Digital Water Systems: How SJRA is Applying Digital Transformation Strategies

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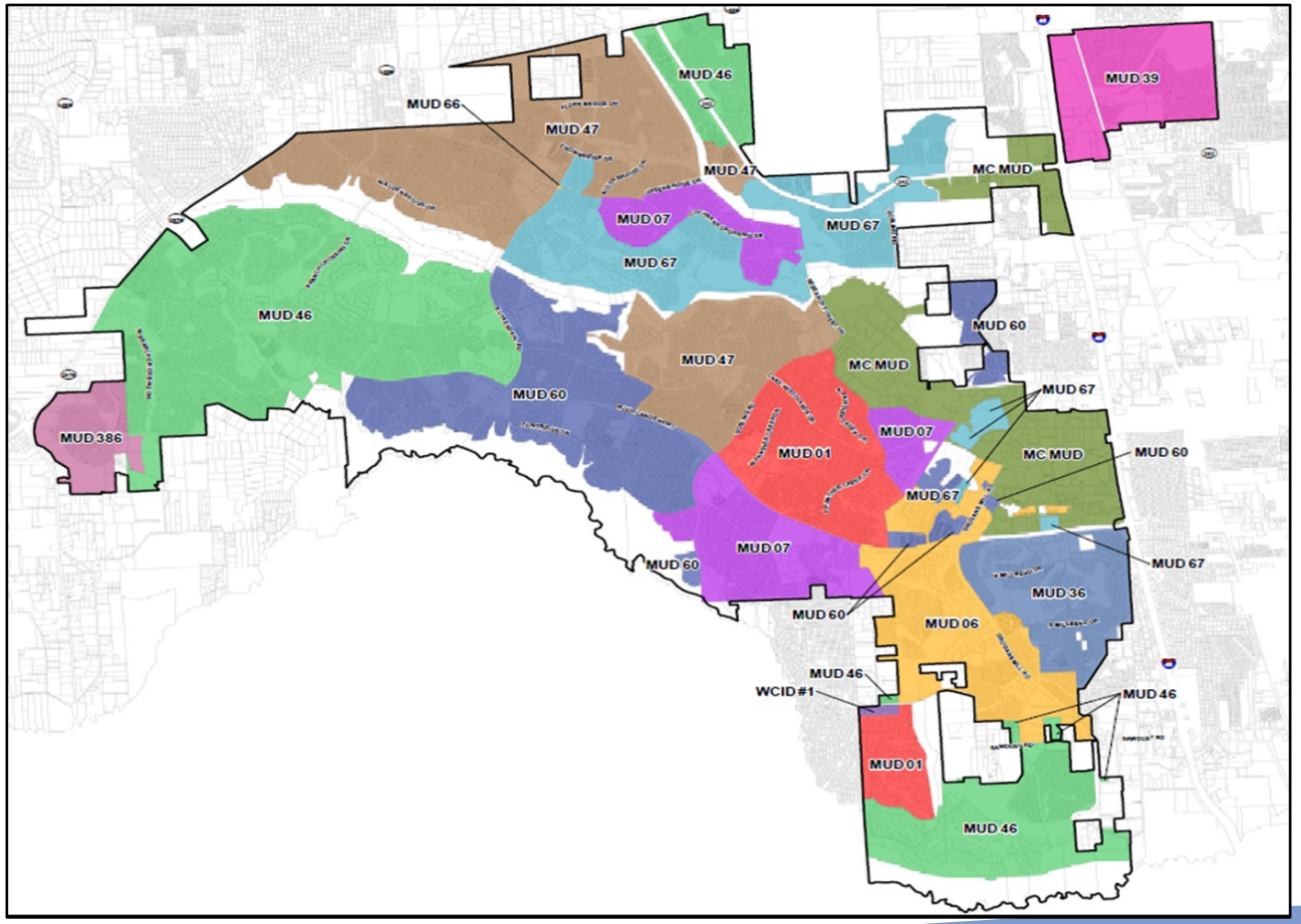
SJRA
SAN JACINTO RIVER AUTHORITY

SJRA - Woodlands Division

Wholesale provider of water and wastewater treatment, collection and distribution to a population of 130,000+.

Water

- 5 water plants
- 38 water wells
- 65 MGD production capacity
- ~24 MG storage
- >126 miles of water mains



Wastewater

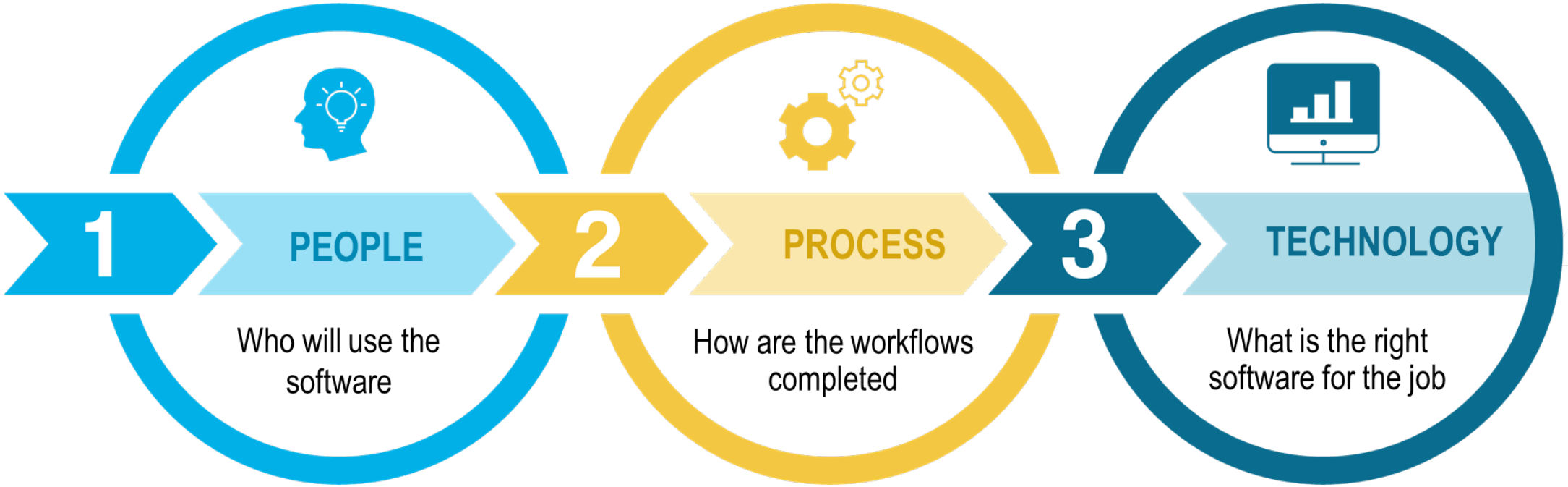
- 3 wastewater treatment plants
- 14.7 MGD treatment capacity
- 30 lift stations
- >70 miles of sewer mains

Digital Water Goals

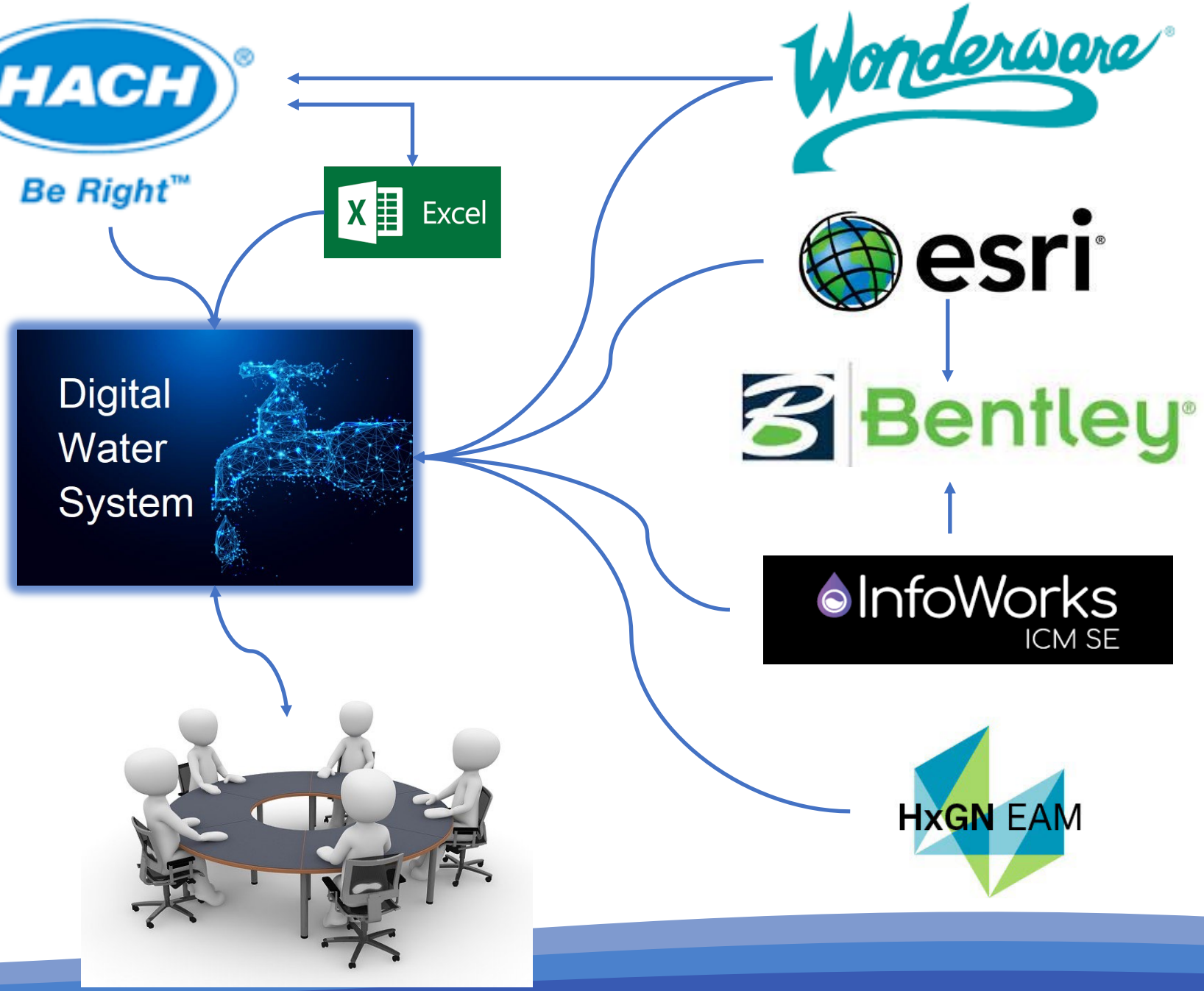
- Utilize existing software for Business Intelligence
- Allow existing software to maintain core functions
- Improve
  - Project planning capabilities
  - Staff efficiency at data review
  - Asset Management

Project Background

Project success is driven by people, process, and then technology



A Digital Water System utilizes data from various software to form a comprehensive review of asset performance and risk.



Asset classification dashboard application

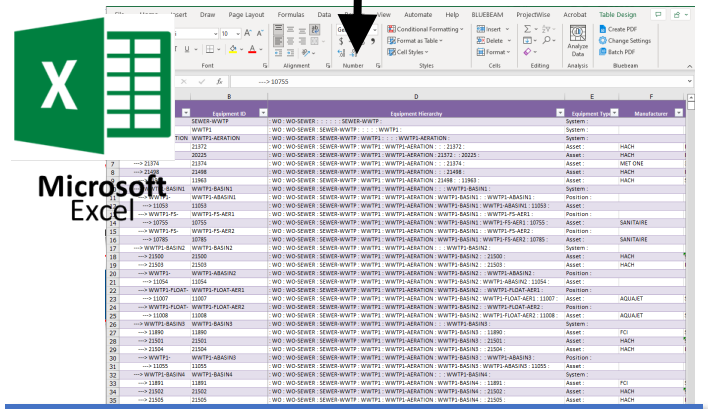
BEFORE

(On Premises)

HxGN EAM

(On Premises)

Microsoft SQL Server



Difficult to manage. 8,000 assets with multi-tabbed spreadsheet!

Export Selection Set of Asset Information (for nearly 8,000 assets)

AFTER

(On Premises)

HxGN EAM

(On Premises)

Microsoft SQL Server

Microsoft SQL Azure

(Cloud)

Power BI

Six Power BI Dashboards Published to Cloud
(Filterable Tables, Graphs, & Maps)

(Cloud)

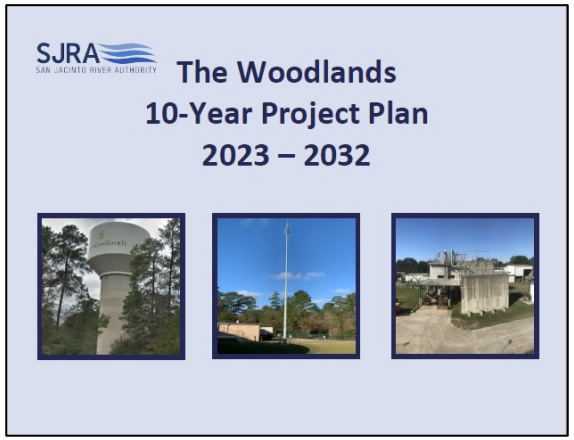
Power BI dashboards accessible with browser.
(8 filterable dashboards to Slice-n-Dice all Asset Data)

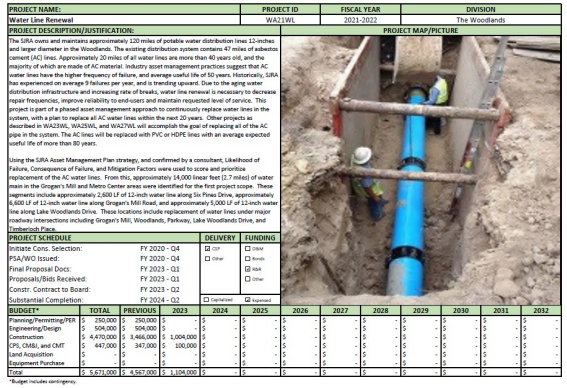
Example of an asset classification dashboard (one of 8 tabs)

Project planning dashboard application

BEFORE (Static CIP)

Spreadsheets for Each of the 70 Projects (made into PDF)





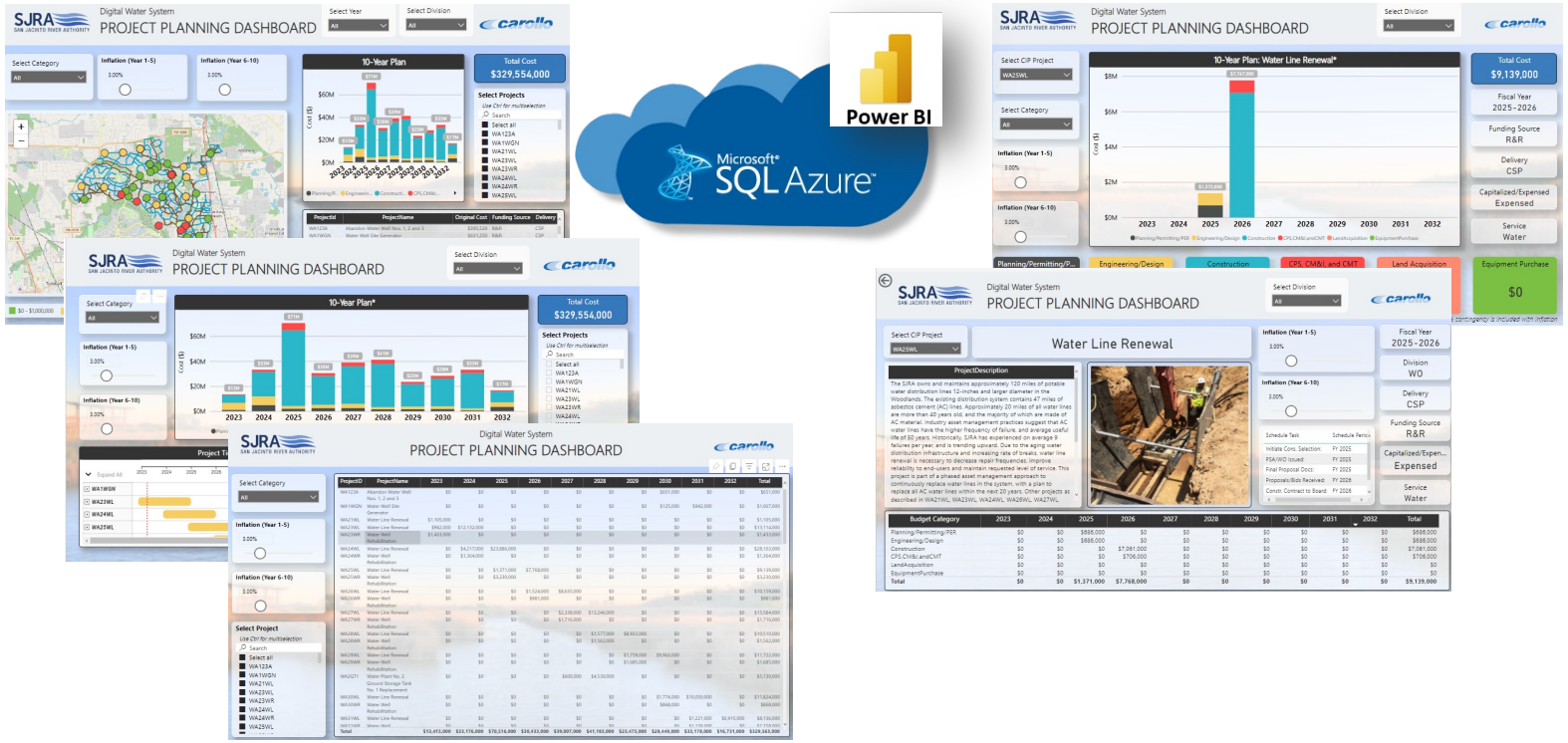
PROJECT NAME:		PROJECT ID	FISCAL YEAR	DIVISION
Water Line Renewal		WA21WL	2021-2022	The Woodlands
PROJECT DESCRIPTION/JUSTIFICATION:			PROJECT MAP/PICTURE	
PROJECT SCHEDULE			DELIVERY	FUNDING
Initiate Cons. Selection:	FY 2020 - Q4		☑ CSP	☐ Grant
PSA/WO Issued:	FY 2020 - Q4		☐ Other	☐ Bonds
Final Proposal Docs:	FY 2023 - Q1			☑ R&R
Proposals/Bids Received:	FY 2023 - Q1			☐ Other
Constr. Contract to Board:	FY 2023 - Q2			
Substantial Completion:	FY 2024 - Q2		☐ Capitalized	☑ Expensed

BUDGET*	TOTAL	PREVIOUS	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Planning/Permitting/PER	$ 350,000	$ 350,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Engineering/Design	$ 504,000	$ 504,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Construction	$ 4,470,000	$ 3,466,000	$ 1,004,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
CPS, CMI&I, and CMT	$ 447,000	$ 347,000	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Land Acquisition	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Equipment Purchase	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total	$ 5,671,000	$ 4,567,000	$ 1,104,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

*Budget includes contingency.

AFTER (Dynamic CIP)

Power BI Dashboards Accessible with Browser (5 Filterable Dashboards with sliders to analyze Inflation)



Example of a project planning dashboard (one of 5 tabs)

Operations management dashboard application

BEFORE

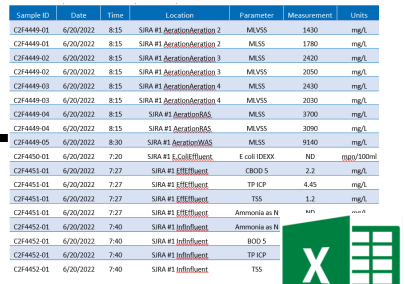
SCADA and LIMS for 3 WWTPs x 35 Parameters

Timeseries from On-line Meters (e.g., Flow, DO, Cl Residual, etc.)

Wonderware by AVEVA

SCADA *Historian*

Grab Samples
Lab Data in CSV File
(e.g., BOD, TSS, etc.)



HACH WIMS

Microsoft Excel

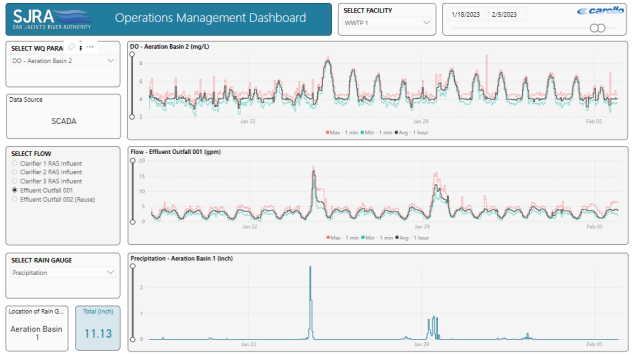
Microsoft Excel

Simple Graphs, Tables, and analysis of SCADA and LIMS Data

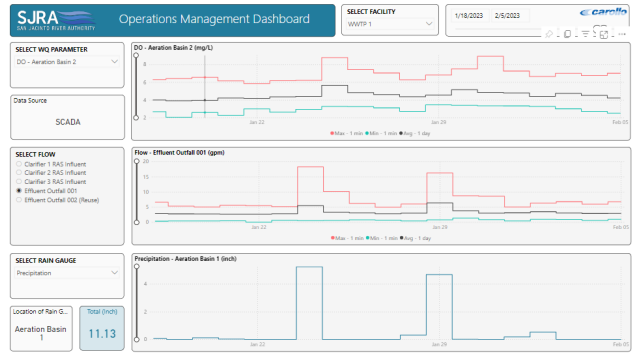
AFTER

Dynamic Dashboards Accessible with Browser on Desktop (potentially on mobile devices) (Selectable Time Periods, Selectable Parameters)

Detailed Dashboard
(Hourly Avg and Minute Min/Max)



Automatic Daily, Weekly, Monthly, and Yearly Dashboards (Min, Avg, Max)



Selectable hourly data for three WWTPs x 35 Parameters x 1.3 years

Example of an operations management dashboard (one of 5 tabs)

Questions?

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