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Asset Management at Central San

Nitin Goel, P.E.
Optimization Division Manager

CENTRAL SAN
CENTRAL CONTRA COSTA SANITARY DISTRICT

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Overview

- Problem Statement
- Asset Management Benefits
- Lessons Learned
- Process
  - Key Attributes of Asset Management
  - Investment in Asset Tools and Information
  - Initiatives
- Asset Management Journey Outcomes

Accepting the Esri Special Achievement in GIS Award

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Problem Statement

- Paper maps and processes
- Legacy software no longer supported by vendors
- Data duplication
- Inaccessibility of information in field

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Asset Management Benefits

- Optimization of lifecycle cost of assets
- Repeatable, transparent process
- Data-driven decisions
- Long-term vision of infrastructure planning
- Data collection programs directed to neighborhoods and individual assets that carry highest risk
- Ability to better articulate plans and decisions to interact with partner agencies

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Lessons Learned

- Ability to see the big picture
  - How all software comes together and communicates with each other is something different
- How end-user groups work and how to tailor software to their style
- Importance of having a champion
- Manage expectations
- Expect changes and know that implementation, while worthy of celebration, is not an end
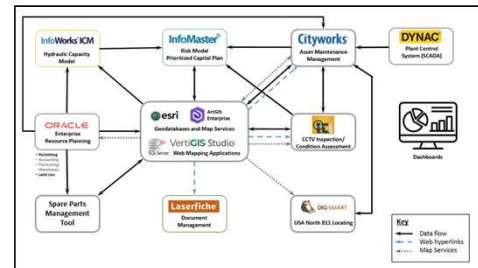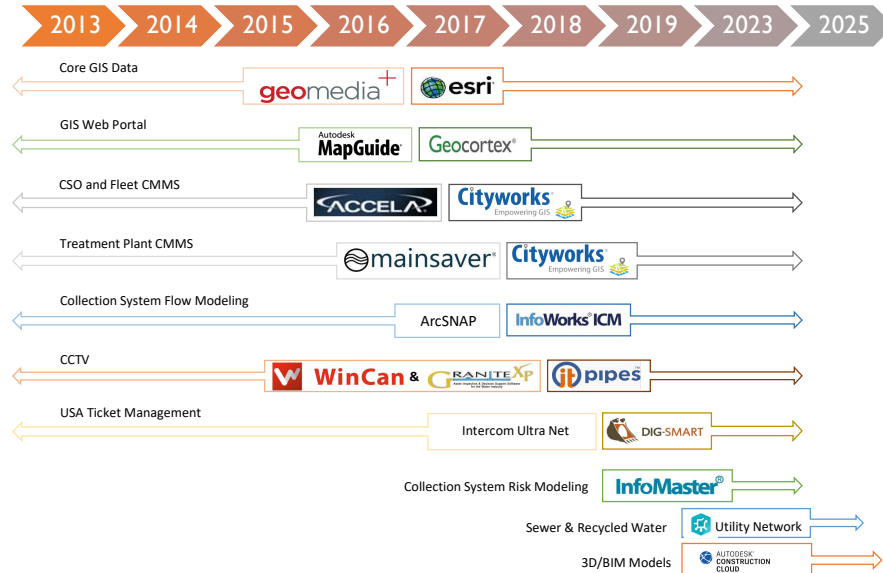
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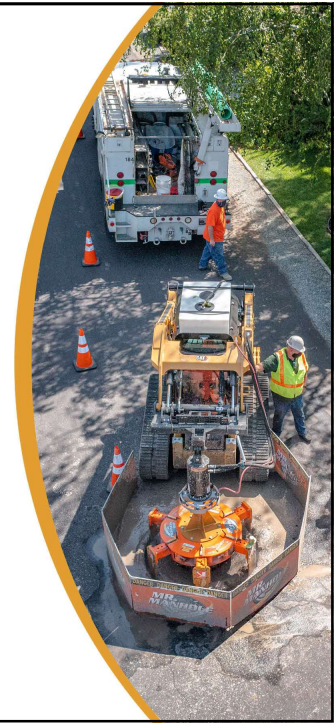
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Key Attributes of Asset Management

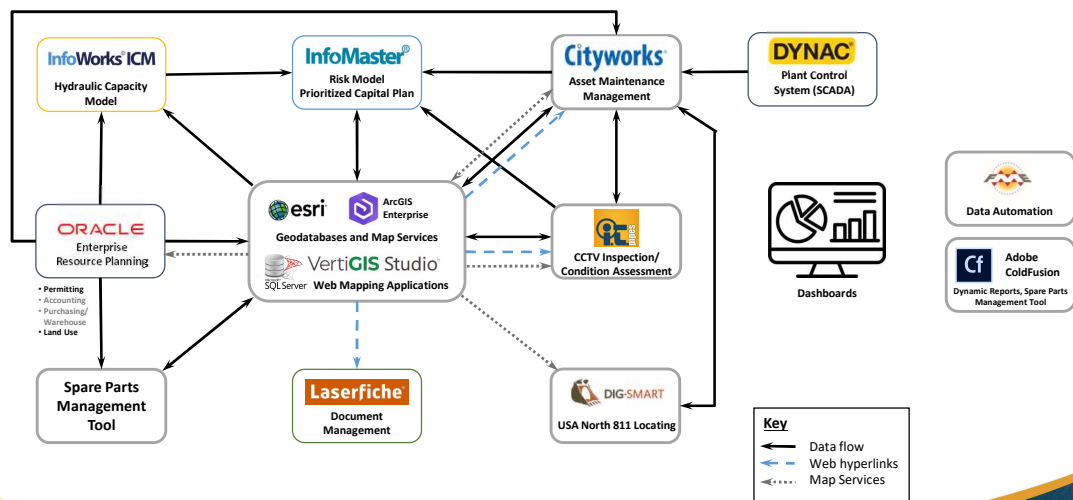**Board Policy**

Staff

Technology

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Investment in Asset Tools and Information
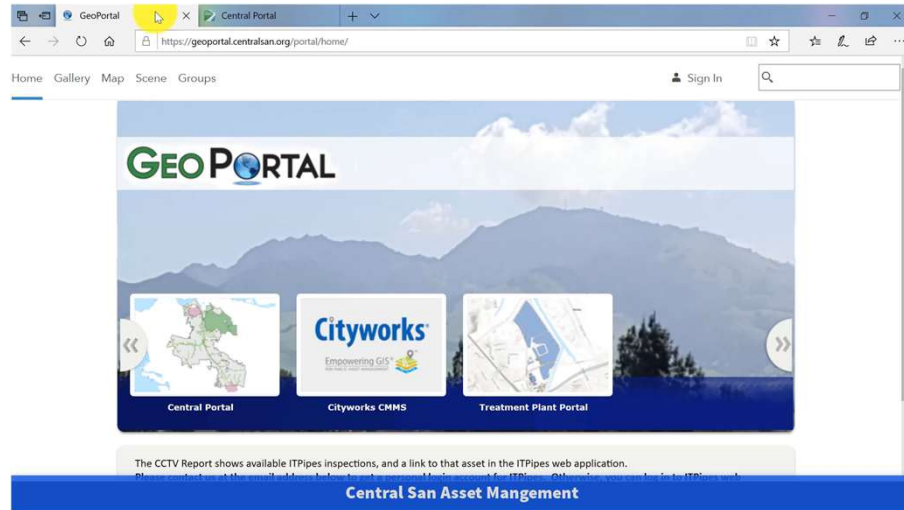

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Investment in Asset Tools and Information

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Investment in Asset Tools and Information
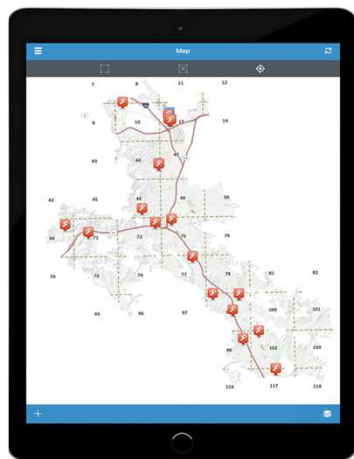**Video Demonstration of Web GIS GeoPortal Tool**

Click above to play – if it doesn't work, click here.

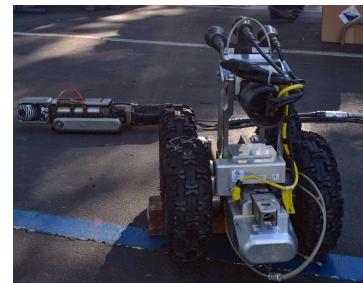9

Investment in Asset Tools and Information
Mobile App

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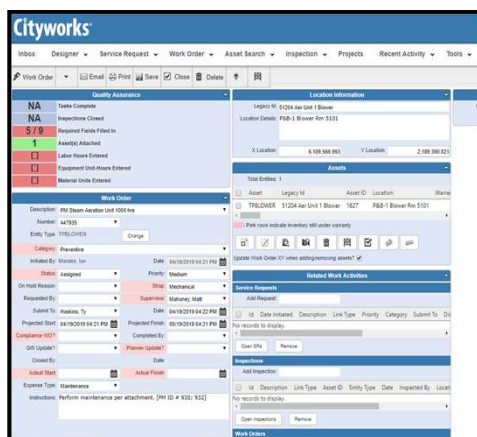# Investment in Asset Tools and Information
ITpipes in Action and Cityworks Integration

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Investment in Asset Tools and Information
Single Asset Registry, One CMMS

- Asset registry is foundation for all asset management practices and is a living tally of all our physical assets
- Simple graphical user interface where staff can view, edit, or update work activities
- Search for assets in a table or map view
- Run reports
- Dashboard with customized inboxes specific to staff
- Allows documents, pictures, or other files to be attached to a workorder
- Comments with username and date stamp

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GIS Mapping Applications and Dashboards

- Mapping Applications - Internal
  - Collection System Operations (CSO) Cleaning Optimization – Coordination of CSO Maintenance Schedule
    - Projected Footages
  - Central Portal
  - Treatment Plant Portal
- Mapping Applications - External
  - Director Election Divisions Web Map
  - Construction Projects
  - Storymap – Go with the Flow
- Dashboards
  - CSO
  - Plant Maintenance
    - UV Lamp Maintenance
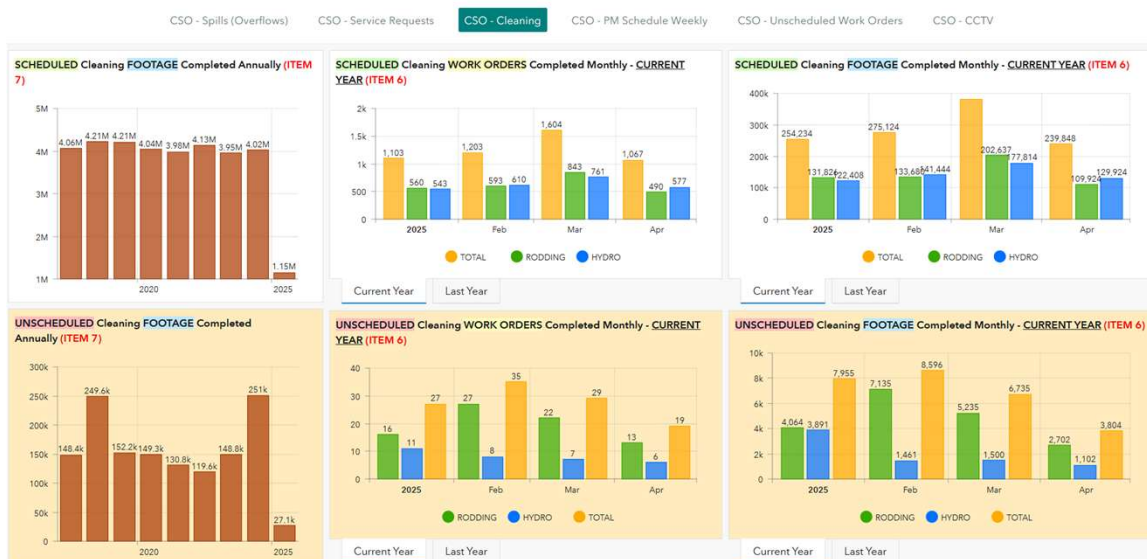   - Furnace Blower
    - Spare Parts

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Data Visualization for Decision Making

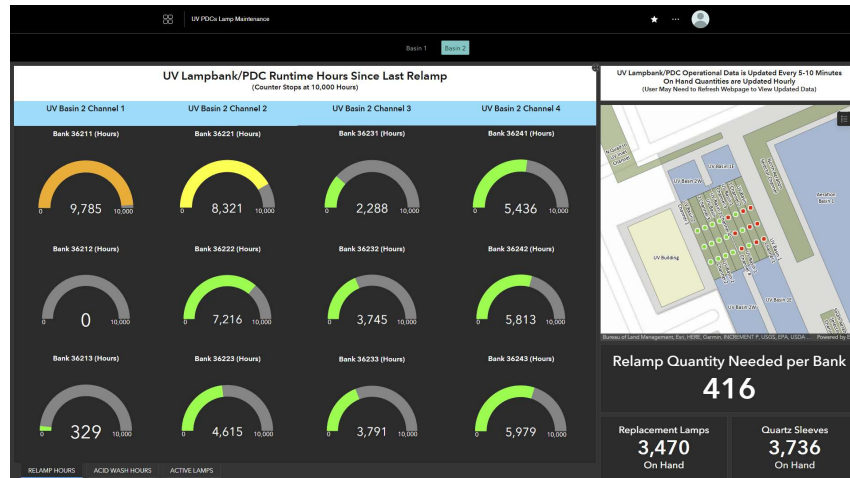### Collection System Operations

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Data Visualization for Decision Making
UV PDCs Runtime Hours

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2024 Accomplishment – Sewer Structure Inventory Project

Purpose/Driver
- Assess the conditions of the surface conditions of our ~38,500 sewer structures
- Inform CSO and Risk Management of potential issues

Description
- Capture two or more photos
- Current conditions of structures and roadway conditions
- Determine if structures are in bike lanes, walkways, public or private roadway
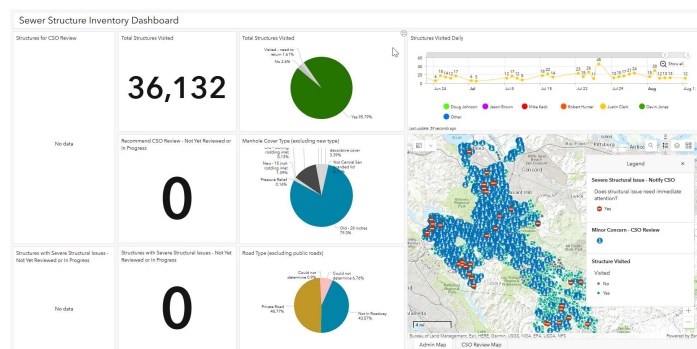- Maintenance access cover style

Benefits
- Before and after photos show progress
- Visited structures that are in roadways and private easements
- Improved surface area conditions for structures

Progress to Date
- Visited 36,132 structures
- About 980 left to visit in private easements

Dashboard Showing Project Status & for CSO to Review
Link: https://bit.ly/2G3kCGG

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2024 Accomplishment – Sewer Structure Inventory Project

Outcomes

- We have visited 36,132 structures
- About 980 left to visit in private easements
- 1,407 were flagged for CSO to review
  - 40 structures needed immediate attention, and CSO took actions
  - CSO reviewed and created 585 work orders
  - 187 were sent to Risk Management for review

Key Summary

- Assessed and improved surface conditions
- Captured photos and attributes
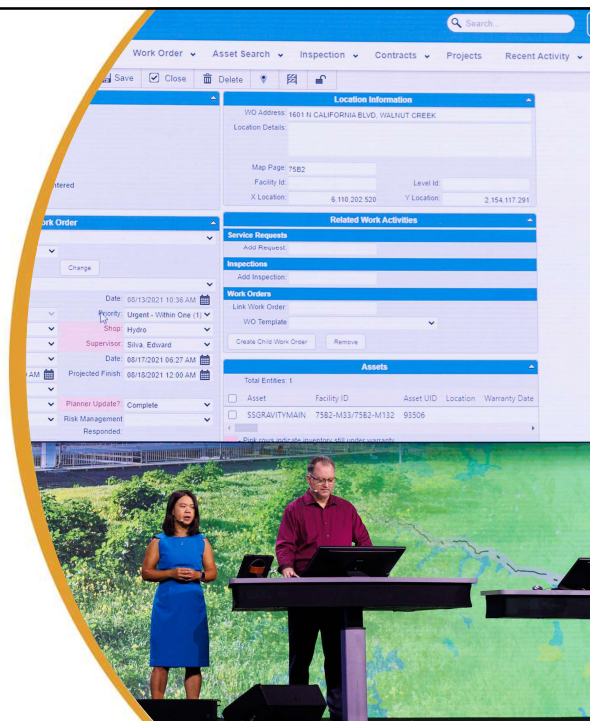
Before   After

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Ongoing Initiatives

1. Asset Health Monitoring Tool
2. Asset Handover
3. BIM and Digital As-Built

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1.   Asset Health Monitoring Tool

Purpose/Driver

- Plant Maintenance division applies many technologies to achieve predictive maintenance techniques on a continuous basis to determine current asset condition
- Asset condition information is stored in many different locations and is not easily viewed based on type of asset, process, or sub-process

Description

- Hazen and Sawyer engaged with stakeholders, developed needs assessment, provided industry research and solutions
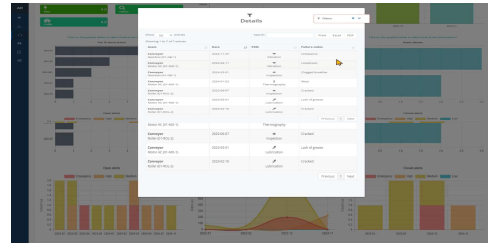
Benefits

- Having the information in one easy-to-access location will help to make better decisions on the repair, replacement, and overhaul of critical assets
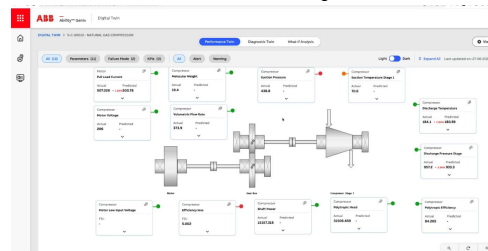
Progress to Date

- Selected top three solutions
- Internal decision to be made soon

Example of Asset Health from Caltrol Spartakus Asset Performance Management

Example of ABB Ability™ Asset Health Management

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2.   Asset Handover/Onboarding

Purpose/Driver

- Asset information and documents are not readily available and tracked from capital improvement projects to stakeholders

Description

- Assess the current state of the process to identify challenges
- Define the desired future state for a streamlined and efficient onboarding
- Evaluate the gap between the current state and desired future state of the process to identify key improvement areas
- Develop a strategic and actionable plan to transition from the current state to future state

Benefits

- Defined resources, process, and tools to track and monitor the process
- Accountability and visibility across a project lifecycle from planning to closeout

Progress to Date

- Survey sent to stakeholders
- Four stakeholder interviews to assess the current state of the asset handover process: Capital Projects, Plant Operations and Maintenance, Optimization, and MWH Constructors, Inc.
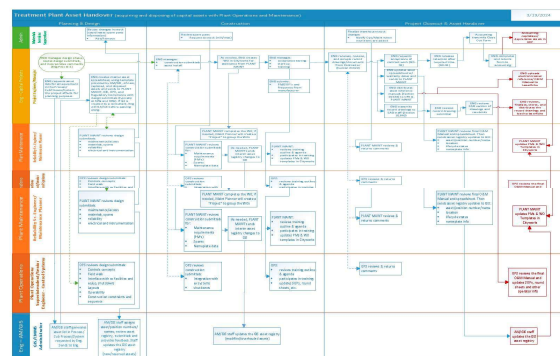
Asset Handover "Swim Lanes" Diagram Depicting Stakeholder Roles and Responsibilities

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3.   BIM and Digital As-Builts

Purpose/Driver

- Address aging infrastructure and sustainability goals by developing digital as-builts from completed capital project improvements
- Develop 2D and 3D digital asset information for long-term use of planning, design, and construction of projects

Description

- Develop workflows and digital assets to capture as-is conditions and as-builts
- Develop vertical assets for the Pump and Blower Building, Aeration Basin, and upcoming capital projects
- Leverage Esri's ArcGIS Indoors with floor plans, integrate with SCADA for plant assets, and display the data in a 2D/3D web application of vertical assets

Benefits

- Offset future costs of design and construction by utilizing these digital as-builts for design
- Integration and visualization of BIM data with asset management

Progress to Date

- Completed CAD / BIM standards with templates
- Modeling of Pump & Blower Building BIM to Scan process is 80% complete

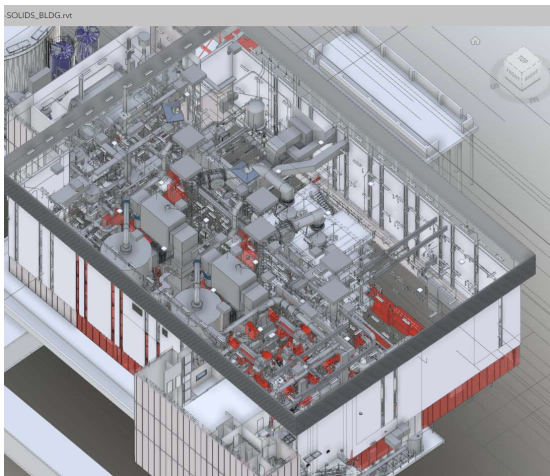CAD / BIM Design Guidelines

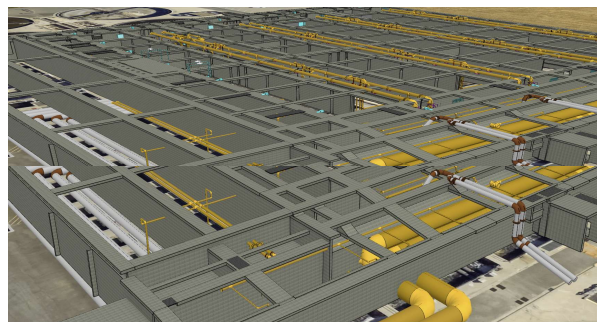Completed CAD/BIM Design Guidelines

3D Model of Pump & Blower Building

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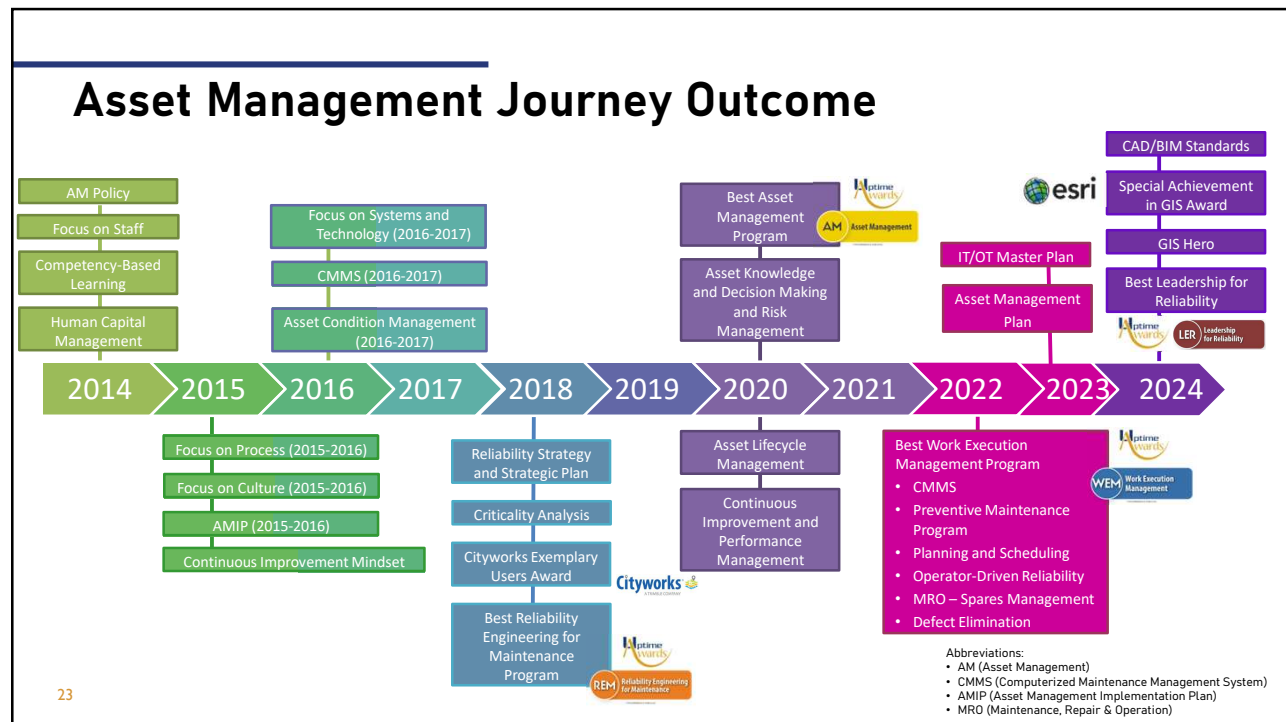## 3.   BIM 3D of Solids Conditioning Building and Aeration Basin

Design 3D Model of the Solids Conditioning Building

Design 3D Model of the Aeration Basin

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Asset Management Journey Outcome

Timeline 2014–2024:

- **AM Policy**
- **Focus on Staff**
- **Competency-Based Learning**
- **Human Capital Management**
- **Focus on Process (2015-2016)**
- **Focus on Culture (2015-2016)**
- **AMIP (2015-2016)**
- **Continuous Improvement Mindset**
- **Focus on Systems and Technology (2016-2017)**
- **CMMS (2016-2017)**
- **Asset Condition Management (2016-2017)**
- **Reliability Strategy and Strategic Plan**
- **Criticality Analysis**
- **Cityworks Exemplary Users Award**
- **Best Reliability Engineering for Maintenance Program**
- **Best Asset Management Program**
- **Asset Knowledge and Decision Making and Risk Management**
- **Asset Lifecycle Management**
- **Continuous Improvement and Performance Management**
- **IT/OT Master Plan**
- **Asset Management Plan**
- **Best Work Execution Management Program**
  - CMMS
  - Preventive Maintenance Program
  - Planning and Scheduling
  - Operator-Driven Reliability
  - MRO – Spares Management
  - Defect Elimination
- **CAD/BIM Standards**
- **Special Achievement in GIS Award**
- **GIS Hero**
- **Best Leadership for Reliability**

Abbreviations:
- AM (Asset Management)
- CMMS (Computerized Maintenance Management System)
- AMIP (Asset Management Implementation Plan)
- MRO (Maintenance, Repair & Operation)

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Thank You!

Nitin Goel, P.E.

ngoel@centralsan.org

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