"You Want to Do What?"
Managing Risk for a First-of-its-kind Project

LASALLE CANAL MGP SITE

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November 22, 2019
1. Introduction to MGP & Ameren’s MGP Program
2. The LaSalle Canal Project – Identifying Issues
3. The LaSalle Canal Project – Finding a Solution
4. The LaSalle Canal Project – Getting to Approval
5. The LaSalle Canal Project – Managing Risk During Implementation
6. Q&A
Manufactured Gas Plants (MGPs)
• Common from early 1800s to mid 1900s
• Converted coal/oil to gas for use in lighting, heating & cooking
• One in every city, up to 5,000 sites nationwide
• Produced various byproducts, including coal tar
• Ultimately replaced by natural gas
• Modern environmental liability
Ameren’s MGP Program

- 55 former MGP sites in 3 states
- Started on identification, investigation, & remediation in 1986
- Currently working on a portfolio of 16 sites in Illinois
- Objective to achieve closure on all sites by 2023
- Historic approach to site remediation centered on excavation & landfilling
- Expanding review of options for remedy selection
I&M Canal Opened in 1848
97 Miles Long
Chicago to LaSalle/Peru Linked Great Lakes to Gulf of Mexico

60' Wide x 6' Deep
Barges Towed by Mules
Series of 15 Locks
Replaced by Chicago Sanitary & Ship Canal in 1933

LaSalle MGP Site Located Below Last Lock of I&M Canal
Operated From 1903 to 1943
Coal Tar Impacts Found in Canal
Canal Site is 250' Wide by 3,100' Long & 17.5 Acres
Water Depth Depends on River Stage & Zero to 20'+ Deep
Investigation Summary

- Sediment sampling
  - 469 samples from 138 borings
  - Geoprobe®, HSA, HA, Vibracore
  - Lab analyses
    - Chemical, forensic, geotechnical
- TarGOST (Tar-specific Green Optical Screening Tool)
  - 118 locations, ~23’ deep
The LaSalle Canal Project – Identifying Issues
The LaSalle Canal Project – Identifying Issues
Site Investigation/Impact Delineation
The LaSalle Canal Project – Identifying Issues

Multiple Stakeholders & Multiple Stakeholder Interests

- **Ameren** – remove future environmental liability associated with MGP impacts
- **IEPA** – remedial action that results in an acceptable level of risk to ecological & human health
- **IDNR** – enhance the possible use options of the natural resource; minimize negative impacts to the natural resource while remedial action is ongoing
- **City of LaSalle** – enhance options for public & private use of the canal; no impact to City's existing wastewater management system
- **Neighboring Facilities/Property Owners** – no negative impacts to their operations

**Addressing Multiple Interests Often Increases Complexity of Project/Project Design, Thereby Increasing Number of Project Risks**
The LaSalle Canal Project – Identifying Issues

- Bank stability
- Overhead & underground utilities
- Significant water level fluctuation
- Constrained support area
- Navigable waterway within canal
The LaSalle Canal Project – Finding the Solution (2016-2018)

Now What? What Is The Path to An Ameren Approvable Project?

- Safety
- Remove Health & Ecological Risk
- Competing Stakeholder Interests
- Changing Conditions
- Cost of Delayed Implementation
- Budget Certainty
Excel Spreadsheet Created to Facilitate Analysis of Various Options

- >10 remedial options with alternative approaches considered
  - Leave all impacted sediment in place & cap
  - Excavate all impacted sediment
  - Solidify all impacted sediment (ex-situ & in-situ options)
  - Utilize various available human health & ecological risk analysis/modeling
  - Combinations of all of the above
  - Etc.

- 26 outcomes evaluated for each remedial option
- Spreadsheet produced a score for seven stakeholder decision areas
### LASALLE CANAL SITE REMEDIATION SCENARIOS – OPTIONS MATRIX

<table>
<thead>
<tr>
<th>Stakeholder Requirement Rankings</th>
<th>Relative Cost</th>
<th>Exposure</th>
<th>Remaining Liability</th>
<th>Navigability</th>
<th>Raw Score</th>
<th>Raw Rank</th>
<th>Cost-Weighted Score</th>
<th>Cost-Weighted Rank</th>
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<tr>
<td>Relative Cost</td>
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<td>13</td>
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<td>14</td>
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<td>Exposure</td>
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<td>12</td>
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<td>Navigability</td>
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<td>Raw Score</td>
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### Remedial Objective & Method Base

<table>
<thead>
<tr>
<th>OPTION</th>
<th>M</th>
<th>N</th>
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</thead>
<tbody>
<tr>
<td>Removal of Impacts to 10'. Capping the excavation footprint and Secondary Impacts &gt;22.8 ppm in Top 5'</td>
<td>Removal of All Primary Impacts to 10' and 70% from 10-15'. Capping the excavation footprint and Secondary Impacts &gt;22.8 ppm in Top 5'</td>
<td>Removal of Primary Impacts to 10'. Stabilizing the remaining primary impacts and capping Secondary Impacts &gt;22.8 ppm in Top 5'</td>
<td></td>
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<tr>
<td>Impacts Removed</td>
<td>Impacts Capped</td>
<td>Impacts Capped</td>
<td></td>
</tr>
<tr>
<td>Shallow</td>
<td>Moderate</td>
<td>Shallow</td>
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<tr>
<td>Primary</td>
<td>Primary</td>
<td>Secondary &gt;22.8ppm</td>
<td></td>
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<tr>
<td>Secondary &gt;22.8ppm</td>
<td>Secondary &gt; 22.8ppm</td>
<td>Secondary &gt;22.8ppm</td>
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### Costs-Weighted Remaining Exposure

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<th>OPTION</th>
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<tbody>
<tr>
<td>Removal of Impacts to Navigable Width and Depth</td>
<td>Cap Area(s) of Existing Exposure Risk (Secondary Impacts &gt;22.8 ppm in Top 5')</td>
<td>Remove Z' and Cap Area(s) of Existing Exposure Risk (Secondary Impacts &gt;22.8 ppm in Top 5')</td>
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<tr>
<td>Cap Entire Area</td>
<td>Remove Z' and Cap Entire Area</td>
<td>Stabilize banks and remove impacts through the middle of the Canal. Benthic cap as restoration cover layer.</td>
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<tr>
<td>Shallow</td>
<td>NA</td>
<td>Shallow</td>
<td>NA</td>
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<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Primary</td>
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### RFP Scope

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The LaSalle Canal Project – Finding the Solution

Project Risk Register – Version 1

- **49** project risks identified
- **Financial impact of all risks** ~$22M

* Engineer’s estimate of total project cost = $38M
The LaSalle Canal Project – Finding the Solution
“You Want to Do What?” – Actual Quote from Ameren Leader

**RISK**
- 49 significant project risks identified
- Resulting in...
  - ~$22M of risk contingency
- Outcome: “denied”

**MITIGATION**
- Create issue for bid design drawings & specifications
- Update/refine risk register
- Implement risk management strategies

**RESULT**
- Project acceptable to Ameren leadership

PMO®
PLAN RISK RESPONSES
- The process of developing options & actions to enhance opportunities & to reduce threats to project objectives

Ameren & AECOM
Advantages

• Provides opportunity for regular review, input & buy-in from multiple stakeholders from concept to final stages

• Progressive design with constructability review leads to progressively increasing cost & schedule certainty

• Project risks identified early & often

• Design process considers risk response strategies (e.g., avoid, transfer, mitigate, accept, etc.)

• Contractors have input & responsibility for 95% design package

PMBOK® PROJECT MANAGEMENT PROCESSES

• “The application of the project management processes is iterative, & many processes are repeated during the project”

• “The Define Scope process can be highly iterative”

• “The iterative nature of project management means that the processes from any group may be reused throughout the project life cycle”

• An iterative process, because new risks may evolve or become known as the project
First Action . . . Need a Second Alternatives Analysis

- Further evaluate top four options & various available combinations
- Incorporate a cursory evaluation of some key risks identified

The Outcome . . .

- In-situ sediment stabilization, along with dredging
The LaSalle Canal Project – Finding the Solution

**Design Challenges**

- Bank stability
- Navigable waterway within canal
- TBD – overhead & underground utility issues
- TBD – significant water level fluctuation
- TBD – constrained support area

ISS to Provide for Bank Stability & Concurrently Solidify & Immobilize Contaminated Media

Dredging to Address the Desire for a Navigable Waterway, & Removal of Contaminated Media
The LaSalle Canal Project – Getting to Approval

Progressive Design Build (EPC)

Remedial Action Plan and Conceptual Design with Engineer’s Estimate

YOU ARE HERE
May, 2017

PMBOK®
RISK STRATEGIES
• Avoid
• Transfer
• Mitigate
• Accept
The LaSalle Canal Project – Getting to Approval

ISS
Bank stability; contaminated media solidification

Property access agreements
Work area adjacent to canal

Dredging
Navigable waterway; removal of contaminated media
The LaSalle Canal Project – Getting to Approval

Relocate and upgrade existing force main
Utility located within remediation

Cofferdam
Better control of water level within remediation area
The LaSalle Canal Project – Getting to Approval

Contractor Bid Evaluation & Scoring
- 27 separate criteria evaluated
- Evaluated outcome with & without weighting of various critical items
- Performed a separate cost sensitivity analysis

PMBOK®

ACQUIRE PROJECT TEAM
- Negotiation
- Acquisition
- Multi-criteria decision analysis
The LaSalle Canal Project – Finding the Solution

“Approved” – Actual Quote from Ameren Leader

Progressive Design Build (EPC)
Remedial Action Plan and Conceptual Design with Engineer’s Estimate

RISK
• 49 significant project risks identified
• Resulting in... ~$22M of risk contingency

MITIGATION
• Stakeholder presentations
• Improved design
• Contractor bids
• Contractor selection
• Constructability review with contractor
• Lump sum contract established

RESULT
• 8 risks removed
• 15 risk probabilities reduced
• 16 risk impact reduced
• 10 risks transferred
• 5 new risks identified
• Risked-based contingency of ~$8M

YOU ARE HERE
August 2018
The LaSalle Canal Project – Managing Risk During Implementation
The LaSalle Canal Project – Managing Risk During Implementation

**RISK**
- Flood of project support area

**MITIGATION**
- Flood action plan

**RESULT**
- Risk-based contingency value ~ $504,000
- Contingency used ~ $540,000

~ $504,000
~ $540,000
The LaSalle Canal Project – Managing Risk During Implementation

**RISK**
- Bank failure

**MITIGATION**
- Geotechnical analysis
- ISS monolith design
- Minimum UCS requirement
- Weekly bank survey

**RESULT**
- Risk-based contingency value ~ $2,000,000
- Contingency used ~ $0
The LaSalle Canal Project – Managing Risk During Implementation

**RISK**
- Release/Impact to Illinois River
  - Elevated canal water pH – fish kill
  - Elevated turbidity
  - Free phase coal tar/water sheen

**MITIGATION**
- Cofferdam
- Moonpool/turbidity curtain
- Buoy monitoring system
- pH adjustment system
- Oil boom/pom poms

**RESULT**
- Risk-based contingency value ~ $640,000
- Contingency used ~$310,000
The LaSalle Canal Project – Managing Risk During Implementation

**RISK**
- Landfill halts/refuses receipt of waste

**MITIGATION**
- Bid requirement
- Landfill agreement requirement
- Identification of multiple landfill options

**RESULT**
- Risk-based contingency value = $215,000
- Contingency used = $0
Q & A