



Lehigh County Authority

LCA 2016 Goals

Goal # 2 - Asset Management Program Development

2nd Quarter 2016 Status Report

Asset Management Program Development

LCA Needs to be Addressed in 2016:



- Perform Suburban Division Facilities Condition Assessment for water and wastewater structures
- Perform in-house mechanical equipment inventory for SD facilities
- Perform in-house major mechanical equipment evaluation
- Integrate SD Facilities Condition Assessment and mechanical equipment evaluation into standardized Asset Management framework
- Utilize AM principles to prioritize rehabilitative/repair projects in annual Capital Planning process
- Implement Computerized Maintenance Management System for SD
- Develop and Implement benchmark operating standards for SD maintenance program (similar to AD)
- Perform updated Condition Assessment at PTP and incorporate results into asset management plan; use for capital project planning

How it Fits with LCA mission: “We will deliver exceptional value to our customers through high quality, affordable & reliable water & wastewater services.”



Asset Management Program

Critical Goal is to achieve sustainability through properly managing, maintaining, & optimizing the use of assets, and proactively planning to meet future needs. The objective of the AM Program is to continuously deliver established levels of service, while balancing risk, at the lowest life cycle cost. Effective asset management uses an integrated set of processes to enable prioritizing of rehabilitation and upgrade projects, and optimize performance and quality.

Computerized Maintenance Management System

Computer assisted preventative maintenance program to be utilized for scheduling jobs, assigning personnel, stocking materials/equipment and tracking costs. CMMS is intended to assist an agency move towards more preventative maintenance (less reactive). It will integrate with and enhance asset management.

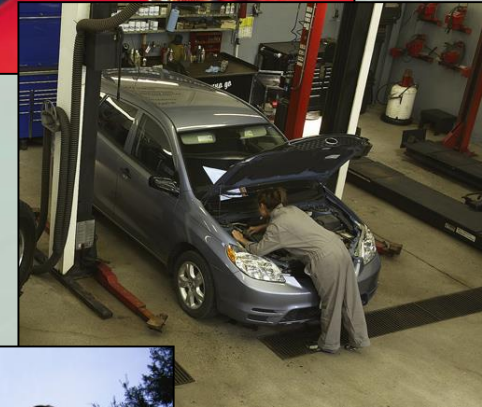
It's as if we've inherited a fine automobile

- **It looks good, but...**
- **How many more miles can it go before rehab and replacement are required?**



The basic principles of Asset Management are similar to managing the operation and maintenance of your car:

- **Diagnostics & preventive maintenance to maintain level of service**
- **Life-extending rehabilitation & eventual replacement**
- **Balancing risk with life cycle costs—what is the cost and consequence of breakdown/failure?**



1st Quarter Milestone



Asset Management program goals defined, team assembled, task milestones established, and work started. Review AD lease operating standards for proposed SD operating standards.

STATUS: COMPLETE

WHAT'S THE PROGRAM STATUS AT END OF Q2? HOW ARE WE DOING?

2nd Quarter Milestone



Perform SD Facilities Condition Assessment Evaluation and Mechanical Inventory

STATUS: 95% COMPLETE

(study excerpts from D'Huy Engineering will follow the Milestones)

2nd/3rd Quarter Milestone



Lehigh County Authority

Integrate Facilities Condition Assessment and major mechanical equipment evaluation into Asset Management framework for each facility

STATUS: 50% COMPLETE; ON SCHEDULE TO FINISH BY
END OF Q3

- Working with Operations; weekly mechanical condition evaluation meetings
- Sample risk scoring sheet follows

Asset Management Scoring Sheet for NL-11/12 (Mill Creek)



Asset Inventory										What is the State of My Assets?						Which Are Most "Critical"?				
Asset Register and Hierarchy					Analysis Date	Installed Date	Asset Class	Original Cost	Original Effective Life	Current Condition	Current Performance	Current Reliability	Effect Life Adjust Factor	Predicted Residual Life Remaining	Replacement date	% Asset Consumed (Physical)	Backup Available (Redundancy)	Probability of Failure	Consequence of Failure	BRE Rating
Levels						Year		\$	Years	1 to 10	1 to 5	1 to 5	Requires a value in Column K, L & M		%	0 to 1.0	1 to 10	1 to 10	=R*S*T	
1	2	3	4	5		Act or Est	Table A-1	Act or Est	Table A-1	Table A-2	Table A-3	Table A-4	Calculated	Calculated	Calculated	Calculated	Table D-2	Table D-1	Table C-1	Calculated
WATER										Must fill in all three columns			+0.2 to -0.2							
	NL-11, 12 - MILL CREEK																			
		BUILDING																		
			Roof		2016	1975		\$ 7,500	25	6	3	3	0.04	-17	2000	167%	1.00	8	3	24
			Structure/Walls		2016	1975		\$ 20,000	40	8	4	4	0.12	-1	2015	103%	1.00	6	3	18
			Foundation		2016	1975		\$ 5,000	40	9	4	4	0.14	-1	2015	103%	1.00	6	2	12
		ELECTRICAL																		
			Panels		2016	1975		\$ 7,500	30	8	4	4	0.12	-12	2004	141%	1.00	7	2	14
			Wiring		2016	1975		\$ 10,000	30	7	3	3	0.06	-12	2005	139%	1.00	8	3	24
			Code		2016	1975		\$ 2,500	20	7	3	3	0.06	-22	1994	211%	1.00	7	3	21
		MECHANICAL																		
			NL-11 Well pump-high S		2016	1995		\$ 4,000	30	7	4	4	0.10	10	2026	67%	0.10	7	3	2.1
			NL-12 Well pump-5hp		2016	2004		\$ 4,000	20	8	4	4	0.12	9	2025	55%	1.00	6	3	18
			Gravity Tank - 10,000gal		2016	1975		\$ 20,000	40	8	3	3	0.08	-1	2015	103%	1.00	7	3	21
			Booster Pump#1- 2hp		2016	2012		\$ 5,000	10	9	5	5	0.18	7	2024	29%	0.10	3	3	0.9
			BP#1 VFD		2016	2014		\$ 2,500	20	9	5	5	0.18	21	2038	-6%	0.10	2	3	0.6
			Booster Pump#2- 2hp		2016	1999		\$ 5,000	25	9	4	4	0.14	9	2026	64%	0.10	6	2	1.2
			Booster Pump#3- 5hp		2016	1998		\$ 7,000	30	9	4	4	0.14	14	2030	54%	0.10	6	2	1.2
			CL2 Pump - LMI		2016	2006		\$ 800	20	9	5	5	0.18	12	2028	41%	0.10	5	2	1
			CL2 Tank - 25gal dbl wall		2016	2014		\$ 400	20	9	5	5	0.18	21	2038	-6%	1.00	2	2	4
			Hach Turdidity Analyzer		2016	2011		\$ 2,500	20	9	5	5	0.18	18	2034	12%	1.00	3	2	6
			Hach CL2 Analyzer		2016	2004		\$ 2,500	20	9	5	5	0.18	9	2026	53%	1.00	5	2	10
			Xtrol expansion tank		2016	2000		\$ 1,000	30	9	4	4	0.14	16	2032	47%	1.00	4	2	8
		HVAC																		
			unit heater & intake fan		2016	1975		\$ 2,500	30	8	4	4	0.12	-12	2004	141%	1.00	8	1	8

2nd/3rd Quarter Milestone



Collaborate with Finance & Capital Works for budget and capital planning process - prioritize rehabilitative/repair projects; phased approach

STATUS: UNDER WAY; USING FACILITIES CONDITION ASSESSMENT FINDINGS IN CAPITAL PLANNING PROCESS

2017-2021 Capital Plan (CP) Schedule

Start Capital Planning Process	05/03/16
Complete Final Capital Project Detail Sheets	07/06/16
Complete Preliminary CP	08/01/16
Distribute Preliminary CP to Outside Agencies for Review	08/03/16
Preliminary CP Presentation to Board	08/08/16
Preliminary CP Follow-up Comments/Questions from Board	08/22/16
Receive Preliminary CP Comments from Outside Agencies	09/02/16
Final CP Board Approval	09/12/16

2nd/3rd Quarter Milestone



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Complete data migration of facilities inventory into “City Works” CMMS platform for SD maintenance program.

STATUS: UNDER WAY; ON SCHEDULE FOR COMPLETION BY
END OF Q3

2ND/3RD Quarter Milestone

Develop Benchmark Operating Standards for SD

STATUS: 90% COMPLETE ON DEVELOPING BENCHMARKS; ON SCHEDULE FOR FINALIZATION IN Q3 AND IMPLEMENTATION IN Q4.

Examples:

Valve Exercising (#valves/year)

Fire Hydrant inspection/exercising (#hydrants/year)

Water Distribution System Flushing (#miles/year)

Sewer Manhole Inspection (#manholes/year)

FACILITIES CONDITION ASSESSMENT PROJECT



SUMMARY OF PROJECT FOLLOWS...

Field Investigation Activities

- Visited 32 sites
- Captured notes on templates
- Assessed by Discipline – Structural, Electrical, HVAC
- Documented conditions with photos
- Performed by D'Huy Engineering, assisted by LCA operations staff



NL 15/16 Heidelberg Heights – Structural Issues (walls failing)



NL 1 Schnecksville – Structural Issues (roof deck deterioration)



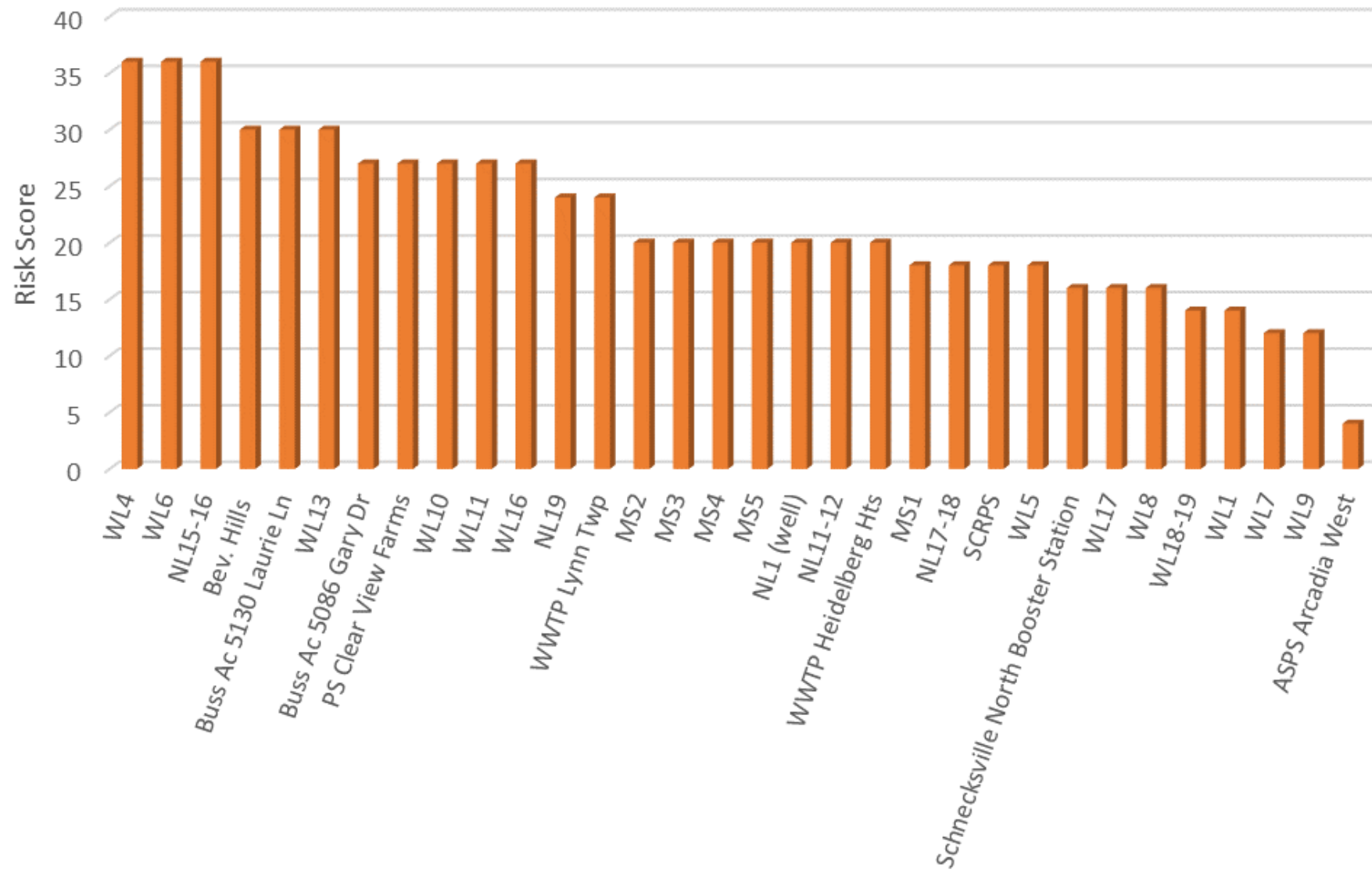
Electrical – Exposed Wires & other Code related issues



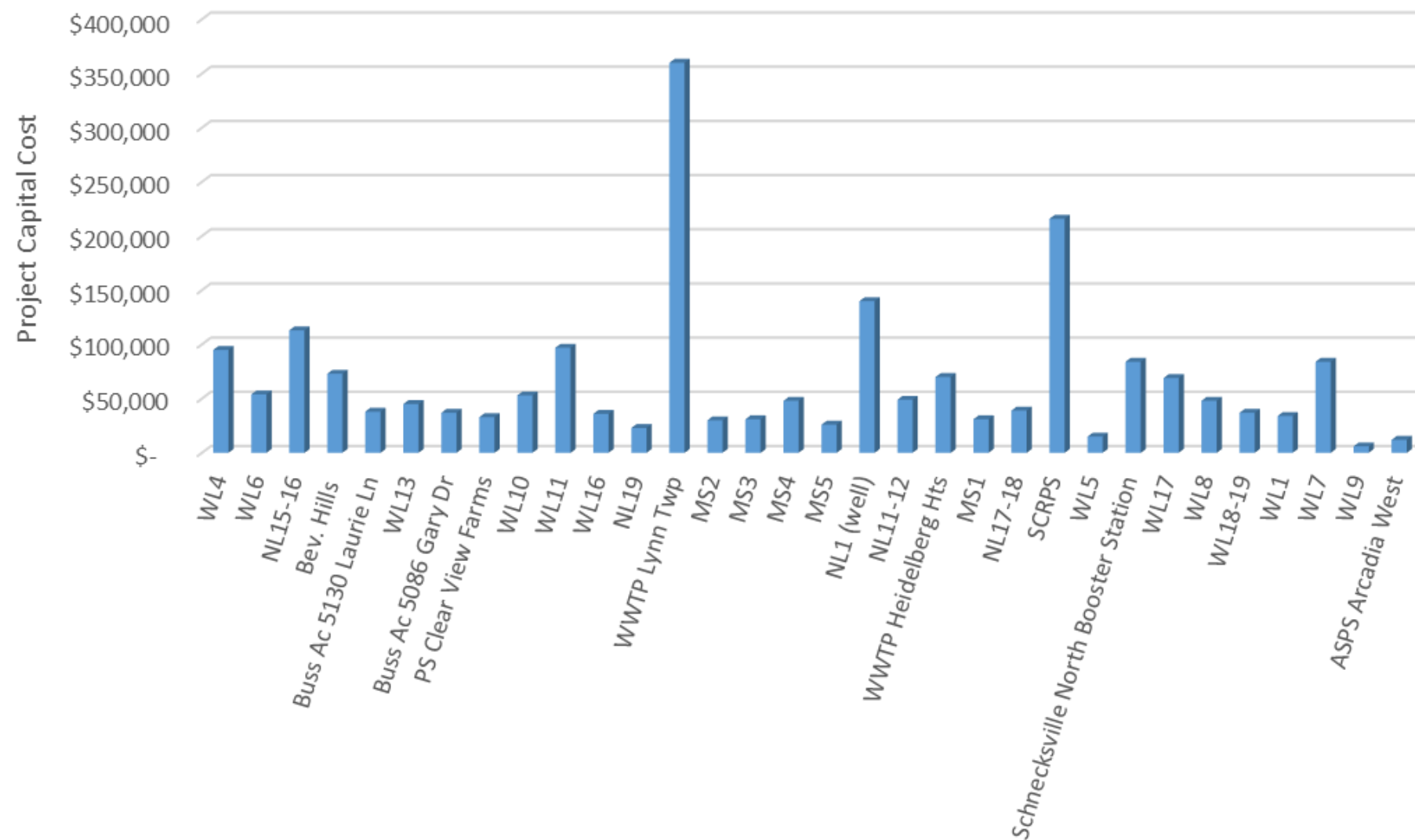
Mechanical - HVAC Issues (corrosion, poor wiring, antiquated units)



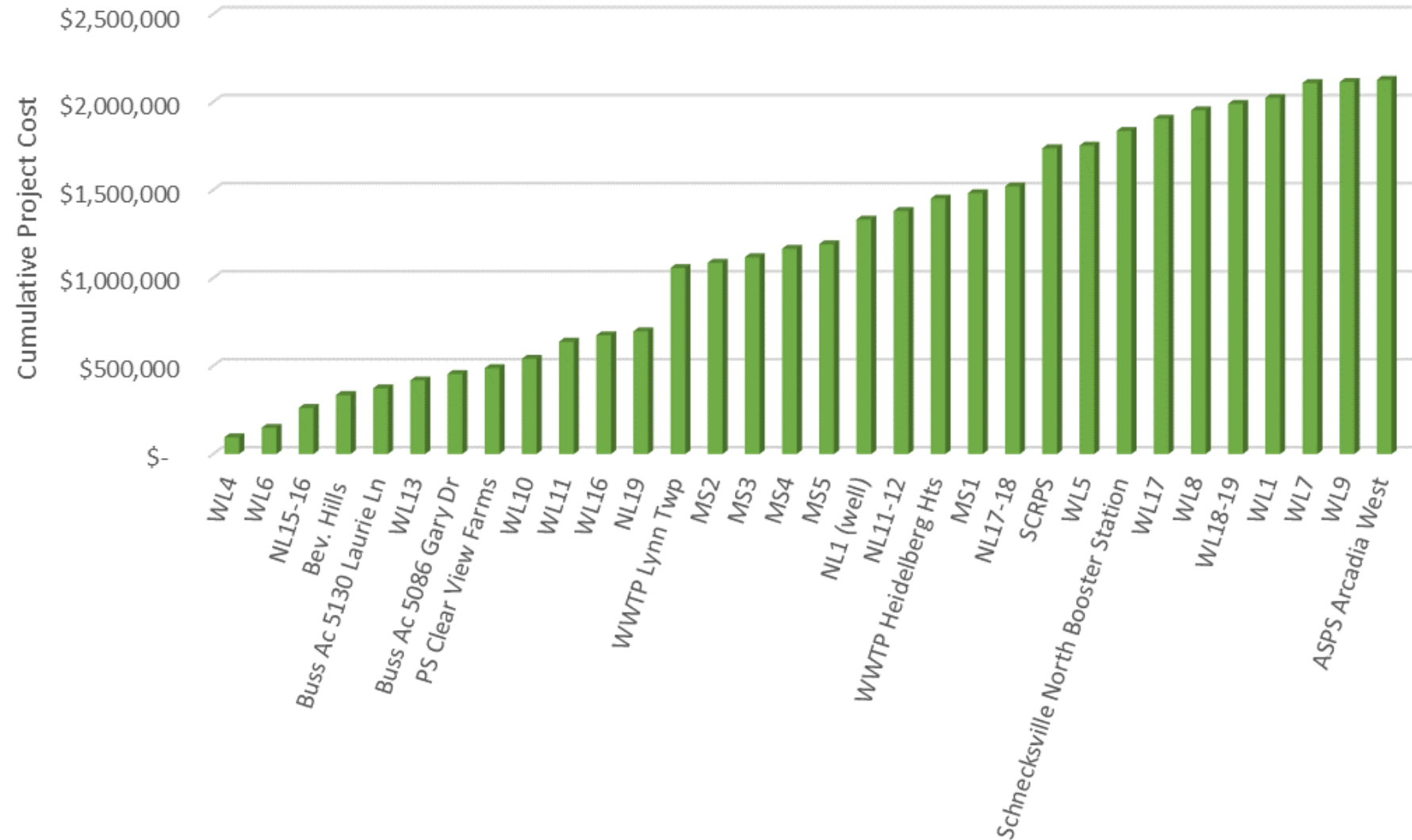
Project Risk Scoring



Overall Project Cost Sorted by Risk



Cumulative Cost Sorted by Risk



What's Next?

Summary of Upcoming AM Milestones:



Implementation of Asset Management program - will require collaboration across internal departments and will link to other goals; program requires regular updating and re-assessment

Implementation of CMMS - will entail some operations staff “refresher” training and staff “buy-in” and commitment to this as a perpetual program

Implementation of Benchmark Operating Standards for SD - as with CMMS, requires operations staff buy-in and commitment

Pretreatment Plant Facility Condition Assessment Analysis - LCA/CH2M will utilize results to update PTP AM plan and prioritize capital project planning at the facility

ASSET MANAGEMENT PROGRAM GOAL

Questions / Discussion



Lehigh County Authority