 1 presents this information graphically. Contingencies are rounded up to the nearest whole percentage.

Table 2. Cost Confidence Levels

Base Estimate	$2,645,284,990		
Confidence Level	**Contingency Value**	**Contingency**	**Cost with Contingency**
0%	$1,005,208,296	38%	$3,650,493,286
10%	$1,587,170,994	60%	$4,232,455,984
20%	$1,692,982,394	64%	$4,338,267,384
30%	$1,798,793,793	68%	$4,444,078,783
40%	$1,878,152,343	71%	$4,523,437,333
50%	$1,931,058,043	73%	$4,576,343,033
60%	$2,010,416,592	76%	$4,655,701,583
70%	$2,116,227,992	80%	$4,761,512,982
80%	**$2,195,586,542**	**83%**	**$4,840,871,532**
90%	$2,327,850,791	88%	$4,973,135,781
100%	$3,042,077,739	115%	$5,687,362,729

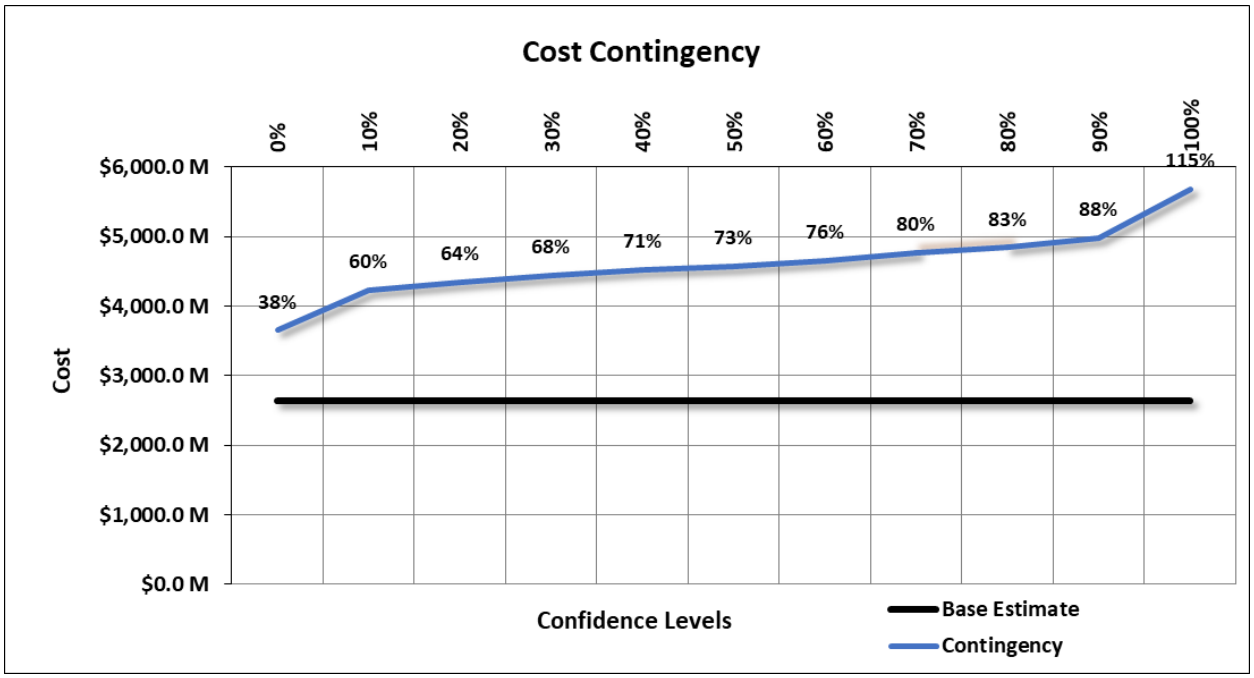


Figure 1. Cost Contingency Levels

8.2.2. Top Cost Risks

The risks/opportunities considered as key or primary cost drivers are ranked in order of potential impact (positive or negative) in Figure 2 at various confidence levels (50%, 80%, and 90%). Opportunities are shown with a negative sign to reflect the potential to decrease cost; risks are shown with a positive sign to reflect the potential to increase cost. These key cost drivers can be used to support development of a risk management plan that will facilitate control of risk factors and their potential impacts throughout the project lifecycle. Together with the risk register, these results can also be used to support development of strategies to eliminate, mitigate, accept, or transfer key risks. See Appendix C for additional details for these risks and further information regarding CSRA development.

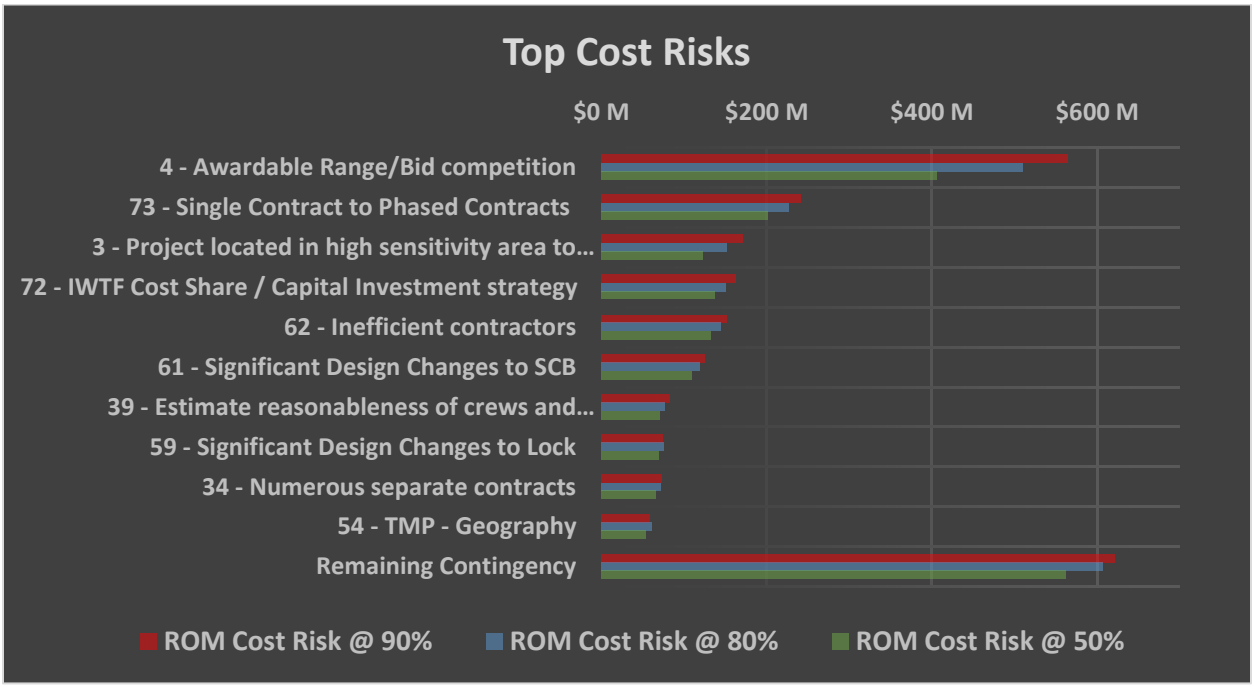


Figure 2. Top Cost Risks

- **Risk 4: Awardable Range/Bid competition**. The Contract can be awarded 25% above the IGE value.
- **Risk 73: Single Contract to Phased Contracts**. The Base assumes one contract and this risk assumes that the one contract is already broken up into 6 contracts. Out of the 6 (or more) contracts, the risk of half becomes base + options.
- **Risk 3: Project located in high sensitivity area to air/water/land/noise impacts**. Regulatory and environmental risk: Continuation of NEPA, or CWA 404 related comments could result in impacts to the contracts that are in the middle of construction. Resulting in REAs and additional mobilizations of the equipment.
- **Risk 72: IWTF Cost Share / Capital Investment strategy.** IHNC is not currently on the 20-year CIS and there are three locks currently beginning construction that are ahead of IHNC. Guidance is to complete construction first. Currently, construction start is 2029.
- **Risk 62: Inefficient contractors.** Cost and schedule impacts occur due to poorly performing contractors
- **Risk 61: Significant Design Changes to SCB.** Refined design, changes design, construction sequence, revise design.
- **Risk 39: Estimate reasonableness of crews and productivity.** Crew and productivity revisions impacts cost and schedule.

- **Risk 59: Significant Design Changes to Lock.** Refined design, changes design, construction sequence, revise design.
- **Risk 34: Numerous separate contracts.** Numerous contracts impact qualified contractor pool, mobilization cost.
- **Risk 54: TMP - Geography.** Limited routes of egress for communities in Orleans, St. Bernard, and Plaquemines Parishes downriver of IHNC.

8.3. Schedule Risk Analysis

8.3.1. Schedule Confidence Levels

The result of risk or uncertainty analysis is quantification of the cumulative impact of all analyzed risks or uncertainties as compared to probability of occurrence. These results, as applied to the analysis herein, depict the overall schedule duration at intervals of confidence (probability). Table 3 provides the schedule duration contingencies calculated for the various confidence levels with the 80% confidence level highlighted. Figure 3 presents this information graphically. Contingencies are rounded up to the nearest whole percentage.

Table 3. Schedule Confidence Levels

Base Schedule Duration	168.9 Months		
Confidence Level	**Contingency Value**	**Contingency**	**Duration with Contingency**
0%	207.3 Months	123%	376.1 Months
10%	300.0 Months	178%	468.8 Months
20%	316.8 Months	188%	485.7 Months
30%	328.6 Months	195%	497.5 Months
40%	340.4 Months	202%	509.3 Months
50%	350.5 Months	208%	519.4 Months
60%	359.0 Months	213%	527.8 Months
70%	370.8 Months	220%	539.6 Months
80%	**384.2 Months**	**228%**	**553.1 Months**
90%	402.8 Months	239%	571.6 Months
100%	492.1 Months	292%	661.0 Months

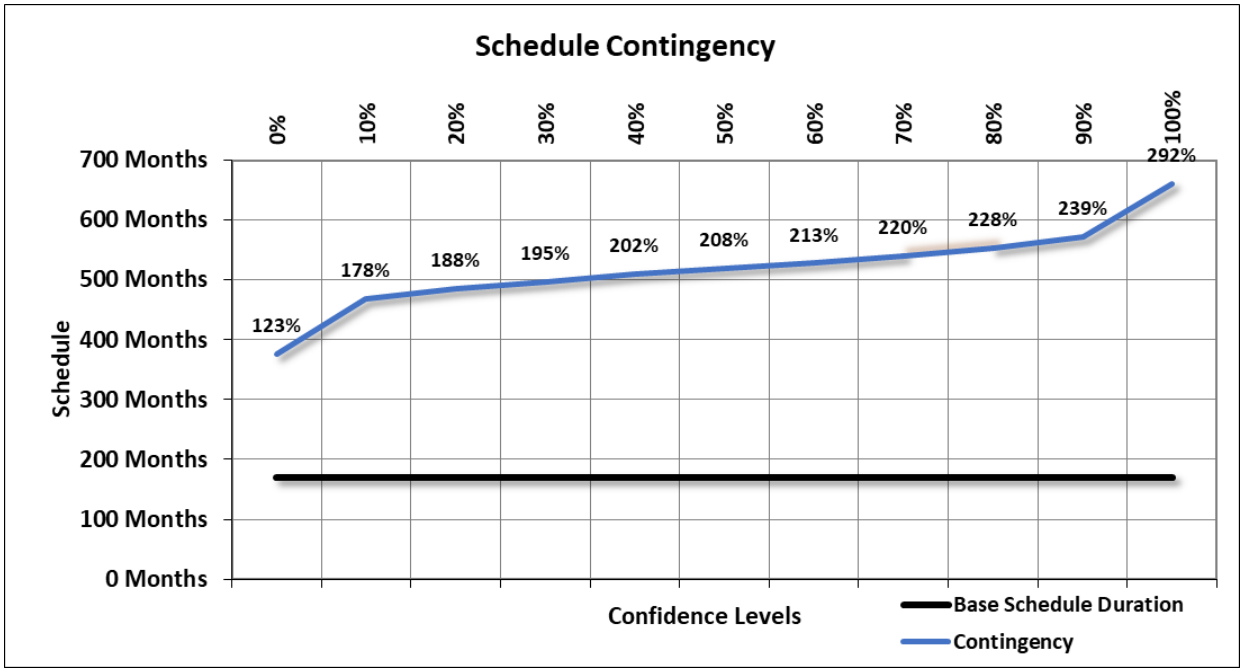


Figure 3. Schedule Contingency Levels

These contingencies were also used to calculate the projected residual fixed cost impact of project delays that are included in the Table 2 presentation of total cost contingency. The schedule contingencies were calculated by applying the high-level schedule risks identified in the risk register for each option to the durations of critical path and near critical path tasks.

The schedule was not resource loaded and contained open-ended tasks and non-zero lags (gaps in the logic between tasks) that limit the overall utility of the schedule risk analysis. These issues should be considered as limitations in the utility of the schedule contingency data presented. Schedule contingency impacts presented in this analysis are based solely on projected residual fixed costs.

8.3.2. Top Schedule Risks

The risks/opportunities considered as key or primary schedule drivers are ranked in order of potential impact (positive or negative) in Figure 4 at various confidence levels (50%, 80%, and 90%). Opportunities are shown with a negative sign to reflect the potential to decrease schedule duration; risks are shown with a positive sign to reflect the potential to increase schedule duration. These key schedule drivers can be used to support development of a risk management plan that will facilitate control of risk factors and their potential impacts throughout the project lifecycle. Together with the risk register, sensitivity analysis results can also be used to support development of strategies to eliminate, mitigate, accept, or transfer key risks. See Appendix C for additional details for these risks and further information regarding CSRA development.

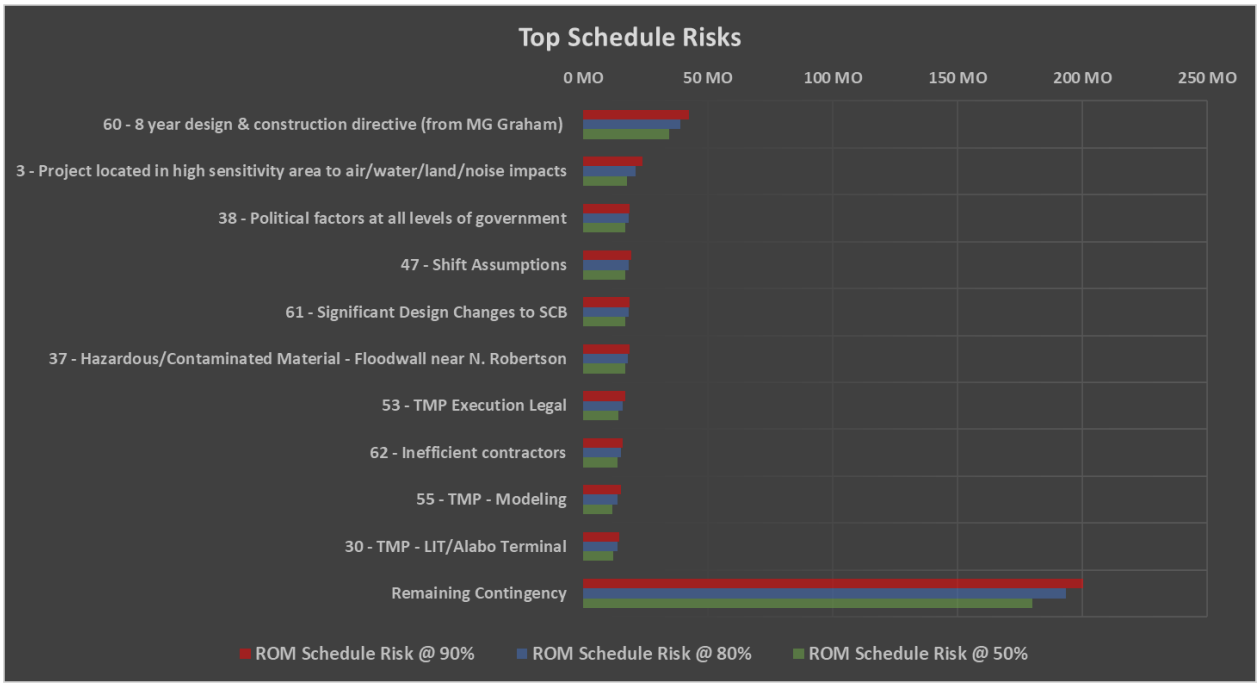


Figure 4. Top Schedule Risks

- **Risk 60:8 year design & construction directive (from MG Graham).** MG Graham has set a goal of an 8-year period start to finish for design and construction of lock projects
- **Risk 3: Project located in high sensitivity area to air/water/land/noise impacts.** Regulatory and environmental risk: Continuation of NEPA, or CWA 404 related comments could result in impacts to the contracts that are in the middle of construction. Resulting in REAs and additional mobilizations of the equipment.
- **Risk 38: Political factors at all levels of government.** Politicians opposed to project delay construction.
- **Risk 47: Shift Assumptions.** Shift and overtime assumptions can impact the contract cost and schedule. Base assumption is 5-12s. Could increase up to 7 days/week, resulting in time savings but cost increases.
- **Risk 61: Significant Design Changes to SCB.** Refined design, changes design, construction sequence, revise design.
- **Risk 37: Hazardous/Contaminated Material - Floodwall near N. Robertson.** HTRW AOI-1 and/or AOI-2 may have different, larger plume extents than currently delineated.
- **Risk 53: TMP Execution Legal** No implementation guidance for a "Program"
- **Risk 62: Inefficient contractors.** Cost and schedule impacts occur due to poorly performing contractors.
- **Risk 55: TMP - Modeling.** TMP modeling did not include IHNC Construction period.
- **Risk 30: TMP - LIT/Alabo Terminal.** Louisiana Internation Terminal (LIT) & Alabo Terminal transportation impact analysis is not complete

See Appendix C for additional details for these risks and further information regarding CSRA development.

9. Recommendations, Risk Management, & Updates

9.1. Recommendations

Risk Management is an all-encompassing, iterative, and life-cycle process of project management. The Project Management Institute's (PMI) *A Guide to the Project Management Body of Knowledge (PMBOK®*

Guide), *Sixth Edition*, states that "project risk management includes the processes of conducting risk management planning, identification, analysis, response planning, response implementation, and monitoring risk on a project." Risk identification and analysis are processes within the knowledge area of risk management. Its outputs pertinent to this effort include the risk register, risk quantification (risk analysis model), contingency report, and the sensitivity analysis.

The intended use of these outputs is implementation by the project leadership with respect to risk responses (such as mitigation) and risk monitoring and control. In short, the effectiveness of the project risk management effort requires that the proactive management of risks not conclude with the study completed in this report.

The CSRA produced by the PDT identifies issues that require the development of subsequent risk response and mitigation plans. This section provides a list of recommendations for continued management of the risks identified and analyzed in this study. Note that this list is not all inclusive and should not substitute a formal risk management and response plan.

The CSRA study serves as a "road map" towards project improvements and reduced risks over time. The PDT should include the recommended cost and schedule contingencies and incorporate risk monitoring and mitigation on those identified risks. Further iterative study and update of the risk analysis throughout the project life cycle is important in support of remaining within an approved budget and appropriation.

9.2. Risk Management

Project leadership should use of the outputs created during the risk analysis effort as tools in future risk management processes. The risk register should be updated at each major project milestone. The results of the sensitivity analysis may also be used for response planning strategy and development. These tools should be used in conjunction with regular risk review meetings.

9.3. Risk Analysis Updates

Project leadership should review risk items identified in the original risk register and add others, as required, throughout the project life cycle. Risks should be reviewed for status and reevaluation (using qualitative measure, at a minimum) and placed on risk management watch lists if any risk's likelihood or impact significantly increases. Project leadership should also be mindful of the potential for secondary (new risks created specifically by the response to an original risk) and residual risks (risks that remain and have unintended impact following response).

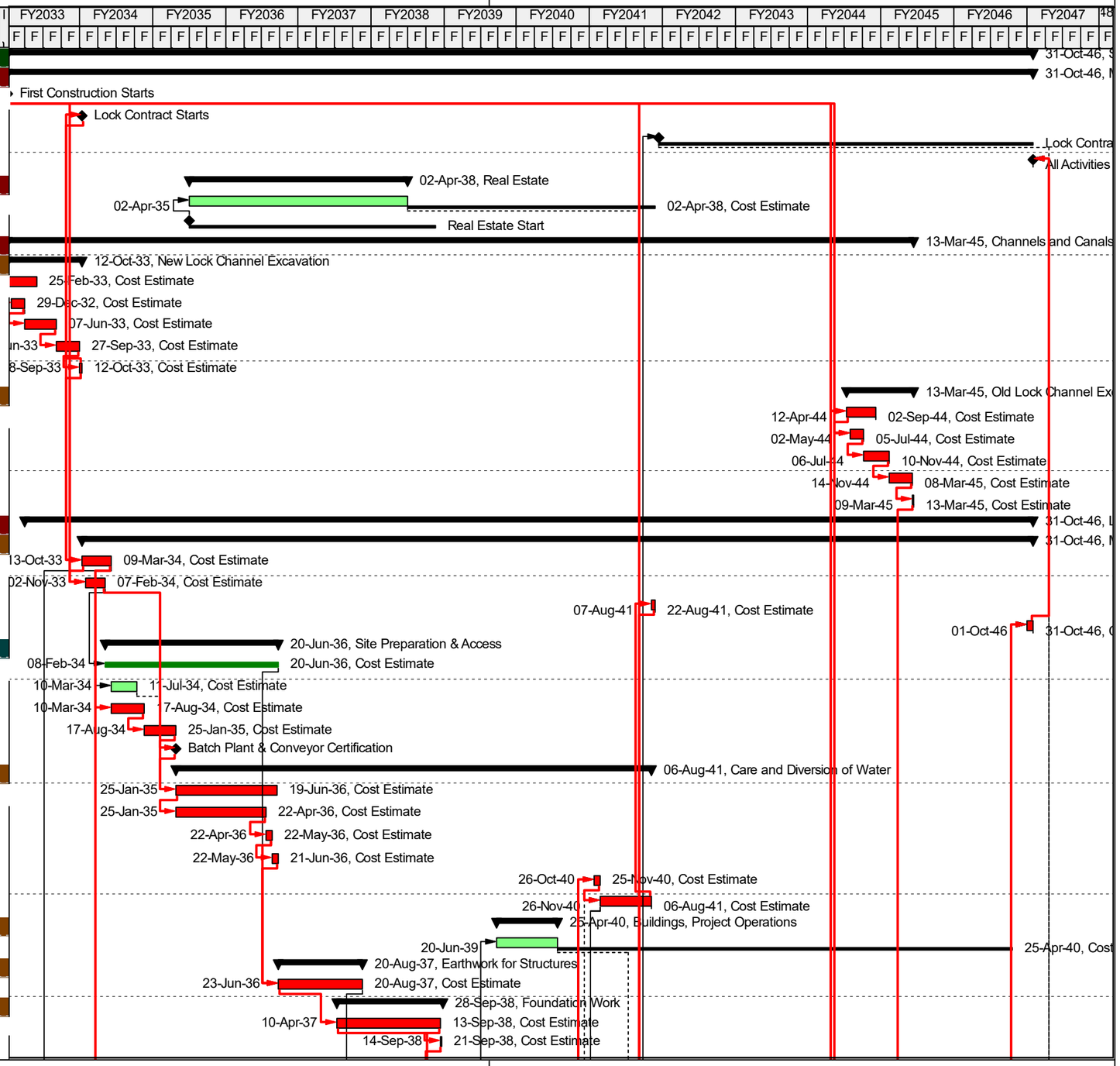
Appendix A

Base Estimate

Appendix B

Base Schedule

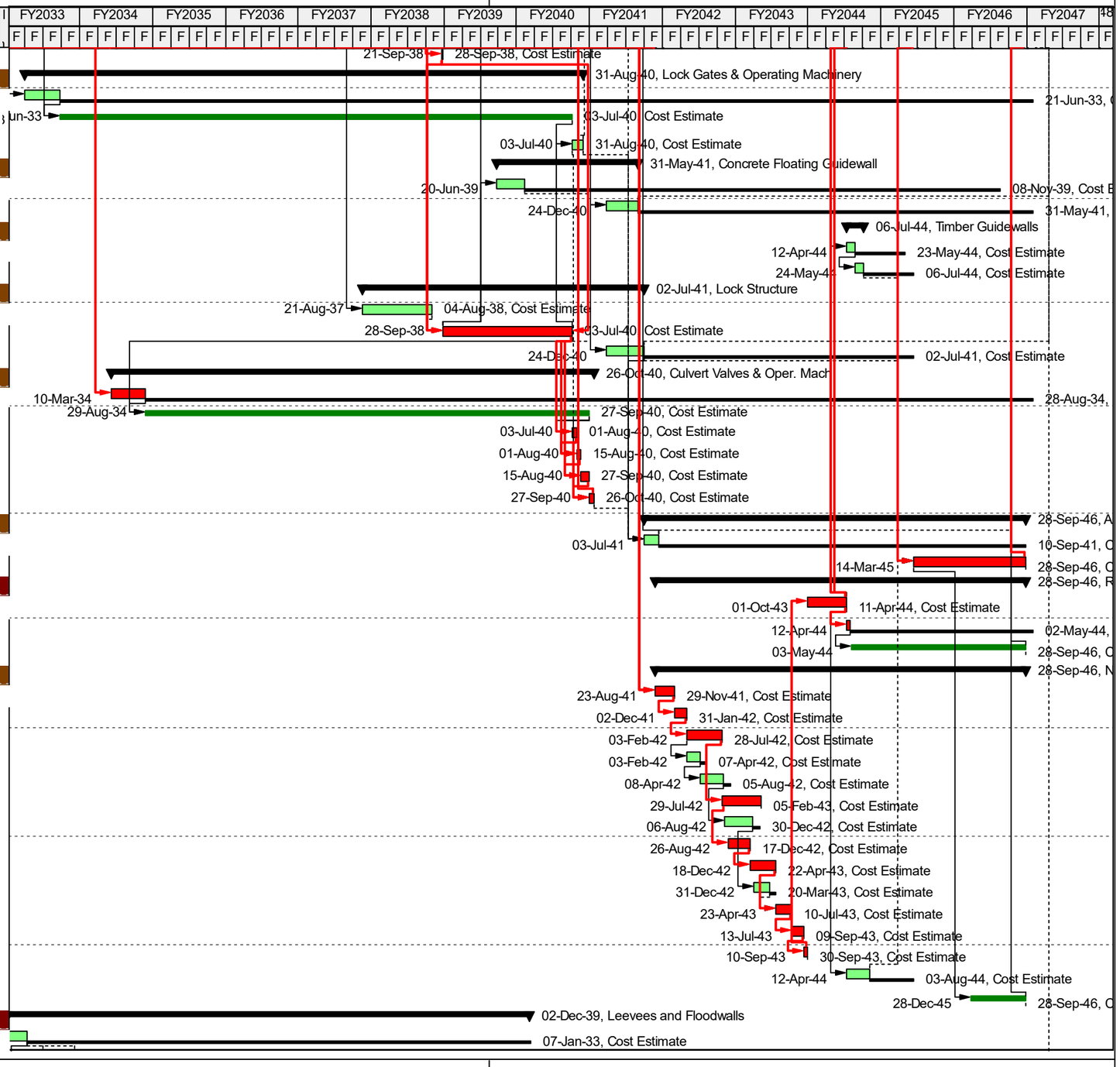
Activity ID	Activity Name	Start	Finish
	Shallow Draft Lock Replacement w St Claude Bridge	04-Oct-32	31-Oct-46
	Milestones	04-Oct-32	31-Oct-46
	Lock Contract Starts	13-Oct-33	
	Lock Contract BOD		10-Sep-41
	All Activities Complete		31-Oct-46
	Real Estate	02-Apr-35	02-Apr-38
	Real Estate Start	02-Apr-35*	
	Channels and Canals	04-Oct-32	13-Mar-45
	New Lock Channel Excavation	04-Oct-32	12-Oct-33
	Mobilization & Site Prep	25-Oct-32	29-Dec-32
	Contaminated bucket dredging	30-Dec-32	07-Jun-33
	New lock channel and by pass pipeline dredging	08-Jun-33	27-Sep-33
	Demobilization	28-Sep-33	12-Oct-33
	Old Lock Channel Excavation	12-Apr-44	13-Mar-45
	Mobilization & Site Prep	02-May-44	05-Jul-44
	Existing lock by pass bucket dredging	06-Jul-44	10-Nov-44
	Bank stabilization	14-Nov-44	08-Mar-45
	Demobilization	09-Mar-45	13-Mar-45
	Locks	30-Dec-32	31-Oct-46
	Mobilization and Demobilization	13-Oct-33	31-Oct-46
	Mobilization	02-Nov-33	07-Feb-34
	Partial demobilization	07-Aug-41	22-Aug-41
	Final site clean up, demobilization	01-Oct-46	31-Oct-46
	Site Preparation & Access	08-Feb-34	20-Jun-36
	Contractor Staging areas	10-Mar-34	11-Jul-34
	Batch Plant Site Preparation	10-Mar-34	17-Aug-34
	Batch Plant and Delivery System	17-Aug-34	25-Jan-35
	Batch Plant & Conveyor Certification		25-Jan-35
	Care and Diversion of Water	25-Jan-35	06-Aug-41
	Construct cofferdam dolphins (concurrent w/cofferdam)	25-Jan-35	22-Apr-36
	Dewater cofferdam	22-Apr-36	22-May-36
	Monitoring Baseline.	22-May-36	21-Jun-36
	Rewater Cofferdam	26-Oct-40	25-Nov-40
	Remove cofferdam & dolphins	26-Nov-40	06-Aug-41
	Buildings, Project Operations	20-Jun-39	25-Apr-40
	Earthwork for Structures	23-Jun-36	20-Aug-37
		23-Jun-36	20-Aug-37
	Foundation Work	10-Apr-37	28-Sep-38
	Storage Platform 24" PPC Piles	14-Sep-38	21-Sep-38



Remaining Level of Effort | Actual Work | Critical Remaining Work
Actual Level of Effort | Remaining Work | Milestone

TASK filter: All Activities

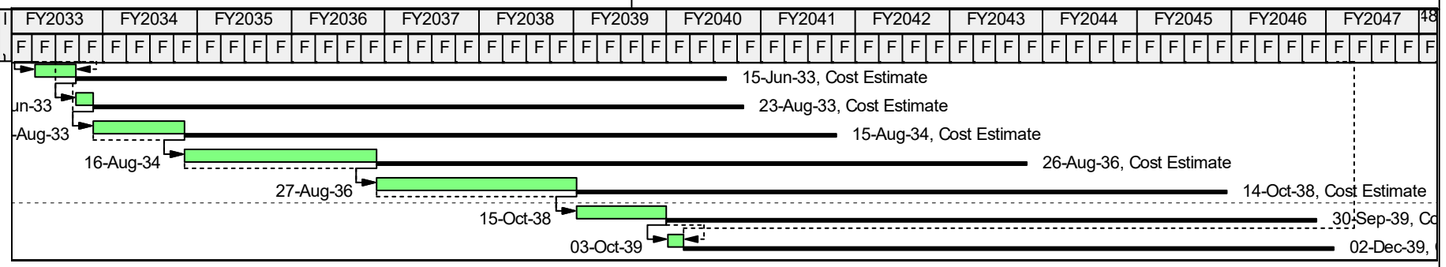
Activity ID	Activity Name	Start	Finish
	Lock Gates & Operating Machinery	30-Dec-32	31-Aug-40
	Miter Gate and Supporting Machinry Order/Fab	22-Jun-33	03-Jul-40
	Install gates (4 sector gate leaves	03-Jul-40	31-Aug-40
	Concrete Floating Guidewall	20-Jun-39	31-May-41
	Complete construction of guide walls, end cells	24-Dec-40	31-May-41
	Timber Guidewalls	12-Apr-44	06-Jul-44
	Dolphins	24-May-44	06-Jul-44
	Lock Structure	21-Aug-37	02-Jul-41
	Gatebay Monoliths	28-Sep-38	03-Jul-40
	Construct east T walls	24-Dec-40	02-Jul-41
	Culvert Valves & Oper. Mach	10-Mar-34	26-Oct-40
	Culvert Gate, Bulkhead and Supporting Machinry Order/Fab	29-Aug-34	27-Sep-40
	Culvert Maint. Bulkhead (4)	03-Jul-40	01-Aug-40
	Culvert Invert Screens (4)	01-Aug-40	15-Aug-40
	Culvert Valve Machinery	15-Aug-40	27-Sep-40
	Culvert Roller Gates (4)	27-Sep-40	26-Oct-40
	Assosciated General Items	03-Jul-41	28-Sep-46
	Demolition of existing lock walls	14-Mar-45	28-Sep-46
	Relocations	23-Aug-41	28-Sep-46
	Partial demobilization	12-Apr-44	02-May-44
	Utility Relocations	03-May-44	28-Sep-46
	New St. Claude Bridge	23-Aug-41	28-Sep-46
	Demolition of existing ramps	02-Dec-41	31-Jan-42
	Pile driving	03-Feb-42	28-Jul-42
	Temporary retaining structure for bridge piers	03-Feb-42	07-Apr-42
	Structural excavation and backfill	08-Apr-42	05-Aug-42
	Retaining wall sheetpile	29-Jul-42	05-Feb-43
	Concrete, piers 1, 2, 3	06-Aug-42	30-Dec-42
	Approach pier concrete	26-Aug-42	17-Dec-42
	Bascule gate leaves	18-Dec-42	22-Apr-43
	Girders	31-Dec-42	20-Mar-43
	Decking, barriers	23-Apr-43	10-Jul-43
	Mechanical, electrical, control house	13-Jul-43	09-Sep-43
	Partial demobilization	10-Sep-43	30-Sep-43
	Leftside Bullnose Dolping & Floating Guide Walls	12-Apr-44	03-Aug-44
	Rightside Bullnose Dolping & Floating Guide Walls	28-Dec-45	28-Sep-46
	Leevees and Floodwalls	04-Oct-32	02-Dec-39



Remaining Level of Effort | Actual Work | Critical Remaining Work
Actual Level of Effort | Remaining Work | Milestone

TASK filter: All Activities

Activity ID	Activity Name	Start	Finish
F&L-1010	Pile tests	10-Jan-33	15-Jun-33
F&L-1020	Demolition of existing buildings	16-Jun-33	23-Aug-33
F&L-1030	Embankment	24-Aug-33	15-Aug-34
F&L-1040	Pile driving	16-Aug-34	26-Aug-36
F&L-1050	Concrete Floodwall	27-Aug-36	14-Oct-38
F&L-1060	Demolition of existing floodwall	15-Oct-38	30-Sep-39
F&L-1070	Partial demobilization	03-Oct-39	02-Dec-39



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

TASK filter: All Activities

Appendix C

Cost & Schedule Risk Analysis Details

Cost & Schedule Summary for Risk Register Development

Project: New Industrial Canal Lock and Connecting Channels Project
Project Development Phase: Report Update
Meeting Date: 7/23/2024 to 7/25/2024

Construction Schedule Start: October 2032 *Month/Year*
Construction Schedule Finish: October 2046 *Month/Year*
Duration: 168.5 Months

Schedule Contingency Duration: 384.2 Months
Schedule Contingency: 228%
Schedule with Contingency (80% Confidence): 553.1 Months
Finish Date with Contingency (80% Confidence): November 2078

	CW WBS	Feature of Work	Base Cost	80% Confidence	80% Confidence ($)	80% Total
	Risk Not Included In CSRA					
	01 - LANDS AND DAMAGES		$4,457,693	0%	$0	$4,457,693
			$0	0%	$0	$0
			$0	0%	$0	$0
			$0	0%	$0	$0
	Risk Included In CSRA					
1	02 - RELOCATIONS		$61,647,500	83%	$51,167,425	$112,814,925
2	05 - LOCKS	IHNC Lock	$1,221,837,524	83%	$1,014,125,145	$1,316,286,890
3	08 - ROADS, RAILROADS, AND BRIDGES	St. Claude Bridge Replacement	$302,161,745	83%	$250,794,249	$316,042,961
4	09 - CHANNELS AND CANALS	Canal Stabalization & Dredging	$65,248,712	83%	$54,156,431	$119,405,143
5	11 - LEVEES AND FLOODWALLS	Levees and Floodwalls	$325,467,129	83%	$270,137,717	$595,604,846
6	Miscellaneous	CIMP and TIMP Mitigation	$214,160,380	83%	$177,753,115	$391,913,495
7			$0	0%	$0	$0
8			$0	0%	$0	$0
9			$0	0%	$0	$0
10			$0	0%	$0	$0
11			$0	0%	$0	$0
12			$0	0%	$0	$0
13			$0	0%	$0	$0
14			$0	0%	$0	$0
15			$0	0%	$0	$0
16			$0	0%	$0	$0
17			$0	0%	$0	$0
18			$0	0%	$0	$0
19			$0	0%	$0	$0
20			$0	0%	$0	$0
21			$0	0%	$0	$0
22			$0	0%	$0	$0
23	30 - PLANNING, ENGINEERING, AND DESIGN	Civil Works only; not included on MILCON Projects.	$257,125,000	83%	$213,413,750	$470,538,750
24	31 - CONSTRUCTION MANAGEMENT	Civil Works only; not included on MILCON Projects.	$197,637,000	83%	$164,038,710	$361,675,710
XX	FIXED DOLLAR RISK ADD (EQUALLY DISPERSED TO ALL, MUST INCLUDE JUSTIFICATION SEE BELOW)				$0	$0

TOTALS				
Risk Not Included In CSRA	$4,457,693	0%	$0	$4,457,693
Total Construction Estimate	$2,190,522,990	83%	$1,818,134,082	$4,008,657,072
Total Planning, Engineering & Design	$257,125,000	83%	$213,413,750	$470,538,750
Total Construction Management	$197,637,000	83%	$164,038,710	$361,675,710
Total EXCLUDING Risk Not Included In CSRA	**$2,645,284,990**	**83%**	**$2,195,586,542**	**$4,840,871,532**
Total INCLUDING Risk Not Included In CSRA	**$2,649,742,683**	**83%**	**$2,195,586,542**	**$4,845,329,225**
PROGRAMMED AMOUNT (IF KNOWN)				

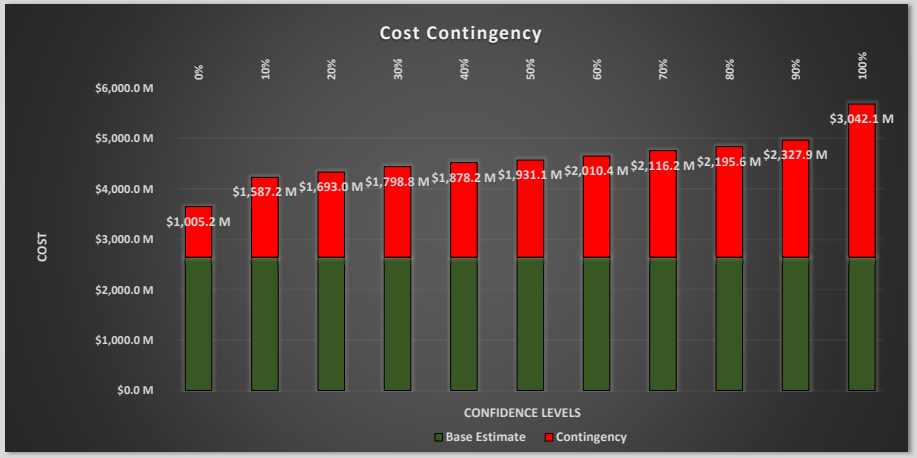
Appendix C-1

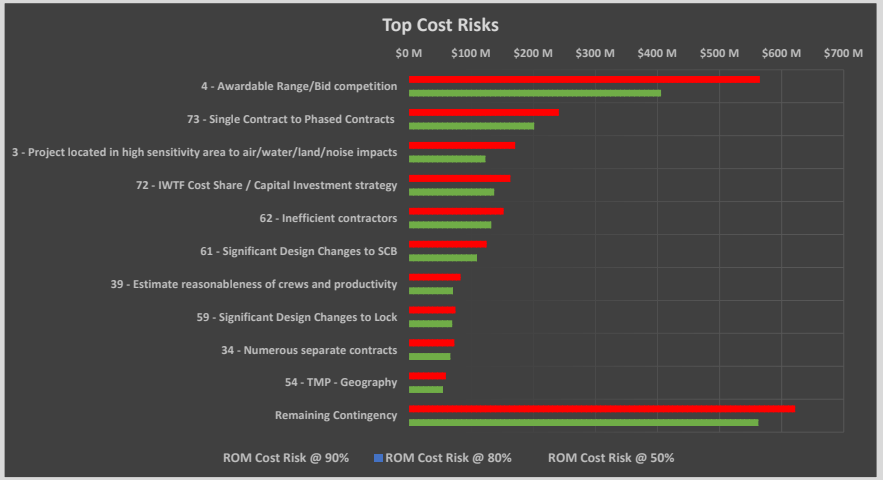
Risk Dashboards

Cost Risk Dashboard

Project: New Industrial Canal Lock and Connecting Channels Project
Location: New Orleans, LA

Contingency on Base Estimate		80% Confidence Project Cost	
	Base Estimate	$2,645,284,990	
	Estimate Contingency	$2,195,586,542	83%
	Base Estimate w/ Contingency (80% Confidence)	$4,840,871,532	





TOP COST RISKS

Risk/Opportunity Event		Risk Event Description	Team Discussions on Impact and Likelihood	Responsibility/ POC	Risk Level		Suggested Risk Reduction Measures (Avoid, Escalate, Exploit, Transfer/Share, Mitigate/Enhance, or Accept)
					Cost	Schedule	
4	Awardable Range/Bid competition	The Contract can be awarded 25% above the IGE value.	The IGE excludes profit but the CWE doesn't so assume 15% increase. Add and addition 15% to make it 30% for the risk of going above	Cost Engineering	High	Low	Accept
73	Single Contract to Phased Contracts	The Base assumes one contract and this risk assumes that the one contract is already broken up into 6 contracts. Out of the 6 (or more) contracts, the risk of half become base + options.	Likelihood: It is Likely that a base plus options is needed for at least 3 contracts, increasing cost and schedule. Cost Impacts: Significant cost increases due to options, possibly due to front-loading or longer overheads. Schedule Impact: Moderate due to a 6-12 mo. delay of a contractor not being able to efficiently plan out work. Note: These likelihoods may be applied to each contract separately. Can be mitigated by running concurrent with each other.	Contracting	High	High	Mitigate: Can be mitigated by running concurrent with each other.
3	Project located in high sensitivity area to air/water/land/noise impacts	Regulatory and environmental risk: Continuation of NEPA, or CWA 404 related comments Could result in impacts to the contracts that are in the middle of construction. Resulting in REAs and additional mobilizations of the equipment.	Likelihood: Very Likely: Could be vulnerabilities not identified by PDT or in review processes Impact (Cost): Costs associated with regulatory and environmental risk fluctuate based on timing of action and outcome of case. Impact (Schedule): Delay associated with continuation of NEPA, or CWA 404 related comments fluctuate based on timing of action and outcome of case. HIGH V: NEPA, or CWA 404 updates could occur during construction LIKELY: Action could occur prior to construction commencing	Project Management	High	Medium	Accept. Note: Due to the proximity of construction in urban environment, activities can disturb the surrounding area. Truck hauling, pile driving, dredging and other construction activities could be restricted to certain times of the day or for short time periods to limit impacts. Work schedule for construction could be 5 to 7 days per week.
72	IWTF Cost Share / Capital Investment strategy	IHNC is not currently on the 20 year CIS and there are three locks currently beginning construction that are ahead of IHNC. Guidance is to complete construction first. Currently, construction start is 2029.	Historic data shows that long term programs have received funding cuts, Inland Waterway Trust Fund has a limited fund balance remaining and other ongoing projects share the funding- reevaluate after IWUB (AUG 2024) It is possible that in 2039, IHNC could become Lock A. This is based on the 25/75 cost	Programs	High	High	Accept
62	Inefficient contractors	Cost and schedule impacts occur due to poorly performing contractors	The procurement process should be able to select the most highly qualified contractors with a proven track record of performance. Risk is higher on smaller contracts; lower for larger contracts.	Construction	High	High	Avoid: Use procurement methods that reduce risk. Combination of best value for larger contracts. IFLB for smaller ones.

Cost Risk Dashboard

Project: New Industrial Canal Lock and Connecting Channels Project
Location: New Orleans, LA

Contingency on Base Estimate	80% Confidence Project Cost	
Base Estimate	$2,645,284,990	
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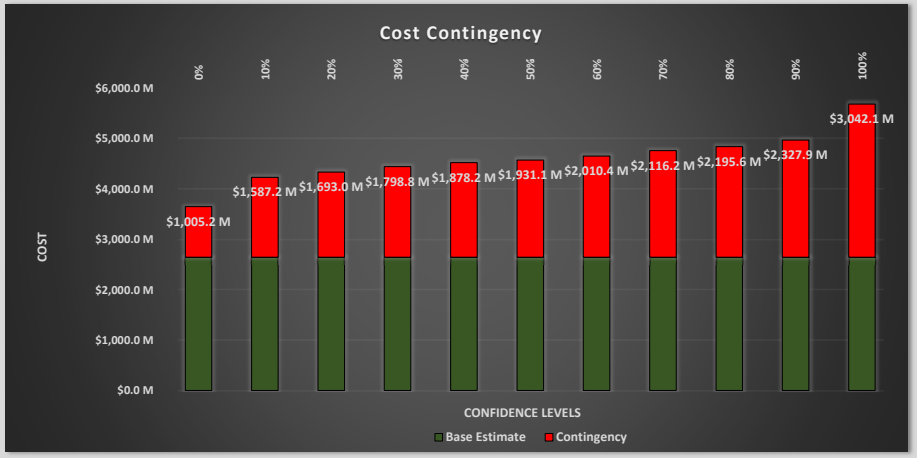
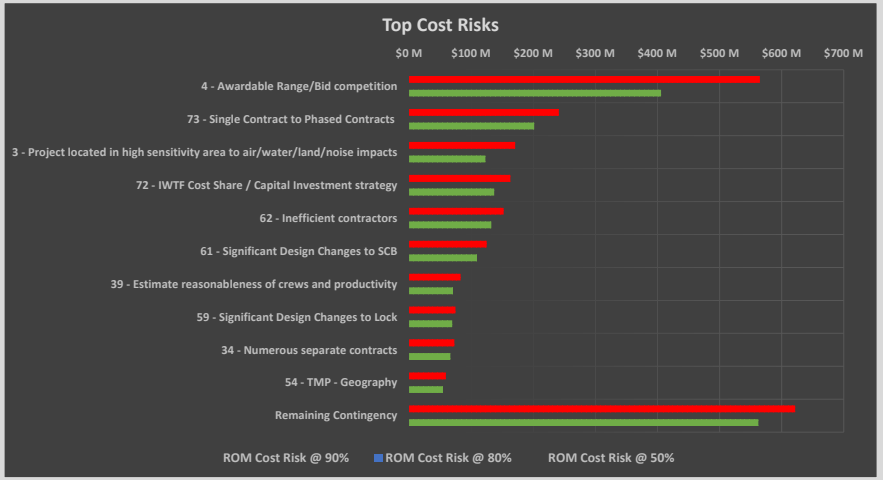




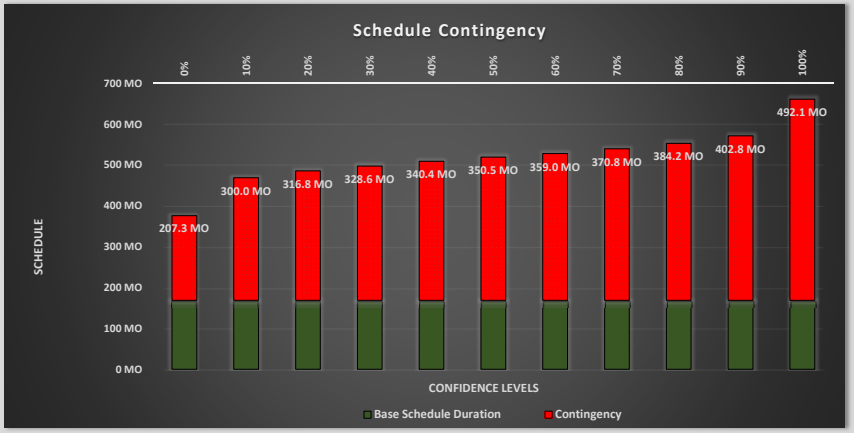
TOP COST RISKS

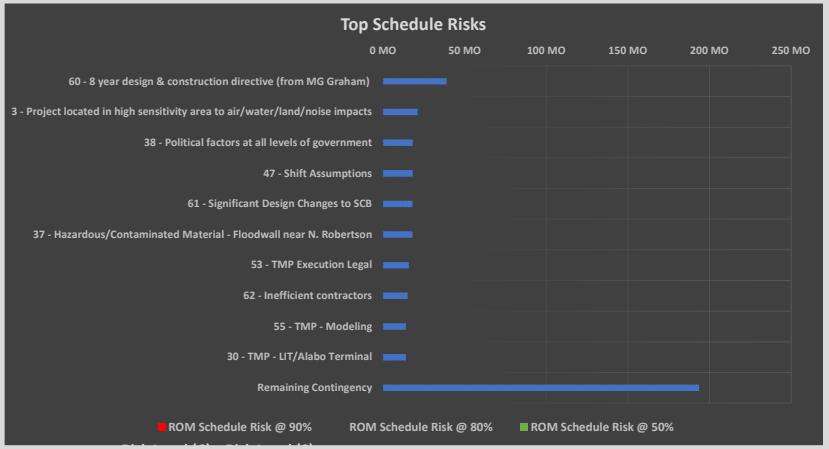
Risk/Opportunity Event		Risk Event Description	Team Discussions on Impact and Likelihood	Responsibility/ POC	Risk Level		Suggested Risk Reduction Measures (Avoid, Escalate, Exploit, Transfer/Share, Mitigate/Enhance, or Accept)
					Cost	Schedule	
61	Significant Design Changes to SCB	Refined design, changes design, construction sequence, revise design	Once the design of New St. Claude Bridge (SCB) is developed there will be some changes to the quantities. Bridge design will be continued in PED with the use of an A/E expert for the bridge. Costs to design and construct a unique bridge such as this within a small footprint and in a fluctuating riverine environment are likely to increase. The design of the new St. Claude bridge is roughly based on the Casco Bay Bridge in Portland, ME. In 1997, it cost approx. $130M to build. In today's dollars, that could range between $250-325M. The new St. Claude Bridge would be more difficult to construct in a sensitive, urban environment with reduced construction access and clearances. Additionally, although the span of the bascule leaves is the same, the approaches of the project bridge would be lower profile and in a highly-trafficked area (both vehicular, pedestrian, and navigation) Other risks identified: 1) Lack of available ROW and space for future ROW for 4 travel lanes plus adequate, separate pedestrian/bike access 2) Existing SCB control operator house is sandwiched between existing structure and the new bridge. Constructability is difficult to maintain a 120+ year old structure without causing damage to it. May require temporary relocation of the operator's house (and connections within). 3) New bridge approach tie-ins will be difficult to phase to maintain vehicular, pedestrian, business and resident access. 4) ROM level of foundation, piers, and abutment designs. 5) AE Firm will be required to design bridge 6) Pedestrian tunnel and vehicular tunnel at Deslonde and Sister Sts, respectively, under bridge on east side After discussion with Modjeski and Masters the PDT has a higher confidence in constructability the bridge. The PDT doesn't have a confidence in the Electric and Mechanical design. they have Higher confidence in the structural design.	Contracting	High	High	More design is needed with bridge design experts.
39	Estimate reasonableness of crews and productivity	Crew and productivity revisions impacts cost and schedule	Estimate of cost and schedule will be based upon historical crew sizes and production rates for similar types of work. MVN has a wealth of third type of data concerning heavy civil construction	Cost Engineering	Medium	Medium	
59	Significant Design Changes to Lock	Refined design, changes design, construction sequence, revise design	MVN has a lot of experience with sector gate and concrete chambers designs. MVN feels this would be a moderate risk compares the SCB design. The Lock design itself is at 30%. Example L&D 25 experienced $100M from 15% to 65% in design.	Civil/Site Design	Medium	Low	Accept.
34	Numerous separate contracts	Numerous contracts impacts qualified contractor pool, mobilization cost	Obtaining qualified contractors to complete a project of this scope. Having numerous contracts can spread thin the Contracting Offices resources to respond. Competing projects in region: LIT, MBrSD, St. Tammany, MRT projects; only handful of local ktrs resulting in more JVs and thus an even smaller contractor pool.	Project Management	High	High	Accept because we have no control over contractor availability and other projects occuring at same time. Competing interests.
54	TMP - Geography	Limited routes of egress for communities in Orleans, St. Bernard, and Plaquemines Parishes downriver of IHNC.	St. Bernard Parish is limited to 4 egress routes, 3 of which transit the IHNC near the project site and are impacted by navigation traffic through the IHNC. The 4th route is an indirect, longer route to the population center of the New Orleans area. Additional consideration may be required to address limited means of egress.	Planning	Medium	High	Accept Mitigate: During PED a life safety analysis will be performed.

Schedule Risk Dashboard

Project: New Industrial Canal Lock and Connecting Channels Project
Location: New Orleans, LA

Contingency on Base Schedule	80% Confidence Project Schedule	
Base Schedule Start Date	October 4, 2032	
Base Schedule Finish Date	October 31, 2046	
Base Schedule Duration	168.9 Months	228%
Schedule Contingency Duration	384.2 Months	
Base Schedule w/ Contingency (80% Confidence)	553.1 Months	
Base Finish Date w/ Contingency (80% Confidence)	November 8, 2078	





TOP SCHEDULE RISKS

Risk/Opportunity Event		Risk Event Description	Team Discussions on Impact and Likelihood	Responsibility/ POC	Risk Level		Suggested Risk Reduction Measures (Avoid, Escalate, Exploit, Transfer/Share, Mitigate/Enhance, or Accept)
					Cost	Schedule	
60	8 year design & construction directive (from MG Graham)	MG Graham has set a goal of an 8 year time period start to finish for design and construction of lock projects	If MG Graham directed the USACE officially then this risk would be triggered. Currently no directive as been issued. Due to the nature of the construction phasing specific to this project, an 8 year time frame is unrealistic. CIMP and TMP are long-term programs that cannot and should not be constrained to 8 years.	Project Management	High	High	Avoid: Separate lock feature construction from other project features. Build the lock itself in 8 years to satisfy requirement.
3	Project located in high sensitivity area to air/water/land/noise impacts	Regulatory and environmental risk:: Continuation of NEPA, or CWA 404 related comments Could result in impacts to the contracts that are in the middle of construction. Resulting in REAs and additional mobilizations of the equipment.	Likelihood: Very Likely: Could be vulnerabilities not identified by PDT or in review processes Impact (Cost): Costs associated with regulatory and environmental risk fluctuate based on timing of action and outcome of case. Impact (Schedule): Delay associated with continuation of NEPA, or CWA 404 related comments fluctuate based on timing of action and outcome of case. HIGH V: NEPA, or CWA 404 related comments still could occur during construction LIKELY: Action could occur prior to construction commencing LOW V: Note: all other Regulatory and environmental risk maybe be combined into the risk referenced in section. If this is triggered it assume the other regulatory and environmental risk will be zero.	Project Management	High	Medium	Accept. Note: Due to the proximity of construction in urban environment, activities can disturb the surrounding area. Truck hauling, pile driving, dredging and other construction activities could be restricted to certain times of the day or for short time periods to limit impacts. Work schedule for construction could be 5 to 7 days per week.
38	Political factors at all levels of government	Politicians opposed to project delay construction	Currently, the political climate is quietly in favor of the project but civic opposition may change mindsets	Local Sponsor	Low	High	Accept Mitigate: Build relationships and work with officials
47	Shift Assumptions	Shift and overtime assumptions can impact the contract cost and schedule. Base assumption is 5-12s. Could increase up to 7 days/week, resulting in time savings but cost increases.	Likelihood: It is likely that actual shift assumptions will be different than the estimates, even up through construction. Cost Impact: Given the magnitude of this project, global changes to the shifts can have a few million dollars worth of impact, which is negligible. Schedule Impact: A range of 1	Cost Engineering	Low	High	

Schedule Risk Dashboard

Project: New Industrial Canal Lock and Connecting Channels Project
Location: New Orleans, LA

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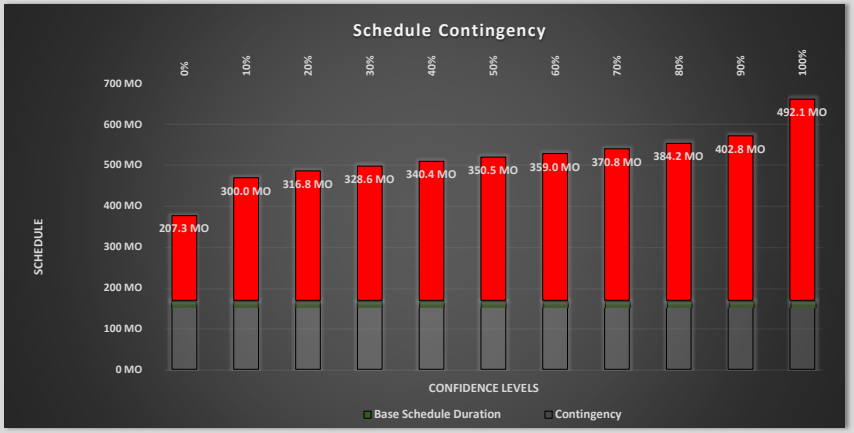

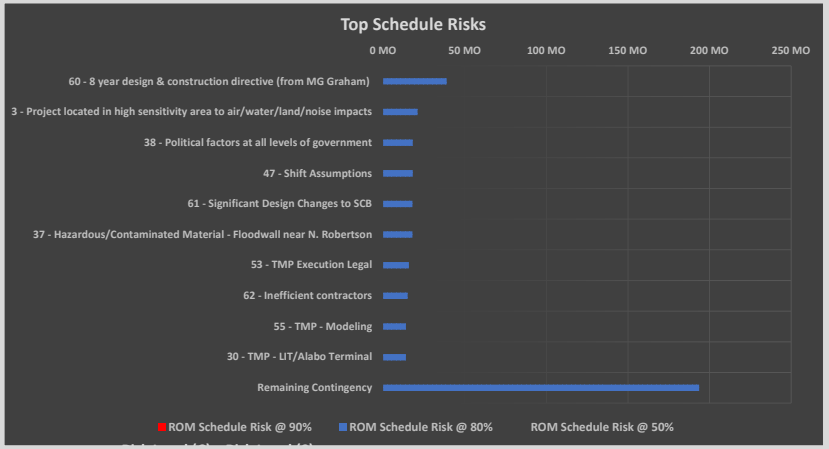

TOP SCHEDULE RISKS

	Risk/Opportunity Event	Risk Event Description	Team Discussions on Impact and Likelihood	Responsibility/ POC	Risk Level		Suggested Risk Reduction Measures (Avoid, Escalate, Exploit, Transfer/Share, Mitigate/Enhance, or Accept)
					Cost	Schedule	
61	Significant Design Changes to SCB	Refined design, changes design, construction sequence, revise design	Once the design of New St. Claude Bridge (SCB) is developed there will be some changes to the quantities. Bridge design will be continued in PED with the use of an A/E expert for the bridge. Costs to design and construct a unique bridge such as this within a small footprint and in a fluctuating riverine environment are likely to increase. The design of the new St. Claude bridge is roughly based on the Casco Bay Bridge in Portland, ME. In 1997, it cost approx. $130M to build. In today's dollars, that could range between $250-325M. The new St. Claude Bridge would be more difficult to construct in a sensitive, urban environment with reduced construction access and clearances. Additionally, although the span of the bascule leaves is the same, the approaches of the project bridge would be lower profile and in a highly-trafficked area (both vehicular, pedestrian, and navigation) Other risks identified: 1) Lack of available ROW and space for future ROW for 4 travel lanes plus adequate, separate pedestrian/bike access 2) Existing SCB control operator house is sandwiched between existing structure and the new bridge. Constructability is difficult to maintain a 120+ year old structure without causing damage to it. May require temporary relocation of the operator's house (and connections within). 3) New bridge approach tie-ins will be difficult to phase to maintain vehicular, pedestrian, business and resident access. 4) ROM level of foundation, piers, and abutment designs. 5) AE Firm will be required to design bridge 6) Pedestrian tunnel and vehicular tunnel at Deslonde and Sister Sts, respectively, under bridge on east side After discussion with Modjeski and Masters the PDT has a higher confidence in constructability the bridge. The PDT doesn't have a confidence in the Electric and Mechanical design. they have Higher confidence in the structural design.	Contracting	High	High	More design is needed with bridge design experts.
37	Hazardous/Contaminated Material - Floodwall near N. Robertson	HTRW AOI-1 and/or AOI-2 may have different, larger plume extents than currently delineated.	Floodwall alignment currently is laid out to avoid the AOIs. If the delineation to be performed (as required by LDEQ and specified in the 2023 Work Plan) identifies HTRW within the current floodwall (and substructure) alignment, HTRW remediation or a new floodwall alignment may be required. Likelihood: Possible Impact (Cost): Marginal (verify w/ Bob Brooks) Impact (Schedule): Significant (24 mo. start to finish is optimistic to work and complete the issue). May be concurrent with other features but delay floodwall completion. HIGH V: $4M cost to perform soil remediation plus delay to construction activity start LIKELY: LOW V:	Construction	Medium	Medium	Avoid: Delineation does not identify larger AOIs than currently shown; can build floodwall as planned. Mitigate: Redesign floodwall or perform soil remediation and remove HTRW.
53	TMP Execution Legal	No implementation guidance for a "Program"	Risk of legal hurdles. There is no precedence for implementation of a Program. The term "program" implies continued O&M by USACE. Could delay implementation of mitigation features.	Planning	Medium	High	Mitigate: Address early in PED Accept. Transfer: Partner with DOTD, CNO, SBP, RPC, PONO.
62	Inefficient contractors	Cost and schedule impacts occur due to poorly performing contractors	The procurement process should be able to select the most highly qualified contractors with a proven track record of performance. Risk is higher on smaller contracts; lower for larger contracts.	Construction	High	High	Avoid: Use procurement methods that reduce risk. Combination of best value for larger contracts. IFLB for smaller ones.
55	TMP - Modeling	TMP modeling did not include IHNC Construction period	Construction sequencing and designs were not available to PDT or transportation modelers. As a result, modeling focused soley on existing conditions and future with project conditions (FWPC). A blind spot of the duration of construction exists. Additional mitigation measures not currently included in TMP may be necessary.	Planning	High	High	Mitigate: Address early in PED Accept.

Schedule Risk Dashboard

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Location: New Orleans, LA

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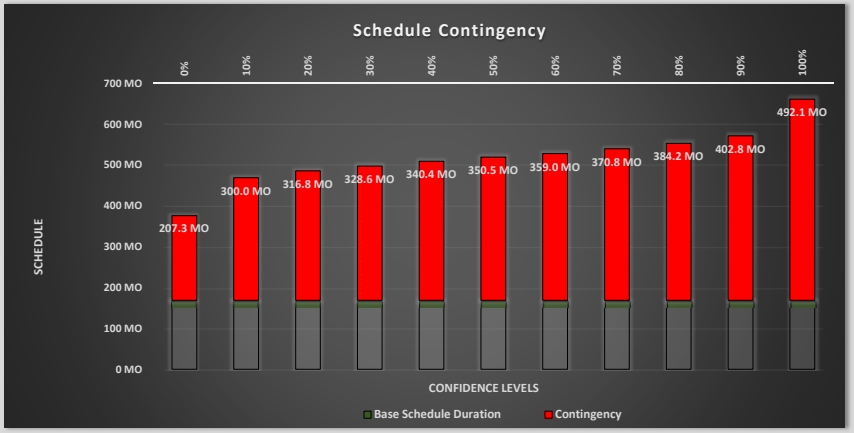
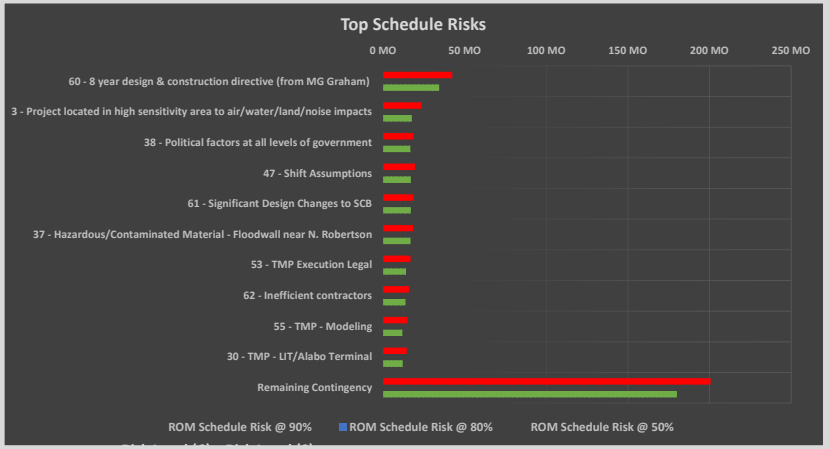
	Base Schedule w/ Contingency (80% Confidence)	553.1 Months	
	Base Finish Date w/ Contingency (80% Confidence)	November 8, 2078	





TOP SCHEDULE RISKS

Risk/Opportunity Event		Risk Event Description	Team Discussions on Impact and Likelihood	Responsibility/ POC	Risk Level		Suggested Risk Reduction Measures (Avoid, Escalate, Exploit, Transfer/Share, Mitigate/Enhance, or Accept)
					Cost	Schedule	
30	TMP - LIT/Alabo Terminal	Louisiana Internation Terminal (LIT) & Alabo Terminal transportation impact analysis is not complete	LIT & Alabo transportation impacts could have greater effects on St. Bernard parish than currently anticipated in the IHNC vehicular modeling report.	Planning	Medium	High	Accept

Appendix C-2

Contingency Summary

Project Contingency

New Industrial Canal Lock and Connecting Channels Project

October 2024

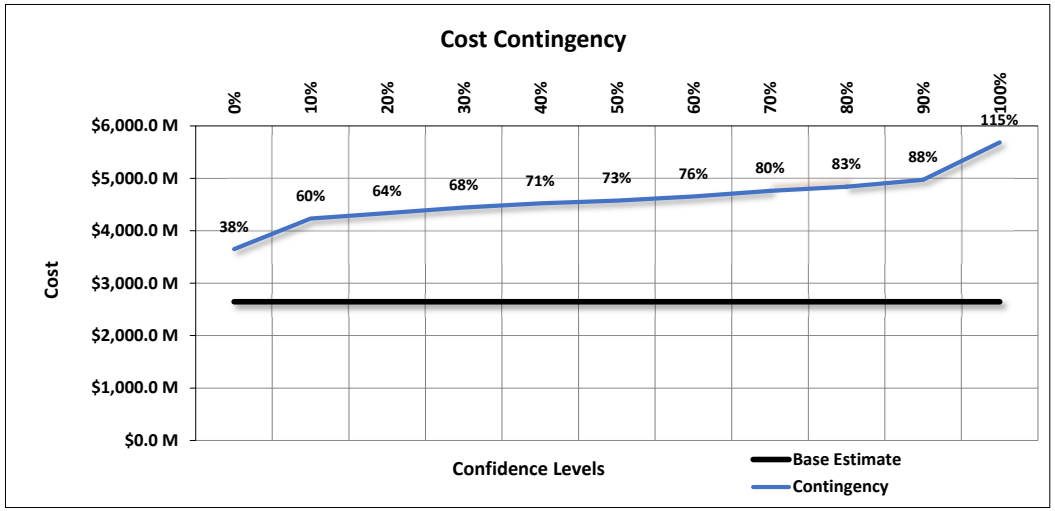
Contingency on Base Estimate	80% Confidence Project Cost	
Base Estimate	$2,645,284,990	
Estimate Contingency	$2,195,586,542	83%
Base Estimate w/ Contingency (80% Confidence)	$4,840,871,532	

Contingency on Base Schedule	80% Confidence Project Schedule	
Base Schedule Start Date	October 4, 2032	
Base Schedule Finish Date	October 31, 2046	
Base Schedule Duration	168.9 Months	
Schedule Contingency Duration	384.2 Months	228%
Base Schedule w/ Contingency (80% Confidence)	553.1 Months	
Base Finish Date w/ Contingency (80% Confidence)	November 8, 2078	

PROJECT COST CONTINGENCY DEVELOPMENT

Cost Contingency Analysis

Base Estimate	$2,645,284,990		
Confidence Level	**Contingency Value**	**Contingency**	**Cost with Contingency**
0%	$1,005,208,296	38%	$3,650,493,286
10%	$1,587,170,994	60%	$4,232,455,984
20%	$1,692,982,394	64%	$4,338,267,384
30%	$1,798,793,793	68%	$4,444,078,783
40%	$1,878,152,343	71%	$4,523,437,333
50%	$1,931,058,043	73%	$4,576,343,033
60%	$2,010,416,592	76%	$4,655,701,583
70%	$2,116,227,992	80%	$4,761,512,982
80%	**$2,195,586,542**	**83%**	**$4,840,871,532**
90%	$2,327,850,791	88%	$4,973,135,781
100%	$3,042,077,739	115%	$5,687,362,729



Project Contingency

New Industrial Canal Lock and Connecting Channels Project

October 2024

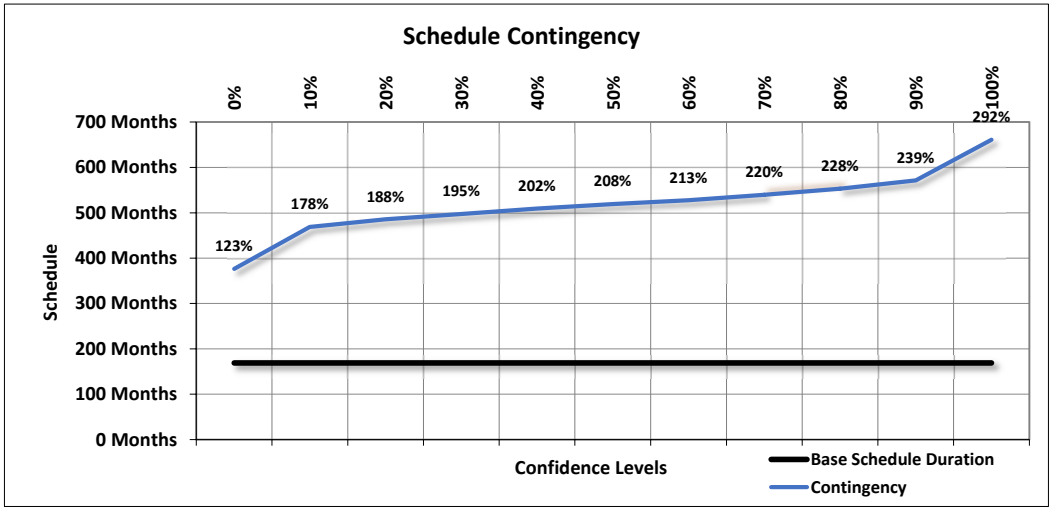
Contingency on Base Estimate	80% Confidence Project Cost	
Base Estimate	$2,645,284,990	
Estimate Contingency	$2,195,586,542	83%
Base Estimate w/ Contingency (80% Confidence)	$4,840,871,532	

Contingency on Base Schedule	80% Confidence Project Schedule	
Base Schedule Start Date	October 4, 2032	
Base Schedule Finish Date	October 31, 2046	
Base Schedule Duration	168.9 Months	
Schedule Contingency Duration	384.2 Months	228%
Base Schedule w/ Contingency (80% Confidence)	553.1 Months	
Base Finish Date w/ Contingency (80% Confidence)	November 8, 2078	

PROJECT SCHEDULE CONTINGENCY (DURATION) DEVELOPMENT

Schedule Contingency Analysis

Base Schedule Duration	168.9 Months		
Confidence Level	Contingency Value	Contingency	Duration with Contingency
0%	207.3 Months	123%	376.1 Months
10%	300.0 Months	178%	468.8 Months
20%	316.8 Months	188%	485.7 Months
30%	328.6 Months	195%	497.5 Months
40%	340.4 Months	202%	509.3 Months
50%	350.5 Months	208%	519.4 Months
60%	359.0 Months	213%	527.8 Months
70%	370.8 Months	220%	539.6 Months
80%	**384.2 Months**	**228%**	**553.1 Months**
90%	402.8 Months	239%	571.6 Months
100%	492.1 Months	292%	661.0 Months



Appendix C-3

Sensitivity Charts

Sensitivity Charts

New Industrial Canal Lock and Connecting Channels Project

October 2024

Contingency on Base Estimate	80% Confidence Project Cost	
Base Estimate	$2,645,284,990	
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Base Estimate w/ Contingency (80% Confidence)	$4,840,871,532	

Contingency on Base Schedule	80% Confidence Project Schedule	
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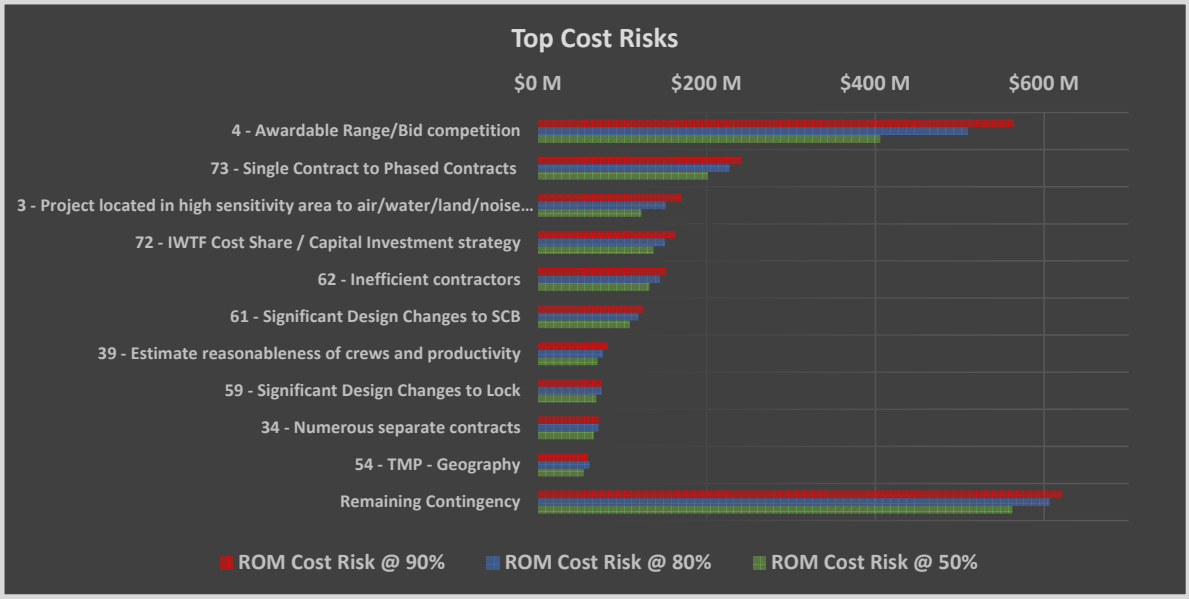
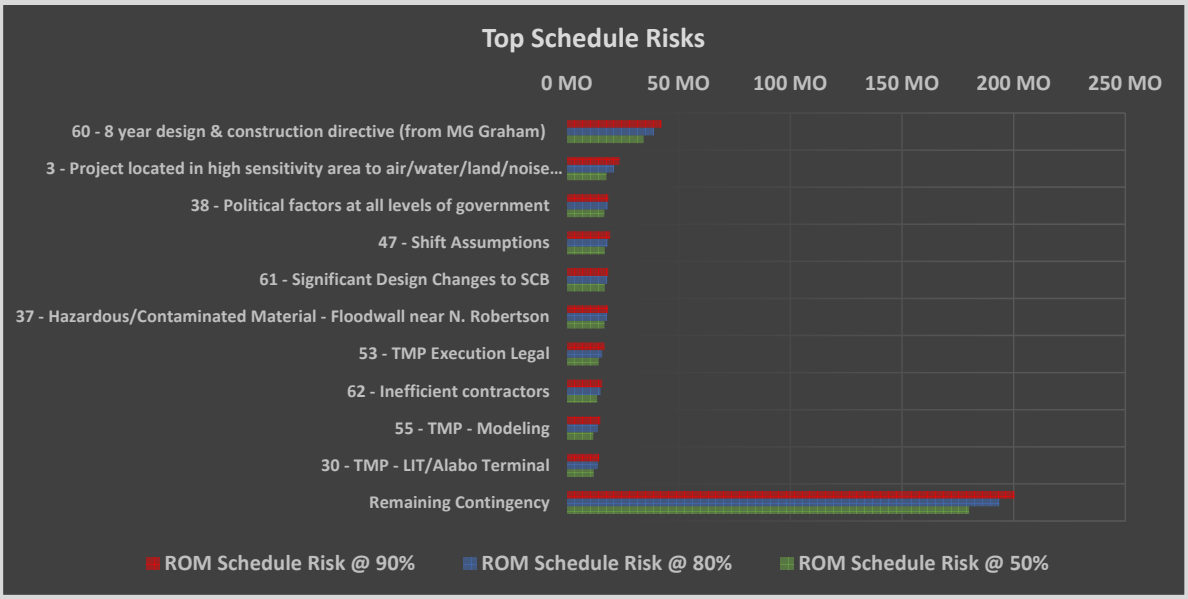
Base Schedule Finish Date	October 31, 2046	
Base Schedule Duration	168.9 Months	
Schedule Contingency Duration	384.2 Months	228%
Base Schedule w/ Contingency (80% Confidence)	553.1 Months	
Base Finish Date w/ Contingency (80% Confidence)	November 8, 2078	

Top Cost Risk Drivers by Confidence Levels



Top Schedule Risk Drivers by Confidence Levels



Sensitivity Charts

New Industrial Canal Lock and Connecting Channels Project

October 2024

Contingency on Base Estimate	80% Confidence Project Cost	
Base Estimate	$2,645,284,990	
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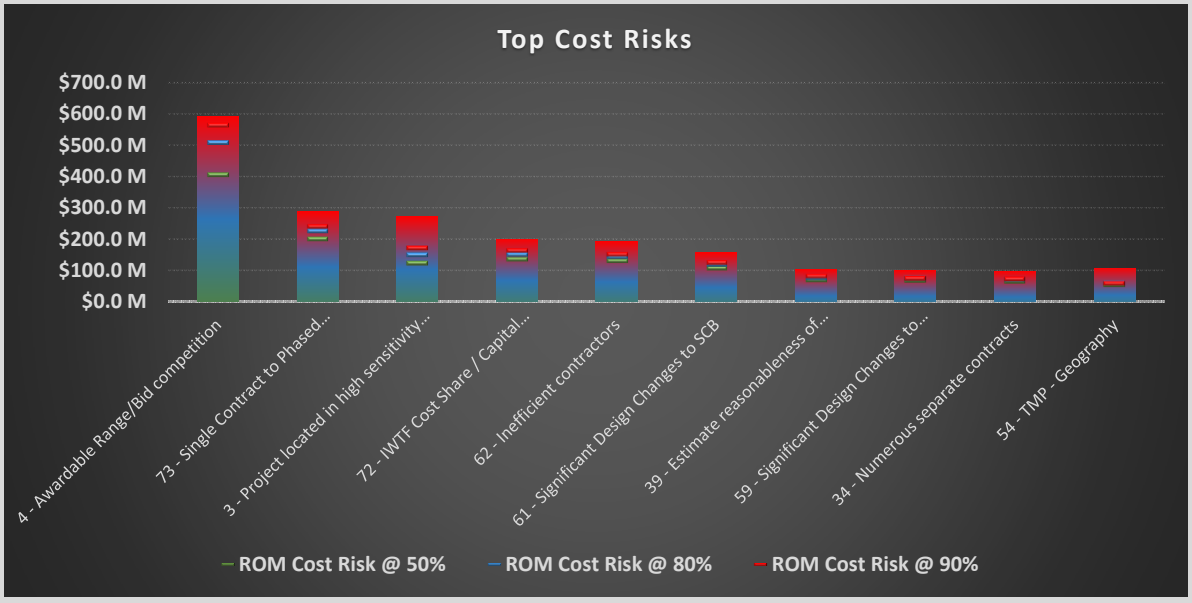
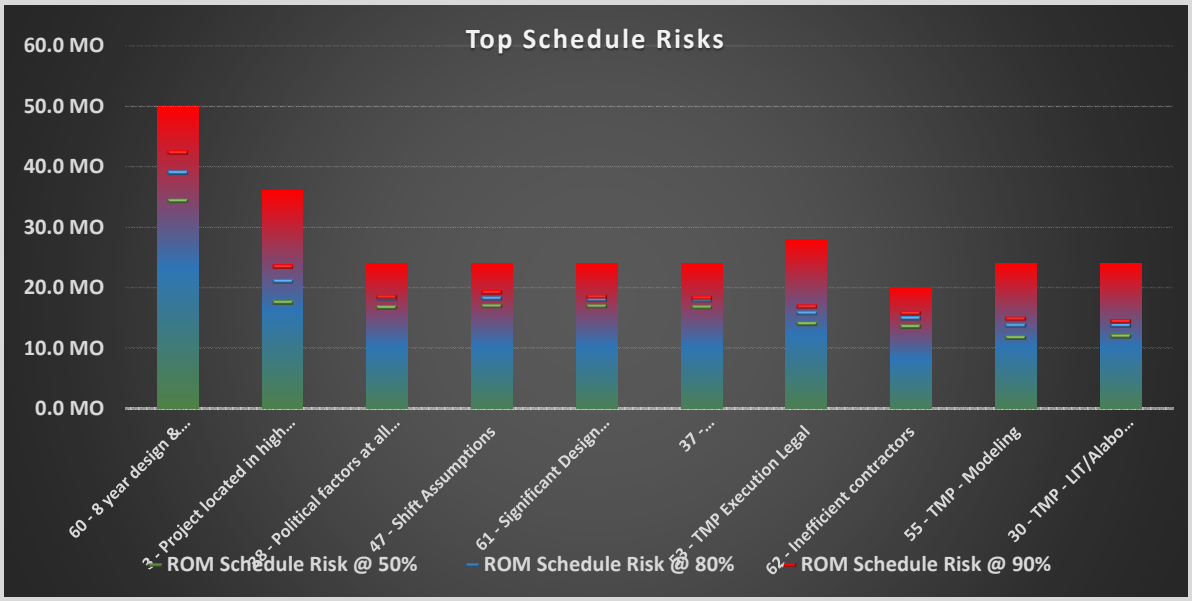
Base Finish Date w/ Contingency (80% Confidence)	November 8, 2078	

Top Cost Risk Drivers & Ranges



Top Schedule Risk Drivers & Ranges



Appendix C-4

Risk Register

New Industrial Canal Lock and Connecting Channels Project Report Update

October 2024

						Project Cost		Project Schedule		Other Information					Additional Documentation
REF	**Risk Type**	**Risk/Opportunity Event**	**Risk Event Description**	**Team Discussions on Impact and Likelihood**	**Likelihood**	**Impact (C)**	**Risk Level (C)**	**Impact (S)**	**Risk Level (S)**	**Cost Variance Distribution**	**Schedule Variance Distribution**	**Correlation to Other(s)**	**Responsibility/ POC**	**Affected Project Component**	**Suggested Risk Reduction Measures (Avoid, Escalate, Exploit, Transfer/Share, Mitigate/Enhance, or Accept)**
1	7 - General Technical Risk (TR)	Construction at existing St. Claude Bridge vicinity.	This risk occurs after the new bridge is constructed and old bridge is ready for removal.	Bridge clearances in this area will require land based equipment to excavate the channel at old lock site. As material is removed, the access improves but shifts to marine-based. Once new SCB is constructed, the workspace becomes more limited. Risk of constructability challenges. Likelihood: Very likely Impact (Cost): Marginal Impact (Schedule): Moderate HIGH V:Assume $20M and 5 months LIKELY: LOW V:	Very Likely	Negligible	Low	Marginal	Medium	Triangular (LV, ML, 80%)	Triangular (LV, ML, 80%)		Construction	Project Cost & Schedule	Mitigate: Require contractors to submit proposed construction sequences and plans in a best value type solicitation.
2	5 - Contract Acquisition Risks (CA)	Undefined acquisition strategy	Type of contracts resulting in delayed awards **There are a minimum of 6 construction contracts that will be required. Type of work (lock, bridge, levee/floodwall, dredging; CIMP (small/dbe), TMP (road construction)**	Negotiated Procurements, low bid, Small Business, Design Bid Build, Early Contractor Involvement are possible vehicles to award features of work. Likelihood: Possible Impact (Cost): Marginal Impact (Schedule): Moderate HIGH V: 12 Months LIKELY: 9 months LOW V:	Possible	Marginal	Low	Moderate	Medium	N/A -Not Modeled	Triangular (LV, ML, 80%)		Project Management	Project Cost & Schedule	Accept if it is due to funding streams or contractor availability.
3	33 - Regulatory And Environmental (ENV)	Project located in high sensitivity area to air/water/land/noise impacts	LEGAL ACTION: Continuation of 2011 injunction (NEPA, CWA 404) This will result in impacts to the contracts that are in the middle of construction. Resulting in REAs and additional mobilizations of the equipment.	Likelihood: **Very Likely**: Could be vulnerabilities not identified by PDT or in review processes Impact (Cost): Costs associated with legal action fluctuate based on timing of action and outcome of case. Impact (Schedule): Delay associated with legal action fluctuate based on timing of action and outcome of case. HIGH V: Legal action could occur during construction LIKELY: Action could occur prior to construction commencing LOW V: Note: all other Legal actions ma be combined into the Injunction referenced in this risk. If this is triggered it assume the other legal risk will be zero.	Likely	Significant	High	Moderate	Medium	Yes-No	Yes-No	60, 64	Project Management	Project Cost & Schedule	**Accept.** **Note:** Due to the proximity of construction in urban environment, activities can disturb the surrounding area. Truck hauling, pile driving, dredging and other construction activities could be restricted to certain times of the day or for short time periods to limit impacts. Work schedule for construction could be 5 to 7 days per week.
4	5 - Contract Acquisition Risks (CA)	Awardable Range/Bid competition	The Contract can be awarded 25% above the IGE value.	The IGE excludes profit but the CWE doesn't so assume 15% increase. Add and addition 15% to make it 30% for the risk of going above	Likely	Critical	High	Negligible	Low	Triangular (LV, ML, 80%)	N/A -Not Modeled		Cost Engineering	Project Cost	Accept
5	17 - Geotechnical / Geology (GG)	Geotechnical	additional borings/testing changes design	The borings for the structure are adequate for the current design. Confidence is high. A pile optimization study will be conducted to reduce cost. Borings for the bridge and floodwall will have to be revisited to refine the design. A cost savings in construction is anticipated because of a conservative design.	Unlikely	Negligible	Low	Moderate	Low	N/A -Not Modeled	N/A -Not Modeled		Project Management	Project Cost & Schedule	Mitigate by performing additional soil borings/analysis.
6	17 - Geotechnical / Geology (GG)	Geotechnical Stability Analysis	Limited analysis on T-wall design (25-30%) in General Re-evaluation Report	Stability analysis performed during PED MAY reveal some unbalanced loads, requiring increases in T wall pile foundation cost. The cost for pile foundations can have up to a 25% increase to foundation cost may be obtained if unbalanced are found.	Possible	Marginal	Low	Marginal	Low	N/A -Not Modeled	N/A -Not Modeled		Project Management	Project Cost & Schedule	Mitigate by performing additional soil borings/analysis.
7	7 - General Technical Risk (TR)	Mechanical/electrical design	Low design maturity adds risk to the SCB. Risk item 61 doesn't consider the electrical and mechanical design for SCB.	No design was performed. Data was used from other projects with similar elements. Detailed design will be done during PED, resulting in potential changes and increased costs	Very Likely	Marginal	Medium	Marginal	Medium	Triangular (LV, ML, 80%)	Triangular (LV, ML, 80%)		Contracting	Project Cost & Schedule	Accept.
8	13 - Construction (CO)	Differing site condition	Impacts to design of project features, demolition of existing lock system, existing buildings.	As built drawing may not capture the undocumented structures around existing Lock and existing St Claude Bridge. Buildings may contain possible contaminated materials that need special handling and disposal.	Likely	Marginal	Medium	Marginal	Medium	Triangular (LV, ML, 80%)	Triangular (LV, ML, 80%)		Contracting	Project Cost & Schedule	Accept differing site conditions if they occur during constrction.
9	7 - General Technical Risk (TR)	INDC and Enterprise Resource Availability	Limited USACE Enterprise resources	Although currently planned to be designed in-house, there is a risk that outside A/E firms may be required due to limited USACE resources. High quality design firms that have the technical capabilities to perform the work are also limited.	Possible	Marginal	Low	Moderate	Medium	N/A -Not Modeled	Triangular (LV, ML, 80%)		Contracting	Project Cost & Schedule	**Accept**: Over the shoulder review will be performed to maintain QA. Other Districts will be utilized . Inland Navigation Design Center will be involved with the design and will used a qualified pool on designers with inland navigation experiences that will be used. **Mitigate**: Evaluate USACE resources prior to PED to make determination whether AE firms would be required or not.
10	9 - Lands and Damages Risk (RE)	Real estate plan	The RE Plan has not been fully defined; currently in progress. Identifying potential easements and purchases associated with St. Claude Bridge re-alignment. Possible purchase RE at 4700 block St. Claude from CNO. In the 4500 block, takings are required.	Awaiting information regarding compensable interest for relocations. Construction will affect right of entry and noise levels for landowners. Some homeowners shall be temporarily relocated (max 12 mo.) for safety and access concerns. Roughly 82 residences and two business can have temporary access issues. From discussions an impact of $6M would impact the project. If temporary relocation need exceeds 12 mo., USACE must buy the affected property. Likelihood: Very likely Impact (Cost): Marginal- up to 82 properties may requiring purchasing (~$500k each) Impact (Schedule): 12+ months HIGH V: LIKELY: LOW V:	Very Likely	Marginal	Medium	Moderate	High	Triangular (LV, ML, 80%)	Triangular (LV, ML, 80%)		Real Estate	Project Schedule	
11	13 - Construction (CO)	Labor availability/wages	Labor pool shortage and wage increases during construction	A ten year project will see fluctuations in the availability of trained and qualified labor pools but if necessary, some labor training can be done by the contractors. Wage increases will occur over the life of the project and the costs should reflect escalations. Availability of qualified tradespeople to perform the work could be a challenge.	Likely	Marginal	Medium	Marginal	Medium	Triangular (LV, ML, 80%)	Triangular (LV, ML, 80%)		Construction	Contract Cost & Schedule	Accept Mitigate: CIMP features include job/skill training for locals with intent that they can work on project.
12	7 - General Technical Risk (TR)	Dredging and Bank Stabilization Quantities	Feasibility-level design/quantities may be inaccurate.	Design quantities have been assessed at a feasibility-level by Civil Branch at this time. Therefore quantities can vary greatly until final alignments and surveys have been completed. This quantity variation will affect the dredging and the bank stabilization quantities. As per the PDT a 15% increase in quantities will be used. The increase in time to the contract for this quantity increase is 1.5 months which is negligible.	Possible	Negligible	Low	Negligible	Low	N/A -Not Modeled	N/A -Not Modeled		Geotechnical Design	Project Cost & Schedule	Mitigate: Higher design maturity would reduce risk of varying quantities.

New Industrial Canal Lock and Connecting Channels Project Report Update

October 2024

						Project Cost		Project Schedule		Other Information					Additional Documentation
REF	**Risk Type**	**Risk/Opportunity Event**	**Risk Event Description**	**Team Discussions on Impact and Likelihood**	**Likelihood**	**Impact (C)**	**Risk Level (C)**	**Impact (S)**	**Risk Level (S)**	**Cost Variance Distribution**	**Schedule Variance Distribution**	**Correlation to Other(s)**	**Responsibility/ POC**	**Affected Project Component**	**Suggested Risk Reduction Measures (Avoid, Escalate, Exploit, Transfer/Share, Mitigate/Enhance, or Accept)**
13	7 - General Technical Risk (TR)	Dredge Scope	Changes in disposal plan, location and capacity.	Currently the disposal plan features hydraulically dredged material to be placed in the Mississippi River. If the current location is adjusted assume an additional 5,000 LF of dredge pipeline. There is a quantity of contaminated material that is barge hauled to a landfill for final disposal. If a facility is unavailable another facility 50 more miles away may need to be used. A change in scope only adds 1 month to the schedule, negligible.	Likely	Negligible	**Low**	Negligible	**Low**	N/A -Not Modeled	N/A -Not Modeled		Geotechnical Design	Project Cost & Schedule	Accept
14	7 - General Technical Risk (TR)	Hydraulic ship simulation	A simulation was done in 1997 report. An AdH model was performed in 2022 for the SHIPSIM exercise. Additional simulations may be required during PED.	Modeling performed during PED may result in design changes. The ship simulation was completed in 2023 that resulted in changes to: Guidwalls, St. Claude Bridge design, Existing lock bypass channel (eliminated), the new lock site bypass channel approach angles, and construction vs. navigation sequencing.	Unlikely	Negligible	**Low**	Negligible	**Low**	N/A -Not Modeled	N/A -Not Modeled		Structural Design	Project Cost & Schedule	
15	7 - General Technical Risk (TR)	Hydraulic filling and emptying system	Physical model is required during PED to validate Hawser forces on barge tows.	If excessive Hawser forces are found during modeling significant changes will need to be made to port system.	Very Likely	Negligible	**Low**	Negligible	**Low**	N/A -Not Modeled	N/A -Not Modeled		Hydrology/Hydraulic Design	N/A -Not Modeled	
16	7 - General Technical Risk (TR)	Real estate/easement acquisition	property ownership/objections to appraisals	Only acquiring in fee 3 properties on the west side of the project. Relocation assistance i.e., new home, moving expenses, etc. If the properties cannot be obtained condemnation would ensure impacting the schedule.	Unlikely	Negligible	**Low**	Marginal	**Low**	N/A -Not Modeled	N/A -Not Modeled		Real Estate	N/A -Not Modeled	
17	14 - Estimate and Schedule Risks (ES)	Fuel price escalation	Fuel is a volatile cost and can greatly affect the cost of this project.	A ten year project will see fluctuations in fuel prices. Fuel could increase or decrease altering the cost. We assume an increase of $2.25 or a decrease of $0.75 based price fluctuation in the past years.	Very Likely	Marginal	**Medium**	Negligible	**Low**	Triangular (LV, ML, 80%)	N/A -Not Modeled		Cost Engineering	Project Schedule	Accept
18	26 - Utilities (UT)	Utility Relocation Plan	We are aware of at least 12 utilities that are known and must be relocated. There are additional utilities not identified for relocation but are within the area of new St. Claude Bridge construction that will pose challenges. Delays to relocations impact project features, known utilities locations differ and impact design/construction.	Waterlines, communications, power lines, sewer lines, private gas. During the Katrina reconstruction, many project site utilities were verified and some were capped, removed and abandoned. Known utilities without verified survey information to determine below channel elevations are real. Utility surveys and as-built information have been collected and will not be needed until construction begins. REF: Appendix B, Para. 11. Construction around the St. Claude corridor will affect SWBNO Operations for sewer gravity and force mains. Risk is damage to existing utilities could require repairs, bypass pumping, bypass trucking to WWTP. Likelihood: Likely Impact (Cost): Marginal Impact (Schedule): Moderate - possibly not critical to overall construction of road/bridge. HIGH V: LIKELY: LOW V:	Likely	Negligible	**Low**	Moderate	**Medium**	N/A -Not Modeled	Triangular (LV, ML, 80%)		Civil/Site Design	Project Cost & Schedule	Attempt to avoid Transfer & Share with local utiltities.
19	17 - Geotechnical / Geology (GG)	Settlement Analysis	Settlement of various features of project	Stability analyses performed during PED may reveal stability issues, requiring increases in costs. Areas of specific concern: T-wall tie ins to levees; lock chamber. May require changes in pile lengths, types, batter angle.	Likely	Marginal	**Medium**	Marginal	**Medium**	Triangular (LV, ML, 80%)	Triangular (LV, ML, 80%)		Geotechnical Design	Contract Cost & Schedule	Mitigate: Perform additional soil borings and **analysis**
20	25 - Hazardous Materials (HZ)	Contaminants of concern	Contaminants outside of identified DMMUs	If dredged material is consistent with assumed characteristics then minimal changes are anticipated. No reason to assume changes have occurred. M. Lahare has quantities identified in draft report.	Unlikely	Negligible	**Low**	Marginal	**Low**	N/A -Not Modeled	N/A -Not Modeled		Environmental Compliance	N/A -Not Modeled	
21	33 - Regulatory And Environmental (ENV)	Multi agency review of permits	Delays to permit approvals	LDEQ (401 WQC), LDNR (CZMAFD), USFWS (ESA), CWA (404 Eval: internal), SHPO, ACHP (Section 106). Schedule or cost changes are not a concern. Bridge Permit with the US Coast Guard (a memorandum). Products would be developed in MVN and processed accordingly	Unlikely	Negligible	**Low**	Moderate	**Low**	N/A -Not Modeled	N/A -Not Modeled		Project Management	N/A -Not Modeled	
22	21 - Environmental & Cultural/Historical Resources (EC)	Historic/cultural site	Unexpected find of historic/cultural significance delays project	The St. Claude Ave. Bridge, The Holy Cross National Register Historic District, Bywater National Register Historic District, Sewerage and Water Board, Sewerage Pump Station B and the Judge Seeber Bridge/LA 39/ N. Claiborne Ave. are the identified at this time. However some project features have not been explored such as the lock itself. After investigation additional cost and schedule impacts can occur.	Possible	Negligible	**Low**	Moderate	**Medium**	N/A -Not Modeled	Triangular (LV, ML, 80%)		Environmental Compliance	Project Schedule	**Avoid**: Communication with Consulting parties and ACHP
23	6 - Planning-Site (PS)	Adequate staging areas	Possible multiple concurrent construction contracts strain available site staging areas	Lock site: Available vacant land and warehouse areas surrounding the project site may be of sufficient size and quantity to support multiple contractors' needs. Bridge Site and Deconstruction of existing lock: Available vacant land and warehouse areas surrounding the project site may not be of sufficient size and quantity to support multiple contractors' needs.	Possible	Negligible	**Low**	Marginal	**Low**	N/A -Not Modeled	N/A -Not Modeled		Civil/Site Design	Contract Cost & Schedule	Phasing of construction minimizes risk of need for both sites to require the same staging areas at the same time.
24	4 - External Risks (EX)	Critical fabrication and delivery of lock gates	Specialized fabrication/materials/delivery of vital lock and bridge components may increase cost and delay construction	Some specialized fabrication may be needed for the lock construction but the fabrication materials and methods are not unique and have been successfully completed on previous projects. The construction schedule is flexible to allow for sufficient lead time for fabrication and delivery of such items.	Unlikely	Marginal	**Low**	Marginal	**Low**	N/A -Not Modeled	N/A -Not Modeled		Construction	N/A -Not Modeled	

New Industrial Canal Lock and Connecting Channels Project Report Update

October 2024

						Project Cost		Project Schedule		Other Information					Additional Documentation
REF	**Risk Type**	**Risk/Opportunity Event**	**Risk Event Description**	**Team Discussions on Impact and Likelihood**	**Likelihood**	**Impact (C)**	**Risk Level (C)**	**Impact (S)**	**Risk Level (S)**	**Cost Variance Distribution**	**Schedule Variance Distribution**	**Correlation to Other(s)**	**Responsibility/ POC**	**Affected Project Component**	**Suggested Risk Reduction Measures (Avoid, Escalate, Exploit, Transfer/Share, Mitigate/Enhance, or Accept)**
25	13 - Construction (CO)	Access to project site could be impacted by adjacent rail roads	Rail traffic can cause delays: Could be 1hour a day +/-	There can be periods of time a contractor is impacted by rail traffic causing schedule delays and safety risks. Likelihood: Very likely Impact (Cost): Negligible Impact (Schedule): Marginal - cumulative effect of minor delays over a multiyear construction period. Contractors are likely to record (with the usage of a flagger) HIGH V: LIKELY: LOW V:	Very Likely	Negligible	**Low**	Marginal	**Medium**	N/A -Not Modeled	Triangular (LV, ML, 80%)		Construction	Contract Schedule	Transfer/Share: Identify in construction specifications that railroad delays are at contractor expense or Accept: Contract modifications to cover delays
26	13 - Construction (CO)	Innovative project construction	Innovative construction methods increase cost and time	The construction methods are similar to what have been successfully used on previous local major structural projects. MVN Corps personnel and contractors are versed in necessary construction methods.	Unlikely	Marginal	**Low**	Marginal	**Low**	N/A -Not Modeled	N/A -Not Modeled		Construction	N/A -Not Modeled	
27	13 - Construction (CO)	Navigation traffic	Constant marine traffic impacting project construction efficiency. Current plan is to perform construction work during 12 hours in daylight hours and navigation traffic can pass unimpeded during nighttime hours. Bypass channel at existing lock site will remain 75' width (instead of planned 110' bypass) for duration of project until old lock is demolished. Economic analysis of these changes has not been performed.	Cofferdam, channel dredging and lock construction will be impacted by marine traffic during certain phases of construction (new lock site cofferdam, demolition of old lock site, construction of new St. Claude Bridge). The new St Claude bridge construction will impact marine traffic. Helper boats for a year may also be required to help facilitate marine traffic. Construction window could be reduced from 12 to 10 hrs. daily for 2-3 years of time during bridge, demo, and bypass channel construction. Likelihood: Likely Impact (Cost): Marginal Impact (Schedule): Moderate HIGH V: LIKELY: LOW V:	Likely	Negligible	**Low**	Moderate	**Medium**	Triangular (LV, ML, 80%)	Triangular (LV, ML, 80%)		Construction	Contract Schedule	**Accept and Mitigate:** SHIPSIM and subsequent tabletop exercise resulted in simplified bascule bridge design, eliminated need for separate bypass channel at existing lock site, eliminated need for additional takings in the Holy Cross neighborhood, and allowed for levees to be constructed along the majority of the eastern side of the channel instead of floodwalls.
28	13 - Construction (CO)	Marine construction	Marine based construction may be more expensive and create longer construction durations	The marine based construction needed for this project is typical for the MVN District and has been successfully deployed before by contractors on minor and major construction projects.	Unlikely	Negligible	**Low**	Negligible	**Low**	N/A -Not Modeled	N/A -Not Modeled		Construction	N/A -Not Modeled	
29	4 - External Risks (EX)	TMP Execution partial participation	TMP is broad and will require several local sponsors. Base currently is a value $38M	Risk of incomplete or partial participation due to multiple parish involvement with varying transportation needs.	Likely	Negligible	**Low**	Moderate	**Medium**	Yes-No	Yes-No		Planning	Project Schedule	Accept
30	4 - External Risks (EX)	TMP - LIT/Alabo Terminal	Louisiana Internation Terminal (LIT) & Alabo Terminal transportation impact analysis is not complete	LIT & Alabo transportation impacts could have greater effects on St. Bernard parish than currently anticipated in the IHNC vehicular modeling report.	Very Likely	Marginal	**Medium**	Significant	**High**	Yes-No	Yes-No	64	Planning	Project Schedule	Accept
31	13 - Construction (CO)	Site restoration and/or post-construction contracts	The Demolition contract at the end will get the site to final state.	The risk would be that the scope is not fully know and there will likely be scope to come up as is progresses that will be added to cost.	Possible	Marginal	**Low**	Negligible	**Low**	N/A -Not Modeled	N/A -Not Modeled		Construction	Project Cost & Schedule	Accept
32	14 - Estimate and Schedule Risks (ES)	Material availability/escalation	Material shortage and price increases	A ten year project might see fluctuations in the availability of certain materials and material price escalation will occur.	Possible	Marginal	**Low**	Marginal	**Low**	N/A -Not Modeled	N/A -Not Modeled		Cost Engineering	N/A -Not Modeled	Accept
33	14 - Estimate and Schedule Risks (ES)	Cost and schedule estimate construction phasing	Variations in construction sequencing and/or phasing may impact cost, duration	construction sequencing changes might impact cost and durations but such changes will have minor impacts	Unlikely	Marginal	**Low**	Marginal	**Low**	N/A -Not Modeled	N/A -Not Modeled		Cost Engineering	N/A -Not Modeled	
34	5 - Contract Acquisition Risks (CA)	Numerous separate contracts	Numerous contracts impacts qualified contractor pool, mobilization cost	Obtaining qualified contractors to complete a project of this scope. Having numerous contracts can spread thin the Contracting Offices resources to respond. Competing projects in region: LIT, MBrSD, St. Tammany, MRT projects; only handful of local ktrs resulting in more JVs and thus an even smaller contractor pool.	Very Likely	Moderate	**High**	Moderate	**High**	Triangular (LV, ML, 80%)	Triangular (LV, ML, 80%)		Project Management	Project Cost & Schedule	Accept because we have no control over contractor availability and other projects occuring at same time. Competing interests.
35	13 - Construction (CO)	Dredge Plant Running Time	Fluctuation in dredge plant running time may occur due to various factors.	Unknown underground obstructions and debris could impact dredge plant running time thus impacting dredging cost. Dredging shall occur only during daytime hours to lower noise levels. We will assume a 25% reduction in dredge running times.	Likely	Negligible	**Low**	Marginal	**Medium**	N/A -Not Modeled	Triangular (LV, ML, 80%)		Construction	Contract Schedule	Accept
36	13 - Construction (CO)	Dredge Production Rates	Dredge plant production can vary.	Dredge production can vary from the ones used in the estimate. A dredge plant of lower capacity could actually construct the work. Assume a 30% reduction in production rates.	Likely	Negligible	**Low**	Marginal	**Medium**	N/A -Not Modeled	N/A -Not Modeled		Construction	N/A -Not Modeled	Transfer: Risk applies to contractor
37	25 - Hazardous Materials (HZ)	Hazardous/Contaminated Material - Floodwall near N. Robertson	HTRW AOI-1 and/or AOI-2 may have different, larger plume extents than currently delineated.	Floodwall alignment currently is laid out to avoid the AOIs. If the delineation to be performed (as required by LDEQ and specified in the 2023 Work Plan) identifies HTRW within the current floodwall (and substructure) alignment, HTRW remediation or a new floodwall alignment may be required. Likelihood: Possible Impact (Cost): Marginal (verify w/ Bob Brooks) Impact (Schedule): Significant (24 mo. start to finish is optimistic to work and complete the issue). May be concurrent with other features but delay floodwall completion. HIGH V: $4M cost to perform soil remediation plus delay to construction activity start LIKELY: LOW V:	Possible	Moderate	**Medium**	Significant	**Medium**	Triangular (LV, ML, 80%)	Triangular (LV, ML, 80%)		Construction	Project Cost & Schedule	Avoid: Delineation does not identify larger AOIs than currently shown; can build floodwall as planned. Mitigate: Redesign floodwall or perform soil remediation and remove HTRW.

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38	4 - External Risks (EX)	Political factors at all levels of government	Politicians opposed to project delay construction	Currently, the political climate is quietly in favor of the project but civic opposition may change mindsets	Likely	Negligible	Low	Significant	High	N/A -Not Modeled	Triangular (LV, ML, 80%)		Local Sponsor	Project Schedule	Accept Mitigate: Build relationships and work with officials
39	14 - Estimate and Schedule Risks (ES)	Estimate reasonableness of crews and productivity	Crew and productivity revisions impacts cost and schedule	Estimate of cost and schedule will be based upon historical crew sizes and production rates for similar types of work. MVN has a wealth of third type of data concerning heavy civil construction	Possible	Moderate	Medium	Moderate	Medium	Triangular (LV, ML, 80%)	N/A -Not Modeled		Cost Engineering	N/A -Not Modeled	
40	4 - External Risks (EX)	Stakeholders request late changes to project features	Late design changes impact cost and duration	Significant input from stakeholders may vary over time and may not be addressed and incorporated into the project	Likely	Moderate	Medium	Moderate	Medium	Triangular (LV, ML, 80%)	Triangular (LV, ML, 80%)		Local Sponsor	Project Cost & Schedule	Accept Mitigate: Continue close coordination with all project stakeholders.
41	17 - Geotechnical / Geology (GG)	Geotechnical Stability Analysis	Limited analysis on levee design in General Re-evaluation Report	Stability analysis performed during PED MAY reveal stability issues, requiring increases in levee foundation cost. A specialized geotextile fabric may be required.	Very Likely	Negligible	Low	Negligible	Low	N/A -Not Modeled	N/A -Not Modeled		Geotechnical Design	N/A -Not Modeled	Mitigate: Perform additional soil borings and analysis
42	4 - External Risks (EX)	Significant Weather Events: High river, hurricanes	High water, significant storms may cause delays or damage during construction	High river stages can delay access to site and limit construction activities such as pile driving and excavation. Hurricanes cause a host of issues: Damage to site, limited resources, materials, staff, etc. This could also occur multiple times over the total construction period. Likelihood (Cost & Schedule): It is **likely** we will have high water issues and/or a hurricane that will lead to cost and schedule impacts. It occurs on almost all river jobs and the likelihood of a named storm in a 10 year period is high. Impact (Cost): Impact (Schedule): 6-12mo is probably reasonable based on similar projects and the construction duration. **Significant.**	Very Likely	Moderate	High	Moderate	High	Triangular (LV, ML, 80%)	Triangular (LV, ML, 80%)		Hydrology/Hydraulic Design	Project Cost & Schedule	Accept
43	17 - Geotechnical / Geology (GG)	Fill sources have not been identified	Access to the quantity of suitable soil required may be limited.	~400,000 CY required for levees. Sources and distances may vary from current estimates.	Likely	Negligible	Low	Negligible	Low	Triangular (LV, ML, 80%)	N/A -Not Modeled		Geotechnical Design	Contract Cost	Mitigate: identify borrow sources
44	19 - Structural (SD)	Cofferdam Design	The cofferdam design is not likely to change due to existing high design maturity.	Likelihood (Cost & Schedule) - **Unlikely** Impact (Cost) - **Unlikely.** Impact (Schedule) - **Unlikely.**	Unlikely	Negligible	Low	Negligible	Low	N/A -Not Modeled	N/A -Not Modeled		Civil/Site Design	N/A -Not Modeled	
45	13 - Construction (CO)	Dewatering	Dewatering system changes are possible due to the level of design maturity on this specific feature.	Likelihood (Cost & Schedule) - **Possible** the design is from 2006 for the deep draft lock and included 26 relief wells Impact (Cost) - **Marginal.** Impact (Schedule) - **Marginal.**	Possible	Marginal	Low	Marginal	Low	N/A -Not Modeled	N/A -Not Modeled		Civil/Site Design	N/A -Not Modeled	
46	13 - Construction (CO)	Shortage of Fly Ash & Slag	Slag & Fly Ash may become less available / more costly, thus providing risks for both project budget and schedule.	The location of the mass concrete is in the gate bays. Compared to other projects this project does not have as much mass concrete in its structure, so the impact to fly ash shortages will be reduced. Remainder of structure types are less likely to be affected by this.	Likely	Negligible	Low	Negligible	Low	N/A -Not Modeled	N/A -Not Modeled		Construction	N/A -Not Modeled	
47	14 - Estimate and Schedule Risks (ES)	Shift Assumptions	Shift and overtime assumptions can impact the contract cost and schedule. Base assumption is 5-12s. Could increase up to 7 days/week, resulting in time savings but cost increases.	Likelihood: It is **likely** that actual shift assumptions will be different than the estimates, even up through construction. Cost Impact: Given the magnitude of this project, global changes to the shifts can have a few million dollars worth of impact, which is **negligible.** Schedule Impact: A range of 1 year savings to 2 years additional is feasible, which is **significant.**	Likely	Negligible	Low	Significant	High	N/A -Not Modeled	Triangular (LV, ML, 80%)		Cost Engineering	Contract Cost & Schedule	
48	14 - Estimate and Schedule Risks (ES)	Productivity Assumptions	Productivity assumptions in Estimate & Schedule may have significant impacts when compared to what Contractors will assume.	Likelihood: It is **likely** that some the contractor's productivities will be different than the Gov't estimate on some major features. Cost Impact: A marginal $2.5M-$5M positive or negative is reasonable. Schedule Impact: Given the linear nature of this work (dredging, demo, wall construction, in-chamber, etc.), it's reasonable that the schedule could be off by (6 mo.) savings to 6 yr more based only on production rates. This is **significant.**	Possible	Negligible	Low	Negligible	Low	N/A -Not Modeled	N/A -Not Modeled		Cost Engineering	Contract Cost & Schedule	
49	14 - Estimate and Schedule Risks (ES)	PED & CM Est/Schedule Assumptions	USACE Labor is estimated using a mix of methods. Given the preliminary nature of this project, there is a likelihood that the actual costs of USACE labor will vary.	Current assumption is 12% for 30 acct and 10% for 31 acct. The risk is that it may be greater than this. Likelihood: It is **likely** that actual USACE labor will be different than estimated. Cost Impact: Based on our accuracy of other projects and assumptions a swing of ($10M) to $10M is reasonable. **Significant.** Schedule Impact: 2 years is aggressive to accomplish this work. This could slip by as much as 1 year. **Significant.**	Possible	Negligible	Low	Negligible	Low	N/A -Not Modeled	N/A -Not Modeled		Project Management	Project Cost & Schedule	
50	13 - Construction (CO)	Deep soil mixing (DSM)	DSM is required for both cofferdam at new lock site and levees. Risk of stability issues of adjacent structures along levee and floodwall reaches during DSM.	Contractor will have to consider efficiency to avoid causing stability problems. Likelihood: **Possible**. Cost Impact: **Negligible** Schedule Impact: **Moderate**.	Possible	Negligible	Low	Marginal	Low	N/A -Not Modeled	N/A -Not Modeled		Construction	Contract Schedule	Accept: Perform in-house design Mitigate: Provide required parameters of DSM to ensure stability of structures in the P&S.
51	5 - Contract Acquisition Risks (CA)	Acquisition Protest	Bid protests could result in additional unforeseen costs and schedule delays. History of bid protests in MVN AOR (but with a high dismissal rate).	Likelihood: It is **possible** that the project have a bid protest. Cost Impacts: **Marginal** to increase price to the next lowest bidder. Schedule Impact: **Marginal** due to a 3-12 mo. delay (per contract) resolving the protest.	Possible	Marginal	Low	Moderate	Medium	N/A -Not Modeled	Triangular (LV, ML, 80%)		Contracting	Project Schedule	Accept
52	5 - Contract Acquisition Risks (CA)	Source Selection for Lock and Bridge	Delays in the Source Selection Plan Development and Approval and overly complicated, excessive, and/or restrictive evaluation criteria can delay the evaluation process. Base is typ. 8-10mo for source selection. Risk is add'l 3-6 mo.	Likelihood: It is **likely** that source selection process will increase costs and schedule. Cost Impacts: **Negligible** impacts assuming robust proposals lead to increased proposal prices and increased USACE labor. Schedule Impact: **Moderate** due to a 3-6 mo. delay resolving working through the various SS processes.	Likely	Negligible	Low	Marginal	Medium	N/A -Not Modeled	Triangular (LV, ML, 80%)		Contracting	Project Schedule	Accept or Mitigate with communication
53	1 - Project & Program Management (PM)	TMP Execution Legal	No implementation guidance for a "Program"	Risk of legal hurdles. There is no precedence for implementation of a *Program.* The term "program" implies continued O&M by USACE. Could delay implementation of mitigation features.	Likely	Moderate	Medium	Critical	High	Yes-No	Yes-No	19	Planning	Project Schedule	Mitigate: Address early in PED Accept. Transfer: Partner with DOTD, CNO, SBP, RPC, PONO.
54	35 - Life Safety (LS)	TMP - Geography	Limited routes of egress for communities in Orleans, St. Bernard, and Plaquemines Parishes downriver of IHNC.	St. Bernard Parish is limited to 4 egress routes, 3 of which transit the IHNC near the project site and are impacted by navigation traffic through the IHNC. The 4th route is an indirect, longer route to the population center of the New Orleans area. Additional consideration may be required to address limited means of egress.	Likely	Moderate	Medium	Significant	High	Yes-No	Yes-No	64	Planning	Project Cost & Schedule	Accept Mitigate: During PED a life safety analysis will be performed.

New Industrial Canal Lock and Connecting Channels Project Report Update

October 2024

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55	2 - Scope and Objectives (SC)	TMP - Modeling	TMP modeling did not include IHNC Construction period	Construction sequencing and designs were not available to PDT or transportation modelers. As a result, modeling focused soley on existing conditions and future with project conditions (FWPC). A blind spot of the duration of construction exists. Additional mitigation measures not currently included in TMP may be necessary.	Very Likely	Moderate		Significant		Yes-No	Yes-No	64	Planning	Project Cost & Schedule	Mitigate: Address early in PED Accept.
56	6 - Planning-Site (PS)	West portion of floodwall from lock tie in to Claiborne	West portion is located near the lock contracts CWL and could cause coordination and access issues for the floodwall contractor.	This section of floodwall could be added to the lock contract. (30% cost addition in markups for the floodwall scope.) PDT will further evaluate. 1675ft of wall	Very Likely	Negligible		Negligible		N/A -Not Modeled	N/A -Not Modeled		Construction	N/A -Not Modeled	
57	2 - Scope and Objectives (SC)	St. Claude Bridge location shifts to south of existing bridge.	Complexity of constructing new SCB north of existing could prove to be exorbitantly expensive and challenging versus shifting the new bridge to the south of the existing structure.	Construction could be simpler on the south side (due to more space and less utilities). Real estate would have to be re-evaluated. This could possibly be an opportunity to reduce cost/risk. Minimum 2 years for SEIS if required. After discussion with Modjeski and Masters the PDT has a higher confidence in constructability the bridge at the current location. Likelihood: Possible re-evaluated to unlikely on 8-27-24 Cost Impacts: Schedule Impact:	Unlikely	Negligible		Moderate		N/A -Not Modeled	N/A -Not Modeled		Technical Lead	Project Schedule	Avoid: Perform evaluation early in PED.
58	4 - External Risks (EX)	CIMP Execution	CIMP is broad and will require many local sponsors. Base currently is a value $109.5M	There is no singular managing sponsor for the CIMP at large. There is currently no documentation between USACE and a sponsor for executing the work. The CIMP features are based on input from the four impacted communities, however some may be difficult or impossible to legally perform. May be lack of local sponsors willing to perform work. The LV: could be a negative value and the HV: could be a cost increase.	Likely	Significant		Negligible		Triangular (LV, ML, 80%)	N/A -Not Modeled		Planning	Project Cost	Mitigate: communicate with potential sponsors and stake holders. Accept: Aggreeement made now may not hold in future after 10 years.
59	19 - Structural (SD)	Significant Design Changes to Lock	Refined design, changes design, construction sequence, revise design	MVN has a lot of experience with sector gate and concrete chambers designs. MVN feels this would be a moderate risk compares the SCB design. The Lock design itself is at 30%. Example L&D 25 experienced $100M from 15% to 65% in design.	Possible	Moderate		Marginal		Triangular (LV, ML, 80%)	Triangular (LV, ML, 80%)		Civil/Site Design	Project Cost & Schedule	Accept.
60	4 - External Risks (EX)	8 year design & construction **directive (from MG Graham)**	MG Graham has set a goal of an 8 year time period start to finish for design and construction of lock projects	If MG Graham directed the USACE officially then this risk would be triggered. Currently no directive as been issued. Due to the nature of the construction phasing specific to this project, an 8 year time frame is unrealistic. CIMP and TMP are long-term programs that cannot and should not be constrained to 8 years.	Very Likely	Significant		Critical					Project Management	Project Cost & Schedule	Avoid: Separate lock feature construction from other project features. Build the lock itself in 8 years to satisfy requirement.
61	19 - Structural (SD)	Significant Design Changes to SCB	Refined design, changes design, construction sequence, revise design	Once the design of New St. Claude Bridge (SCB) is developed there will be some changes to the quantities. Bridge design will be continued in PED with the use of an A/E expert for the bridge. Costs to design and construct a unique bridge such as this within a small footprint and in a fluctuating riverine environment are likely to increase. The design of the new St. Claude bridge is roughly based on the Casco Bay Bridge in Portland, ME. In 1997, it cost approx. $130M to build. In today's dollars, that could range between $250-325M. The new St. Claude Bridge would be more difficult to construct in a sensitive, urban environment with reduced construction access and clearances. Additionally, although the span of the bascule leaves is the same, the approaches of the project bridge would be lower profile and in a highly-trafficked area (both vehicular, pedestrian, and navigation) Other risks identified: 1) Lack of available ROW and space for future ROW for 4 travel lanes plus adequate, separate pedestrian/bike access 2) Existing SCB control operator house is sandwiched between existing structure and the new bridge. Constructability is difficult to maintain a 120+ year old structure without causing damage to it. May require temporary relocation of the operator's house (and connections within). 3) New bridge approach tie-ins will be difficult to phase to maintain vehicular, pedestrian, business and resident access. 4) ROM level of foundation, piers, and abutment designs. 5) AE Firm will be required to design bridge 6) Pedestrian tunnel and vehicular tunnel at Deslonde and Sister Sts, respectively, under bridge on east side After discussion with Modjeski and Masters the PDT has a higher confidence in constructability the bridge. The PDT doesn't have a confidence in the Electric and Mechanical design, they have Higher	Likely	Significant		Significant		Triangular (LV, ML, 80%)	Triangular (LV, ML, 80%)		Contracting	Project Cost & Schedule	More design is needed with bridge design experts.
62	13 - Construction (CO)	Inefficient contractors	Cost and schedule impacts occur due to poorly performing contractors	The procurement process should be able to select the most highly qualified contractors with a proven track record of performance. Risk is higher on smaller contracts; lower for larger contracts.	Likely	Significant	**High**	Significant	**High**	Triangular (LV, ML, 80%)	Triangular (LV, ML, 80%)		Construction	Contract Cost & Schedule	Avoid: Use procurement methods that reduce risk. Combination of best value for larger contracts. IFLB for smaller ones.
63	13 - Construction (CO)	Modifications	Large scope will produce modifications	The large scope of the project will result in numerous modifications HIGH V: Assume 7% LIKELY: Standard is 5% LOW V:	Very Likely	Significant	**High**	Moderate	**High**	Triangular (LV, ML, 80%)	Triangular (LV, ML, 80%)		Construction	Contract Cost & Schedule	Accept
64	4 - External Risks (EX)	CIMP - Legal Action	Broadness of CIMP opens up many doors to legal action from external sources	Competing interests among many factions of the community may drive lawsuits.	Very Likely	Negligible	**Low**	Significant	**High**	N/A -Not Modeled	Yes-No	19	Project Management	Project Schedule	Accept
65	13 - Construction (CO)	Dredge Material Handling	Limited adjacent properties for drying dredged material	Contractor will have to identify a suitable location for drying dredged material before it can be hauled to a landfill to be used as cover material. Risk that sites located near the project site may be unavailable, increasing costs to use a facility further away.	Possible	Negligible	**Low**	Negligible	**Low**	N/A -Not Modeled	N/A -Not Modeled		Construction	Contract Cost	Accept

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October 2024

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66	4 - External Risks (EX)	St. Claude Bridge: Significant Weather Events: High river, hurricanes	High water, significant storms may cause delays or damage during construction	High river stages can delay access to site and limit construction activities such as pile driving, cofferdam construction, excavation. Hurricanes cause a host of issues: Damage to site, limited resources, materials, staff, etc. This could also occur multiple times over the total construction period. Likelihood (Cost & Schedule): It is **likely** we will have high water issues and/or a hurricane that will lead to cost and schedule impacts. It occurs on almost all river jobs and the likelihood of a named storm in a 10 year period is high. Impact (Cost): Impact (Schedule): 6-12mo is probably reasonable based on similar projects and the construction duration. **Significant.**	Very Likely	Negligible	Low	Moderate	High	N/A -Not Modeled	Triangular (LV, ML, 80%)		Construction	Project Cost & Schedule	Accept
67	35 - Life Safety (LS)	Barge impacts to cofferdam	Damage to cofferdam and life safety risk	Design currently features dolphins to protect from head-on impact and angled corners of cofferdam reduces risk, but does not eliminate it.	Possible	Marginal	Low	Moderate	Medium	N/A -Not Modeled	Triangular (LV, ML, 80%)		Construction	Project Cost & Schedule	Accept
68	13 - Construction (CO)	Demolition of old lock in the "wet"	Difficulty and unique activity of demolishing a 110+ year old structure in a flooded condition	Production inefficiencies due to curfews for navigation, other conditions could slow overall duration and increase costs.	Possible	Marginal	Low	Moderate	Medium	N/A -Not Modeled	Triangular (LV, ML, 80%)		Construction	Project Cost & Schedule	Accept
69	13 - Construction (CO)	Demolition of old chamber poses risk to navigation	Safety risk to navigation from nature of demolishing concrete structure and equipment	Exposed, jagged concrete or reinforcing steel, other materials in the channel poses a risk to vessels transiting the old lock chamber area.	Possible	Marginal	Low	Marginal	Low	N/A -Not Modeled	N/A -Not Modeled		Construction	Project Cost & Schedule	
70	13 - Construction (CO)	Demolition of old chamber poses risk to navigation	Delay risk to navigation from unforeseen problems during deconstruction of chamber or construction of new SCB	Equipment breakdowns, unforeseen problems could prevent navigation traffic from passing through IHNC for longer-than-expected durations.	Likely	Negligible	Low	Marginal	Medium	N/A -Not Modeled	Triangular (LV, ML, 80%)		Construction	Project Cost & Schedule	
71	19 - Structural (SD)	Vessel impact to FRM	Potential for vessels to impact during high water events.	Would necessitate additional protection features.	Possible	Marginal	Low	Negligible	Low	N/A -Not Modeled	N/A -Not Modeled		Structural Design	Project Cost & Schedule	Mitigate: Add protection features during PED. Life Safety Analysis will review in depth.
72	1 - Project & Program Management (PM)	IWTF Cost Share / Capital Investment strategy	IHNC is not currently on the 20 year CIS and there are three locks currently beginning construction that are ahead of IHNC. Guidance is to complete construction first. Currently, construction start is 2029.	Historic data shows that long term programs have received funding cuts, Inland Waterway Trust Fund has a limited fund balance remaining and other ongoing projects share the funding- reevaluate after IWUB (AUG 2024) It is possible that in 2039, IHNC could become Lock A. This is based on the 25/75 cost share.	Very Likely	Significant	High	Critical	High	N/A -Not Modeled	N/A -Not Modeled		Programs	N/A -Not Modeled	Accept
73	5 - Contract Acquisition Risks (CA)	Single Contract to Phased Contracts	The Base assumes one contract and this risk assumes that the one contract is already broken up into 6 contracts. Out of the 6 (or more) contracts, the risk of half become base + options.	Likelihood: It is **Likely** that a base plus options is needed for at least 3 contracts, increasing cost and schedule. Cost Impacts: **Significant** cost increases due to options, possibly due to front-loading or longer overheads. Schedule Impact: **Moderate** due to a 6-12 mo. delay of a contractor not being able to efficiently plan out work. Note: These likelihoods may be applied to each contract separately. Can be mitigated by running concurrent with each other.	Likely	Critical	High	Significant	High	Triangular (LV, ML, 80%)	Triangular (LV, ML, 80%)		Contracting	Project Cost & Schedule	Mitigate: Can be mitigated by running concurrent with each other.
74	4 - External Risks (EX)	Tariffs on imports	Currently Tariffs have been applied to all imports including Canada and Mexico. The minimum Tariff is 10% on all countries. Even though tariffs are on imports the Domestic product will likely increase. There are several reasons for this one could be that they increase their prices to be just under the tariff, and another is that some components needed for items built in the US may on have to be imported.	The base estimate does not include tariffs because it not clear what is materials are affected by tariffs and the degree of the effect. The effects can range from no impact going to partial Impact or full impact. The project is not planned to start construction until 2033. LV: No change MV: HV:	Possible	Moderate	Medium	Marginal	Low	Triangular (LV, ML, 80%)	Triangular (LV, ML, 80%)		Cost Engineering	Project Cost & Schedule	Accept. This will require the US to change the US Import policies.
75	Select From List	High number of Lump Sum Project Items	The Base estimates contains a higher than normal allowed number of Lumps Sum Items. The value varies in value from 10's of millions to 100's Thousands.	The Base estimate Lump sums are difficult to update and to verifiy the revolence to the scope they are ment to represent. This could impact the construction cost and schedule increasing both cost and duration.	Likely	Marginal	Medium	Marginal	Medium	Triangular (LV, ML, 80%)	Triangular (LV, ML, 80%)		Cost Engineering	Project Cost & Schedule	
76	Select From List				Select From List	Select From List	Unrated	Select From List	Unrated	Select From List	Select From List		Select From List	Select From List	
77	Select From List				Select From List	Select From List	Unrated	Select From List	Unrated	Select From List	Select From List		Select From List	Select From List	
78	Select From List				Select From List	Select From List	Unrated	Select From List	Unrated	Select From List	Select From List		Select From List	Select From List	
79	Select From List				Select From List	Select From List	Unrated	Select From List	Unrated	Select From List	Select From List		Select From List	Select From List	
80	Select From List				Select From List	Select From List	Unrated	Select From List	Unrated	Select From List	Select From List		Select From List	Select From List	
81	Select From List				Select From List	Select From List	Unrated	Select From List	Unrated	Select From List	Select From List		Select From List	Select From List	
82	Select From List				Select From List	Select From List	Unrated	Select From List	Unrated	Select From List	Select From List		Select From List	Select From List	
83	Select From List				Select From List	Select From List	Unrated	Select From List	Unrated	Select From List	Select From List		Select From List	Select From List	
84	Select From List				Select From List	Select From List	Unrated	Select From List	Unrated	Select From List	Select From List		Select From List	Select From List	
85	Select From List				Select From List	Select From List	Unrated	Select From List	Unrated	Select From List	Select From List		Select From List	Select From List	
86	Select From List				Select From List	Select From List	Unrated	Select From List	Unrated	Select From List	Select From List		Select From List	Select From List	
87	Select From List				Select From List	Select From List	Unrated	Select From List	Unrated	Select From List	Select From List		Select From List	Select From List	
88	Select From List				Select From List	Select From List	Unrated	Select From List	Unrated	Select From List	Select From List		Select From List	Select From List	
89	Select From List				Select From List	Select From List	Unrated	Select From List	Unrated	Select From List	Select From List		Select From List	Select From List	
90	Select From List				Select From List	Select From List	Unrated	Select From List	Unrated	Select From List	Select From List		Select From List	Select From List	
91	Select From List				Select From List	Select From List	Unrated	Select From List	Unrated	Select From List	Select From List		Select From List	Select From List	

New Industrial Canal Lock and Connecting Channels Project Report Update																
October 2024						Project Cost			Project Schedule		Other Information					Additional Documentation
REF	Risk Type	Risk/Opportunity Event	Risk Event Description	Team Discussions on Impact and Likelihood	Likelihood	Impact (C)	Risk Level (C)		Impact (S)	Risk Level (S)	Cost Variance Distribution	Schedule Variance Distribution	Correlation to Other(s)	Responsibility/ POC	Affected Project Component	Suggested Risk Reduction Measures (Avoid, Escalate, Exploit, Transfer/Share, Mitigate/Enhance, or Accept)
92	Select From List				Select From List	Select From List	Unrated		Select From List	Unrated	Select From List	Select From List		Select From List	Select From List	
93	Select From List				Select From List	Select From List	Unrated		Select From List	Unrated	Select From List	Select From List		Select From List	Select From List	
94	Select From List				Select From List	Select From List	Unrated		Select From List	Unrated	Select From List	Select From List		Select From List	Select From List	
95	Select From List				Select From List	Select From List	Unrated		Select From List	Unrated	Select From List	Select From List		Select From List	Select From List	
96	Select From List				Select From List	Select From List	Unrated		Select From List	Unrated	Select From List	Select From List		Select From List	Select From List	

Appendix C-5

CSRA Assumptions

CSRA Assumptions

Risk Matrix

Likelihood of Occurrence	Impact or Consequence of Occurrence				
	Negligible	Marginal	Moderate	Significant	Critical
Certain	RELOOK AT BASIS OF ESTIMATE				
Very Likely	Low	Medium	High	High	High
Likely	Low	Medium	Medium	High	High
Possible	Low	Low	Medium	Medium	High
Unlikely	Low	Low	Low	Medium	Medium

Likelihood of Occurrence

Likelihood	Low % Occurrence	High % Occurrence
Certain	90%	100%
Very Likely	70%	90%
Likely	30%	70%
Possible	6%	30%
Unlikely	0%	6%
Unrated	*Needs Rated*	

Any changes to these assumptions will change the assumptions in the models.

Percent's above are based on 10 events, and are considered approximate, judgment should be used for final grouping dependent on # of occurrences, project size, flexibility and complexity.

If event occurrence is...	then it s likelihood is thought to be between...
Certain	90% and 100%
Very Likely	70% and 90%
Likely	30% and 70%
Possible	6% and 30%
Unlikely	0% and 6%

Definition
Certain: implies the event has a 90% to 100% chance of occurrence. Relook at basis of estimate.
Very Likely: implies the event has a 70% to 90% chance of occurrence.
Likely: implies the event has a 30% to 70% chance of occurrence.
Possible: implies the event has a 6% to 30% chance of occurrence.
Unlikely: implies the event has a 0% to 6% chance of occurrence.

Impact or Consequence of Occurrence

This sheet defines what the impacts are based on their cost. This is crucial to define what truly negligible, marginal, moderate, etc. are. Fill this out before the meeting so that you can show what the ranges to be concerned are.

Likelihood	% of Project Cost or Schedule Change per Cost Event Exceeds	per Schedule Event Exceeds
Negligible	0.00%	1.00%
Marginal	1.00%	2.00%
Moderate	2.00%	5.00%
Significant	5.00%	10.00%
Critical	10.00%	15.00%

Any changes to these assumptions will change the assumptions in the models.

Percent's above are based on 10 events, and are considered approximate, judgment should be used for final grouping dependent on # of occurrences, project size, flexibility and complexity.

Cost Impact

If event occurrence is...	then it s impact to total project cost is thought to be between...
Negligible	0.00% and 1.00%
Marginal	1.00% and 2.00%
Moderate	2.00% and 5.00%
Significant	5.00% and 10.00%
Critical	Over 10.00%

Definition
Negligible: implies the event has a 0.00% to 1.00% impact to project cost.
Marginal: implies the event has a 1.00% to 2.00% impact to project cost.
Moderate: implies the event has a 2.00% to 5.00% impact to project cost.
Significant: implies the event has a 5.00% to 10.00% impact to project cost.
Critical: implies the event has a greater than 10.00% impact to project cost.

Schedule Impact

If event occurrence is...	then it s impact to total project schedule is thought to be between...
Negligible	1.00% and 2.00%
Marginal	2.00% and 5.00%
Moderate	5.00% and 10.00%
Significant	10.00% and 15.00%
Critical	Over 15.00%

Definition
Negligible: implies the event has a 1.00% to 2.00% impact to project schedule.
Marginal: implies the event has a 2.00% to 5.00% impact to project schedule.
Moderate: implies the event has a 5.00% to 10.00% impact to project schedule.
Significant: implies the event has a 10.00% to 15.00% impact to project schedule.
Critical: implies the event has a greater than 15.00% impact to project schedule.

Cost / Schedule Impact Percentages Converted to Cost / Schedule Ranges

	Cost Impacts		Schedule Impacts	
Impact	Low Impact	High Impact	Low Impact	High Impact
Negligible	0.00%	1.00%	1.00%	2.00%
Marginal	1.00%	2.00%	2.00%	5.00%
Moderate	2.00%	5.00%	5.00%	10.00%
Significant	5.00%	10.00%	10.00%	15.00%
Critical	10.00%	100.00%	15.00%	100.00%

	Cost Impacts		Schedule Impacts	
Impact	Low Range	High Range	Low Range	High Range
Negligible	$0	$26,500,000	2.00 MO	3.50 MO
Marginal	$26,500,000	$53,000,000	3.50 MO	8.50 MO
Moderate	$53,000,000	$132,300,000	8.50 MO	17.00 MO
Significant	$132,300,000	$264,600,000	17.00 MO	25.50 MO
Critical	$264,600,000	∞	25.50 MO	∞

Appendix C-6

Risk Register Attendance

CSRA Risk Register Meeting Attendance

Risk Facilitator **Andrew Loudermilk**

Risk Register Meeting

Date: 7/23/2024 to 7/25/2024

Attendance	Name	Office	Role / Discipline
In-Person	Dauenhauer, Rob M CIV USARMY CEINDC (USA)	Office	Technical Lead
In-Person	Shulman, David S CTR USARMY CEMVN (USA)	Office	Project Management
In-Person	Lovett, David P CIV USARMY CEINDC (USA)	Office	Technical Manager
In-Person	Danielson, Michael R CIV USARMY CEMVN (USA)	Office	Cost Engineering
In-Person	Roberts, Jennifer C CIV USARMY CEMVN (USA)	Office	Planning
Virtual	Martinez, David J CIV USARMY CEMVN (USA)	Office	Civil
Virtual	Awsumb, G (Lance) CIV USARMY USACE (USA)	Office	Economist
Partial	Napolitano, Matthew P CIV USARMY CEMVN (USA)	Office	Economist
Partial	Derbes, Zachary J CIV USARMY CEMVN (USA)	Office	Real Estate
Virtual	OUBRE, MELANIE E CIV USARMY CEMVN (USA)	Office	
Partial	Laster, Jeremy D CIV USARMY CEMVN (USA)	Office	Structural
Virtual	Vititoe, Jennifer M CIV USARMY CEHQ (USA)	Office	Program Mananger
Virtual	Turner, Travis Nathan (Nate) CIV USARMY CEMVN (USA	Office	H&H
Virtual	Gandolfi, Lauren A CIV USARMY CEMVN (USA)	Office	Contracting Specialist
In-Person	Nuccio, Christopher CIV USARMY CEMVN (USA)	Office	Chief Of Contracting
Partial	Lahare, Mark H CIV USARMY CEMVN (USA)	Office	Environmental
Partial	Hebert, Shaun B CIV USARMY CEMVN (USA)	Office	Landscape Architect
Virtual	Drury-Blaize, Pamela J CIV USARMY CEMVN (USA)	Office	Real Estate
Virtual	Petitbon, John B CIV USARMY CEMVN (USA)	Office	Construction
	NAME	Office	Sponsor
	NAME	Office	OTHER
	NAME	Office	OTHER
	NAME	Office	OTHER
	NAME	Office	OTHER

Follow-Up Discussions (Individual or Group Discussions)

Date: September 1, 2024 **through** October 1, 2024

Attendance	Name	Office	Role / Discipline
Virtual	Dauenhauer, Rob M CIV USARMY CEINDC (USA)	Office	Technical Lead
Virtual	Shulman, David S CTR USARMY CEMVN (USA)	Office	Project Management
Virtual	Lovett, David P CIV USARMY CEINDC (USA)	Office	Technical Manager
Virtual	Danielson, Michael R CIV USARMY CEMVN (USA)	Office	Cost Engineering
Virtual	Laster, Jeremy D CIV USARMY CEMVN (USA)	Office	Structural
	NAME	Office	Role/Discipline
	NAME	Office	Role/Discipline
	NAME	Office	Role/Discipline
	NAME	Office	Role/Discipline
	NAME	Office	Role/Discipline

Risk Register Update(Group Discussions)

Date: April 16, 2025 **through** April 16, 2025

Attendance	Name	Office	Role / Discipline

CSRA Risk Register Meeting Attendance

Virtual	Dauenhauer, Rob M CIV USARMY CEINDC (USA)	**Office**	**Technical Lead**
Virtual	Shulman, David S CTR USARMY CEMVN (USA)	**Office**	**Project Management**
Virtual	Rob Guichet	**Office**	**Cost Engineering**
Virtual	Danielson, Michael R CIV USARMY CEMVN (USA)	**Office**	**Cost Engineering**
Virtual	jeremy Lester	**Office**	**Structural**
Virtual	Lowrie, Steven P CIV USARMY CEMVN (USA) <Steven.P.	**Office**	**Cost Engineering**
Virtual	Dunn, Christopher L CIV USARMY CEMVN (USA) <Christ	**Office**	**Chief fo EC**
Virtual	Dunn, Kelly G CIV USARMY CEMVN (USA) <Kelly.G.Dunr	**Office**	**Office of Counsel**
Virtual	Lahare, Mark H CIV USARMY CEMVN (USA)	**Office**	**Environmental**
Virtual	Escobedo, Rory E CIV (USA) <Rory.Escobedo@usace.arr	**Office**	**Role/Discipline**
Virtual	Napolitano, Matthew P CIV USARMY CEMVN (USA)	**Office**	**Economist**
Virtual	Creel, Travis J CIV USARMY CEMVN (USA) <Travis.J.Cree	**Office**	**Planner**
Virtual	Petitbon, John B CIV USARMY CEMVN (USA)	**Office**	**Construction**