

Assets need BIM



How Milwaukee Metropolitan Sewerage District's BIM Vision Supports Vertical Asset Management and Operations

Emily Champagne, GISP
Geospatial Manager
Milwaukee Metropolitan Sewerage District



About MMSD

Regional government agency that provides water reclamation and flood management services for about 1.1 million people in 28 communities in the Greater Milwaukee Area.



Two Water Reclamation Facilities (WRF) locations

300+ Buildings & Structures

17,000+ Assets

630 MGD capacity



Background

Identifying Problems

- Lack of survey-grade master site plans, yard piping and vertical assets.
- Inconsistent information across multiple systems of record.
- Inefficient workflows for updates and maintenance of electronic records.

Recommendations

Need to establish accessible and maintainable WRF asset data and drawings, workflows, and application solutions to reduce operating costs and facilitate an underground and vertical asset management system



Development of a BIM Vision

Goals:

- To improve decision making
- To increase efficient emergency response
- To support succession planning
- To determine the best solution that meets the functional requirements of major stakeholders and the project's objectives.

Create a scalable and maintainable solution for sharing data that integrates with other systems

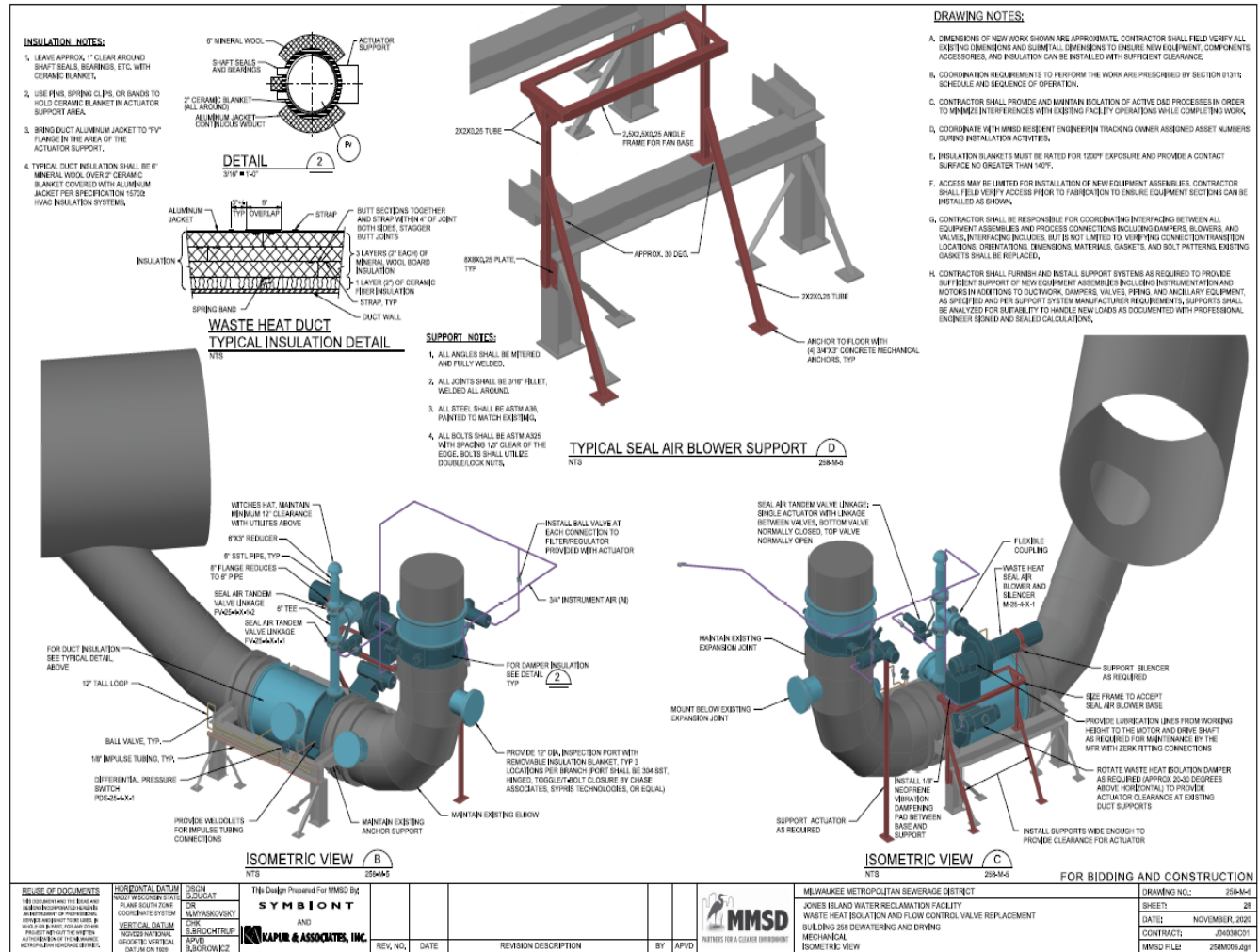
What if MMSD does nothing?

Continue to store WRF data in disparate systems with no easy or consistent access to find information

Employee succession means loss of institutional knowledge

AEC consultants are already creating 3D models for WRF projects

Plan for BIM instead of just *letting it happen*



Roadmap to Digital Twin



Vertical Asset Management

- Asset Management Inventory
- Reconcile
 - Fixed Asset number
 - P&ID number
 - Asset location
 - Grouped Assets
 - Operator CMMS Asset number
 - Transmittal number

Assets			Other
MMSD Asset ID	Asset Description	Asset Status	Building
146886	SWITCH, NETWORK, J234D1, J234D2	ACTIVE	BLDG234
146885	SWITCH, NETWORK, J234R2	ACTIVE	BLDG234
146884	SWITCH, NETWORK, J234R1	ACTIVE	BLDG234
146548	PLC, RAS	ACTIVE	BLDG234
146547	PLC, WET WEATHER MASTER	ACTIVE	BLDG234
146483	LCP, EAST PLANT RAS PUMPING	ACTIVE	BLDG234
146186	MCC, BLDG234 #4A	ACTIVE	BLDG234
145443	MOTOR, RAS PUMP #2 EAST	ACTIVE	BLDG234

Photo



System Integrations

- Document Management (OnBase)
 - Construction Drawings
 - Record Drawings
 - Process O&M Manuals
 - Equipment O&M Manuals
- Asset Management (Bi-Cycle)
 - CMMS information
- P&IDs (Microsoft Sharepoint)

In Progress:

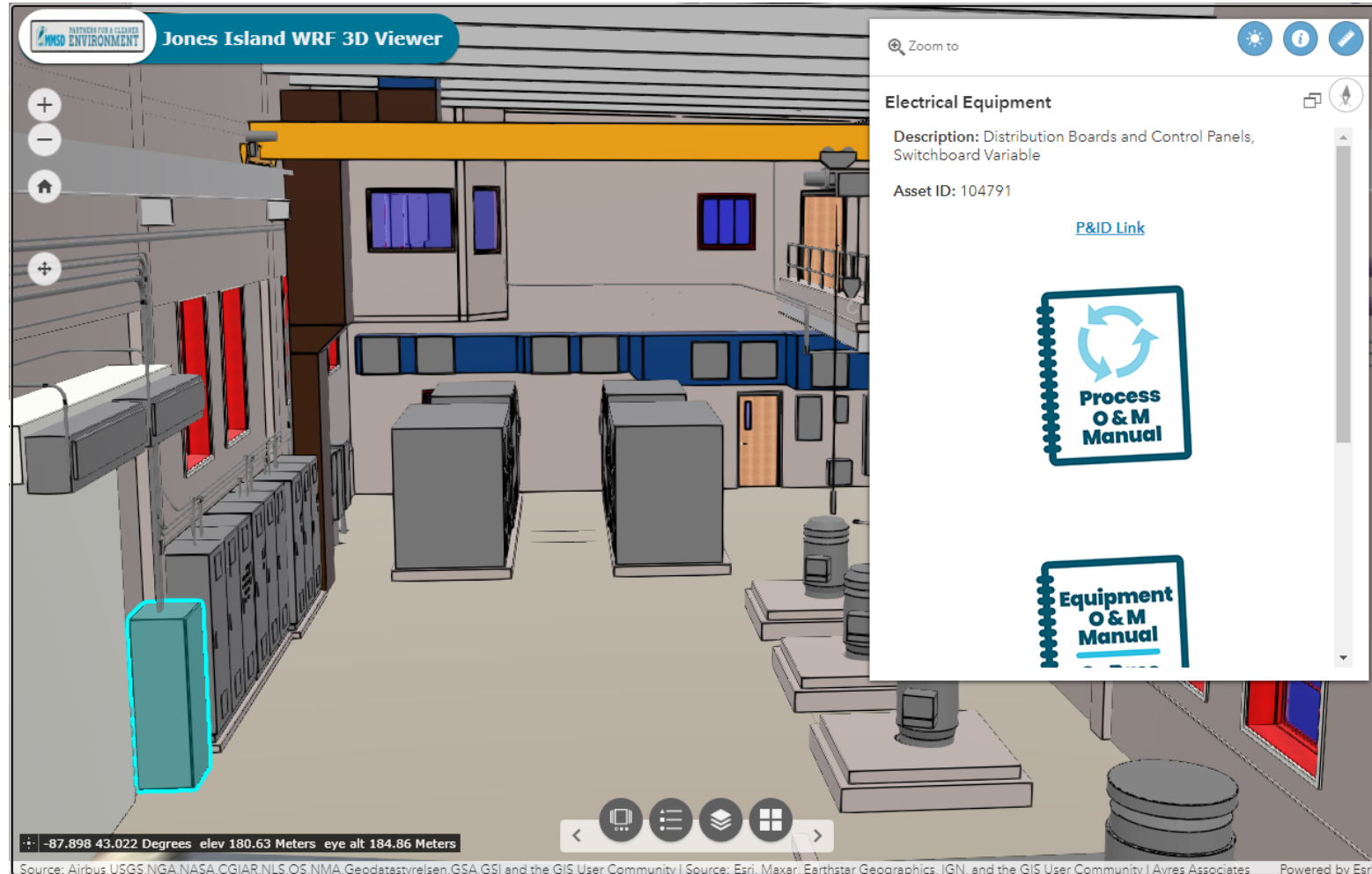


Return Activated Sludge (RAS) Pump Station & Underground Gallery



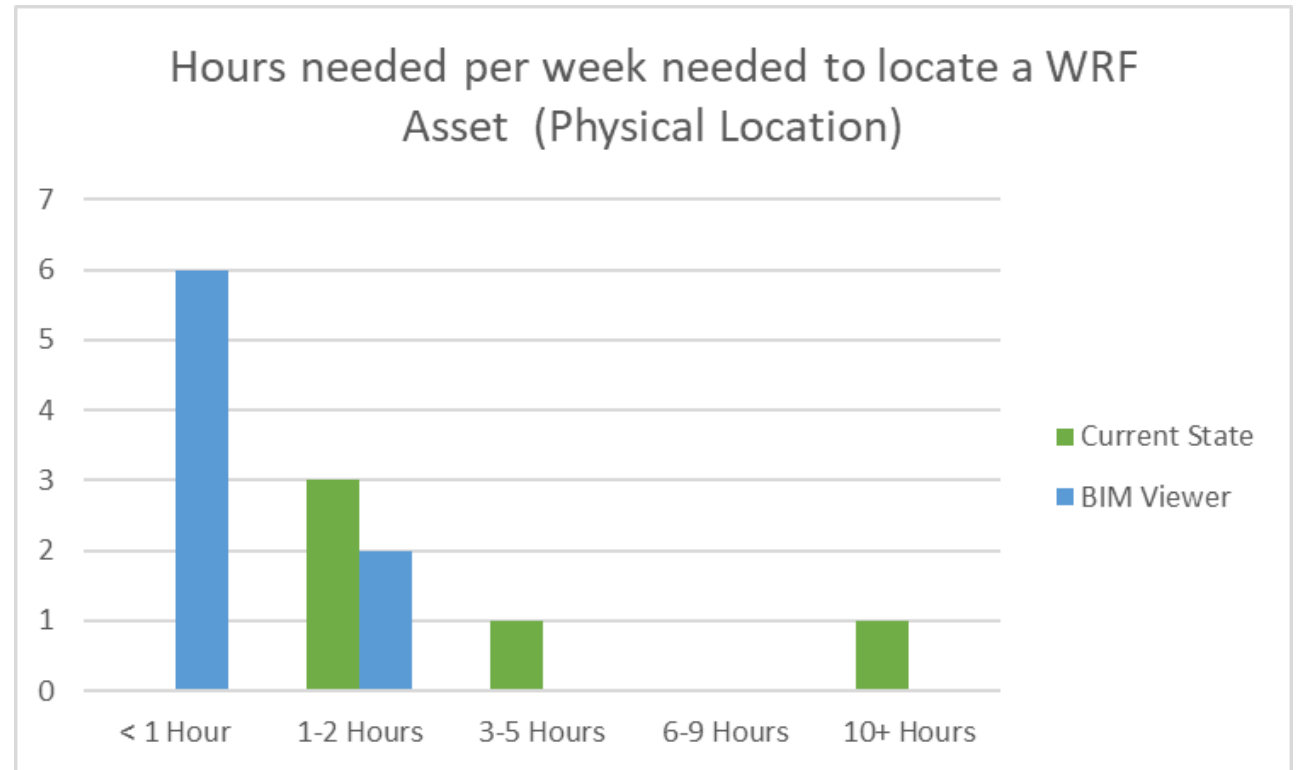
- 11,768 sq ft
- 2 floors
- 154 assets
- Survey grade accuracy 1/8"
- 110 scan positions
- 2" pipe diameter
- LOD 300-350
- Scan + Modeling: 91 hours

Demonstration



Lessons Learned

- BIM Execution Plan
 - Building Priority
 - Asset Inventory
 - BIM Standards
- Model Viewer Applications
 - Focus on business needs
 - Prepare for updates
- Communicate!



Current State average: 7 hours

BIM Viewer average: 1.25 hours

550% longer time to locate asset under current methods vs. using BIM viewer

Conclusion

Increased requests for scanning and 3D modeling

Capital and Operations & Maintenance projects planned 2023-2027

Asset Management reliance on BIM

- Planned CMMS

Department reorganization 2023

- New position BIM Coordinator



Geospatial Services and Solutions Department

Virtual Design

GIS

CAD

BIM

Database

Solutions



Thank you

Emily Champagne, GISP

echampagne@mmsd.com

414.225.2180

Geospatial Manager

Milwaukee Metropolitan Sewerage District (MMSD)