Philadelphia Water Department's Non-Traditional Self-Assessment for Distribution System Optimization

PHILADELPHIA WATER

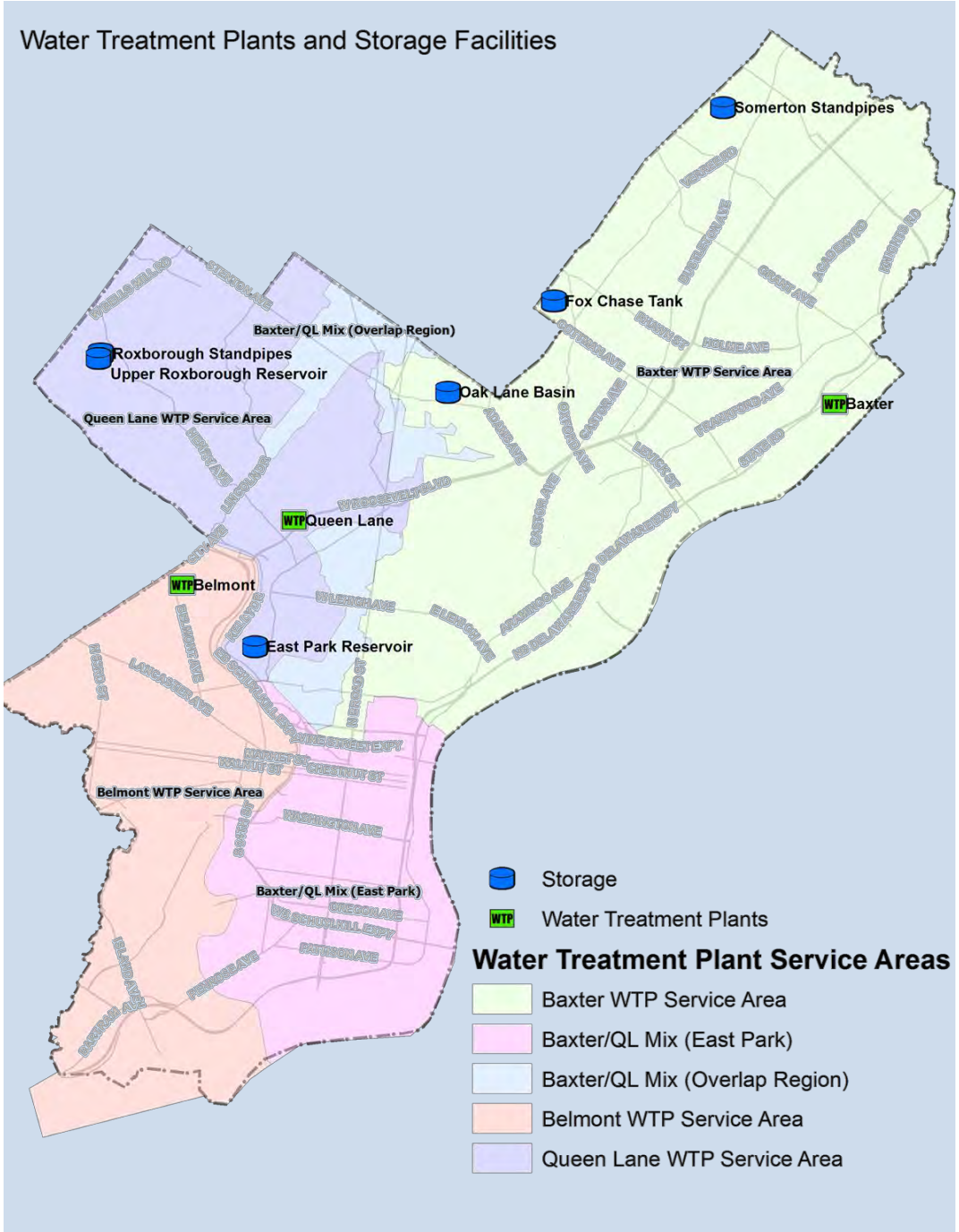
EST. 1801

Agenda

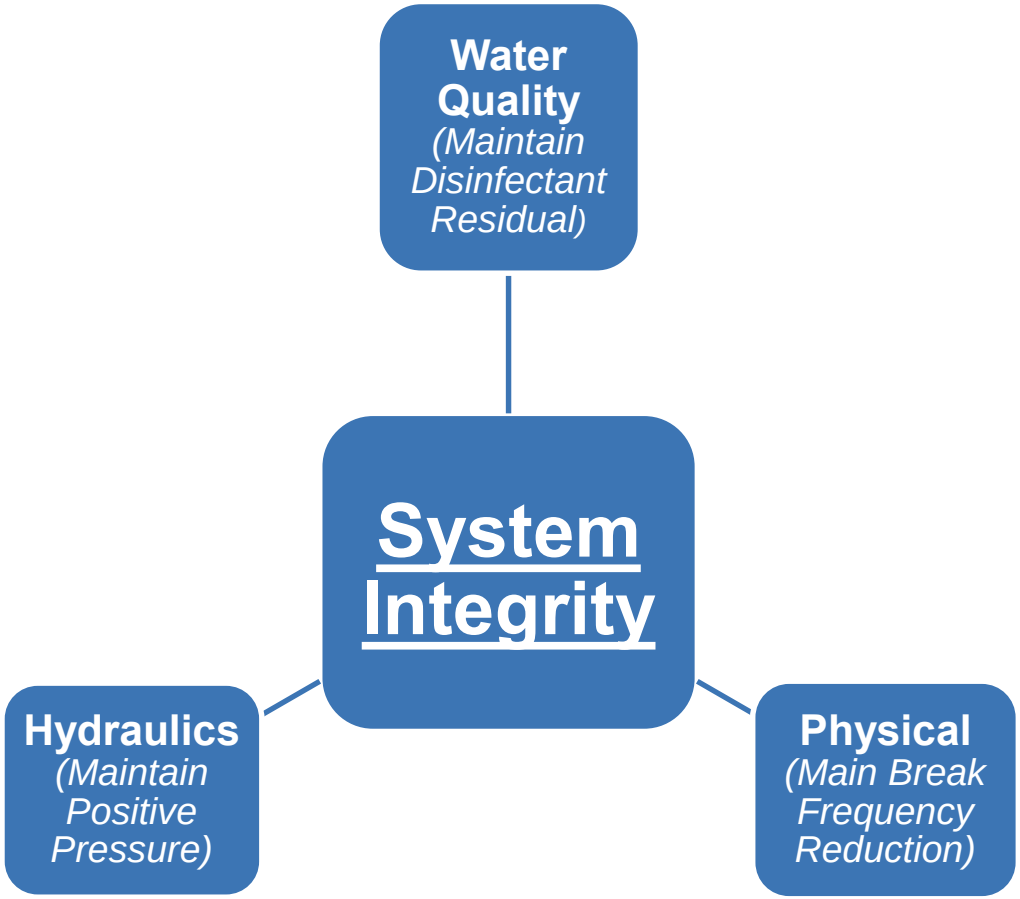
- PWD System Overview
- PSW Distribution System Optimization Program (DSOP)
- PWD DSOP Self Assessment Process
- PWD DSOP Self Assessment Examples
- Findings, Lessons Learned
- Conclusions

PWD Water System Overview

- 3 Water Treatment Plants
  - 250 MGD avg, 546 MGD combined rated capacity, 683 MGD max
- 130 square mile area inside City
- 3,178 miles of water main
- 1,728,900 people served
- 1065.5 MG storage capacity
- 25,394 hydrants,
  - 16,727 compression locks
- 472,553 accounts
- 13 Pressure Districts

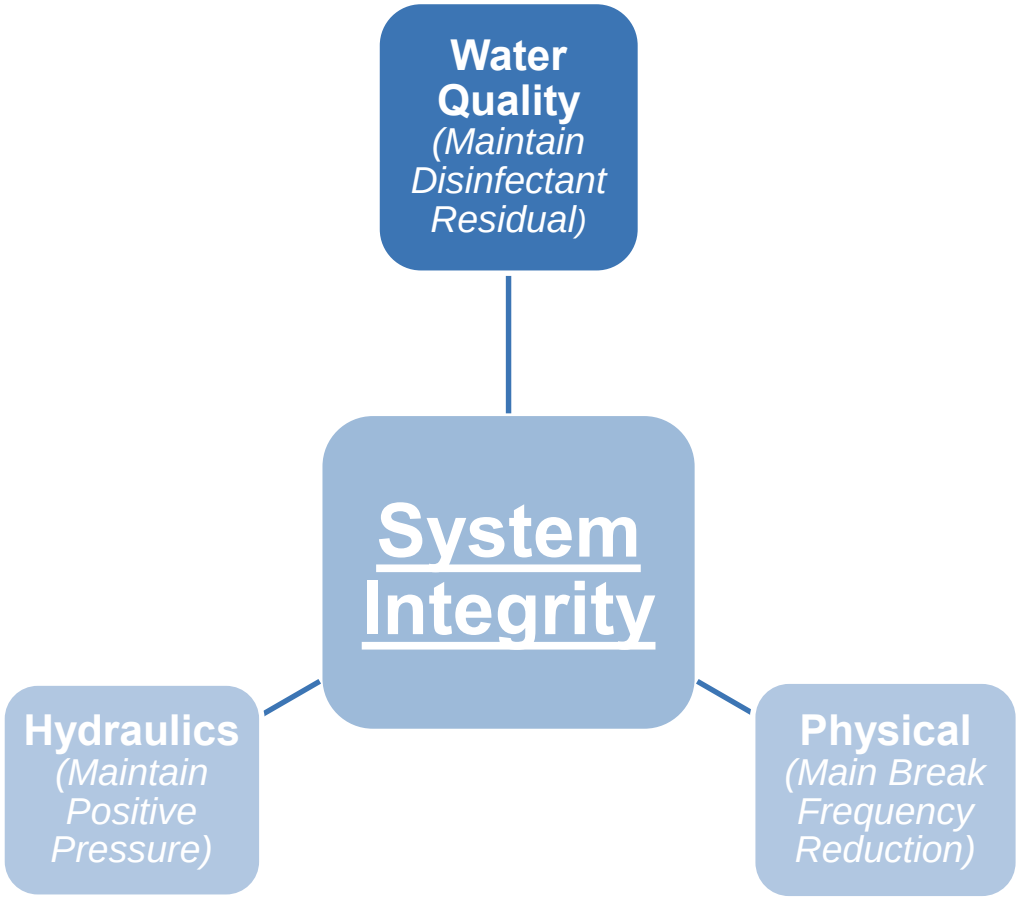

Water Treatment Plants and Storage Facilities
Somerton Standpipes
Fox Chase Tank
Baxter/QL Mix (Overlap Region)
Roxborough Standpipes
Upper Roxborough Reservoir
Oak Lane Basin
Baxter WTP Service Area
WTP Baxter
Queen Lane WTP Service Area
WTP Queen Lane
WTP Belmont
East Park Reservoir
Belmont WTP Service Area
Baxter/QL Mix (East Park)
Storage
WTP Water Treatment Plants
Water Treatment Plant Service Areas
Baxter WTP Service Area
Baxter/QL Mix (East Park)
Baxter/QL Mix (Overlap Region)
Belmont WTP Service Area
Queen Lane WTP Service Area

PSW DSOP Program Goals



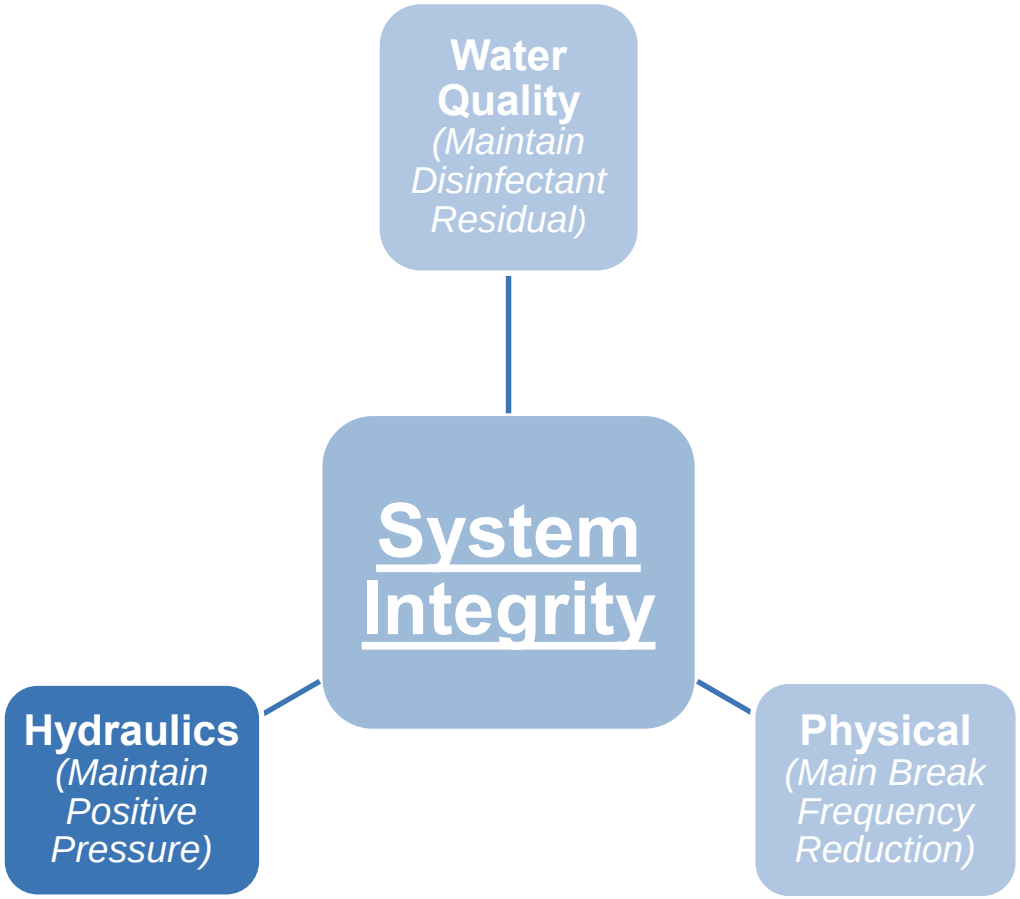
- System Integrity may be at risk when these performance indicators are not optimized

PSW DSOP Program Goals



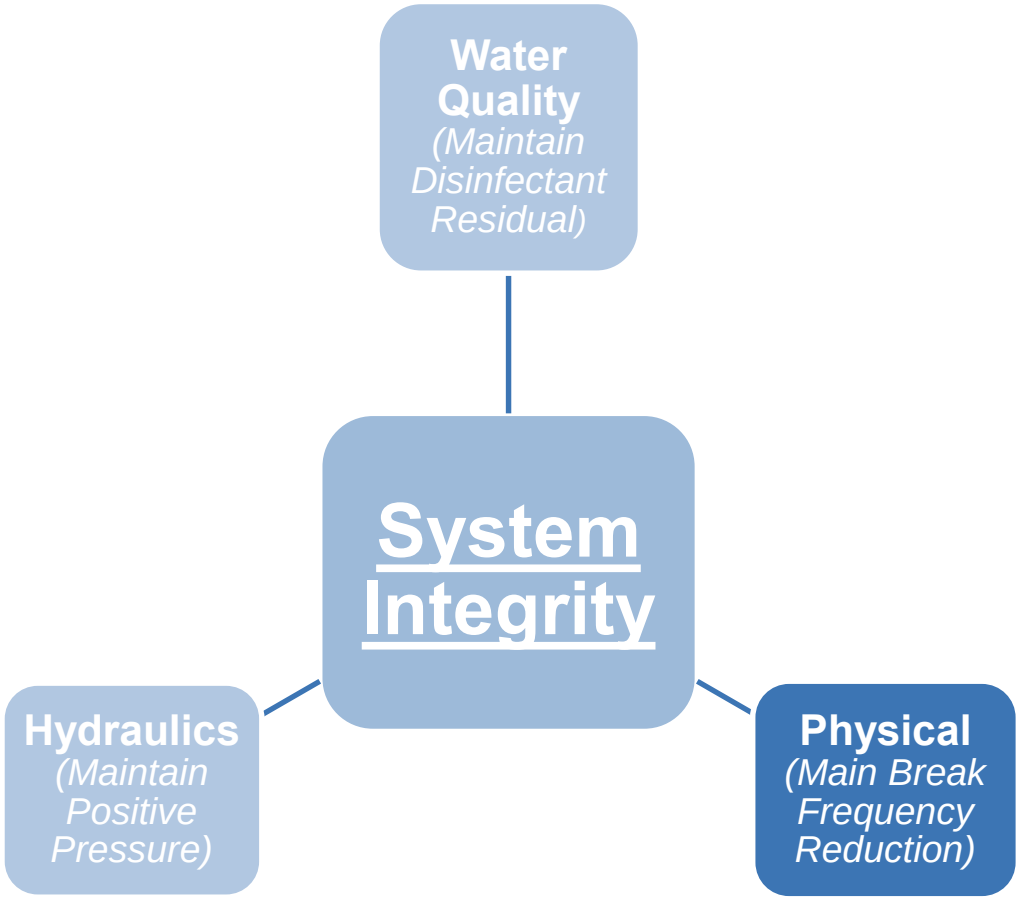
- Disinfectant Residual Goals (95% of routine results each month)
  - Free chlorine: ≥ 0.20 mg/L and ≤ 4.0 mg/L
  - Total chlorine: ≥ 0.50 mg/L and ≤ 4.0 mg/L
  - Chlorine dioxide: ≥ 0.20 mg/L and ≤ 0.80 mg/L

PSW DSOP Program Goals



- Hydraulics/Pressure Management Goals
  - ≥ 20 psi for 99.5% of the minimum daily readings from pressure sensors located at the sites of minimum pressure
  - ≥ 35 psi maintained as a monthly average of daily minimum values
  - Maximum pressure range is not greater than a pre-determined utility specific goal

PSW DSOP Program Goals



- Physical/Main Break Frequency Goal
  - ≤ 15 breaks/100 miles pipeline/year
  - Declining break frequency (5 year rolling trend)

PSW DSOP Program Phases

Phase I – Commitment

Agree to continue PSW program at least through Phase III

Phase II – Baseline and Annual Data Collection

Submit annual performance data

Phase III – Self-Assessment

Complete a self-assessment and provide a summary report

Phase IV – Optimization

Achieve full optimization

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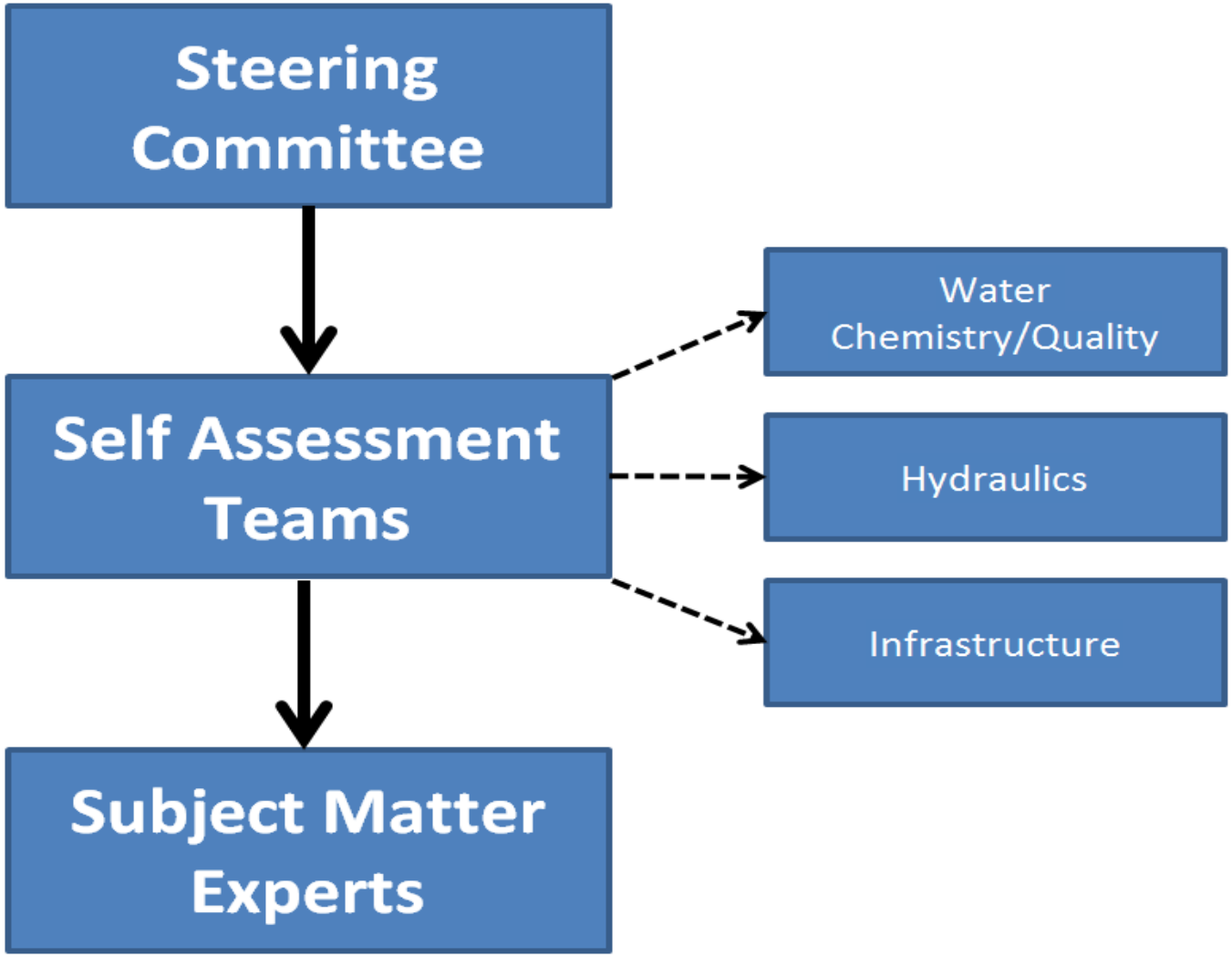
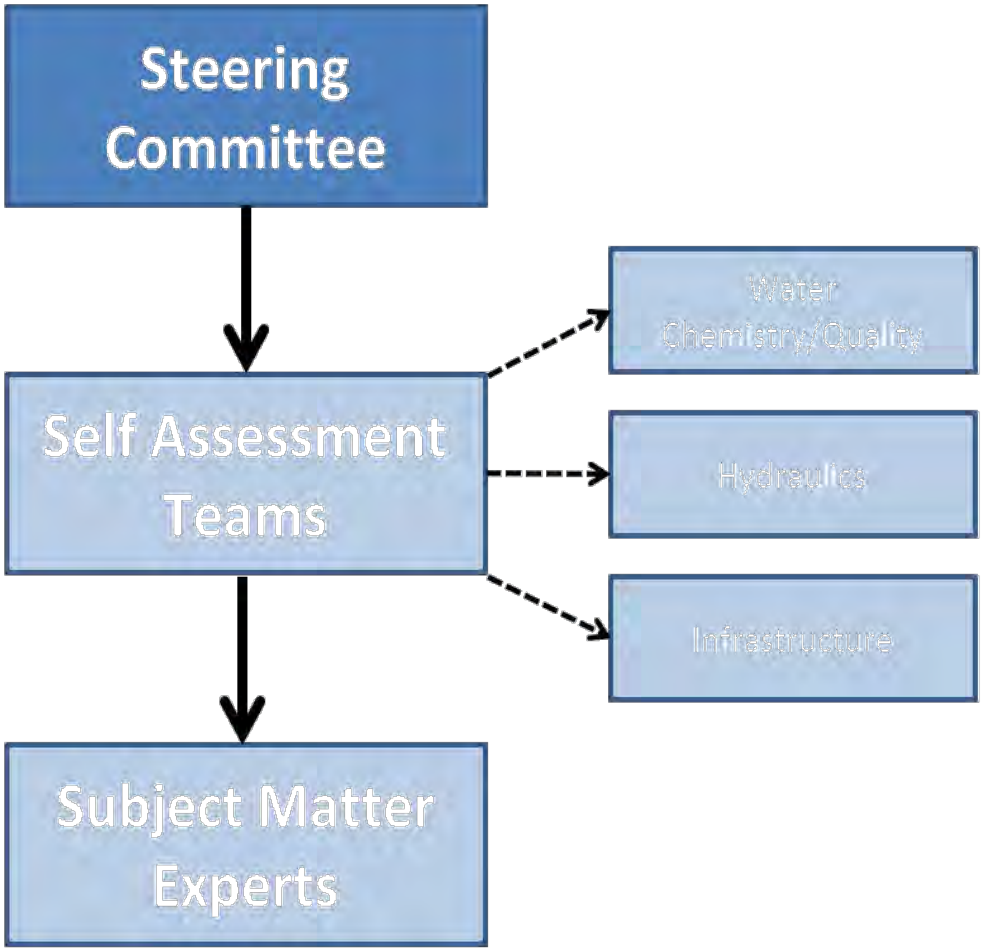
PWD DSOP Self-Assessment Structure

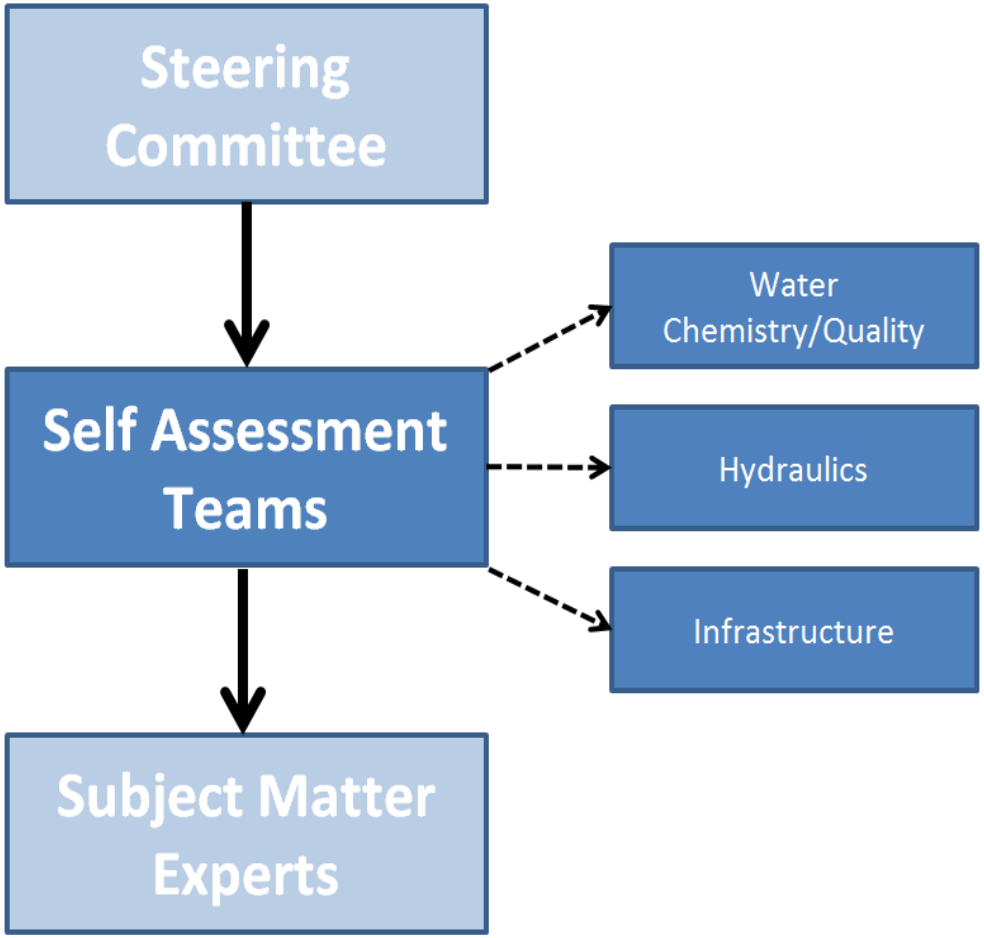


PWD DSOP Self-Assessment Structure: Steering Committee



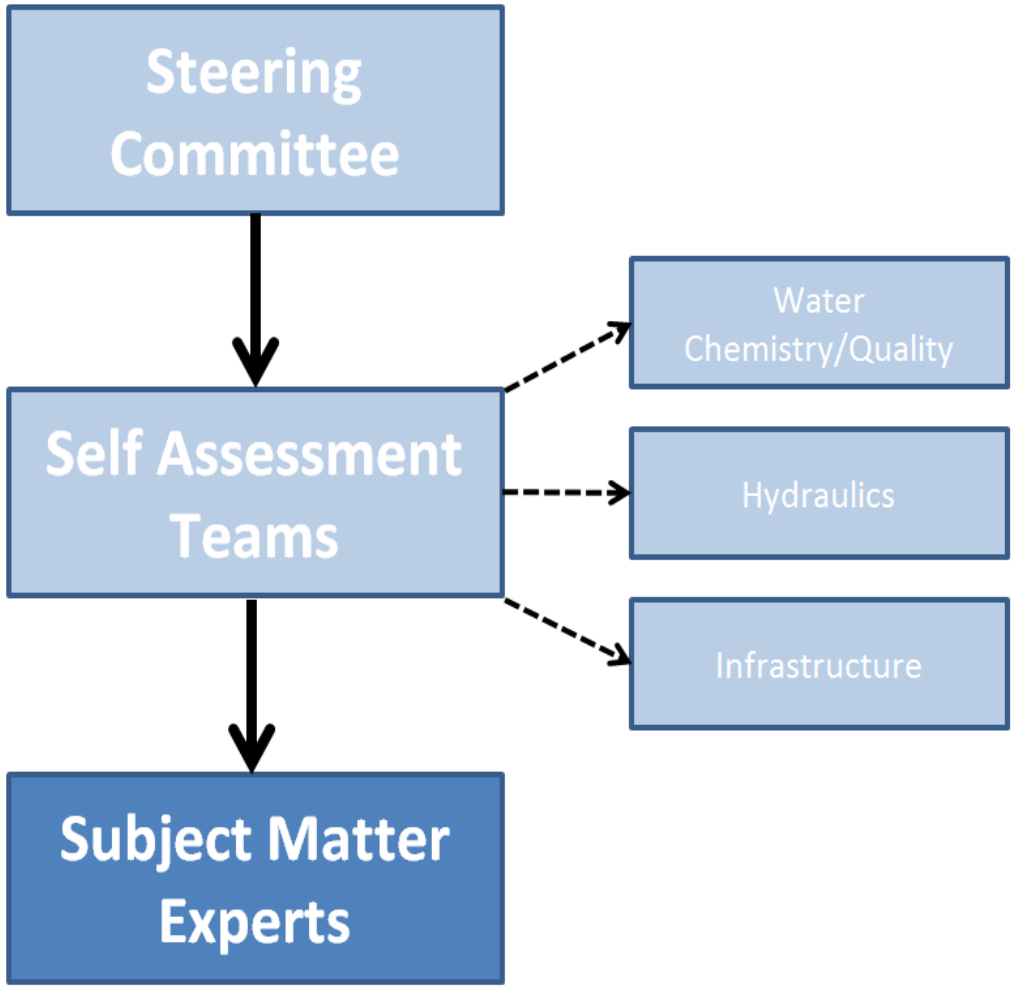
- Led by project manager
- Consists of leaders within the utility whose organization would be impacted by the Self-Assessment process

PWD DSOP Self-Assessment Structure: Self Assessment Teams



- 3 teams
  - grouped by Performance Improvement Variable (PIV)
- Comprised of younger professionals
- Managed and directed details of Self-Assessment process
  - Summary interview documents

PWD DSOP Self-Assessment Structure: Subject Matter Experts (SMEs)



- Experienced technical staff
- Participated in interviews with Self-Assessment team
- Reviewed findings and recommendations
- Steering Committee members also participated as SMEs

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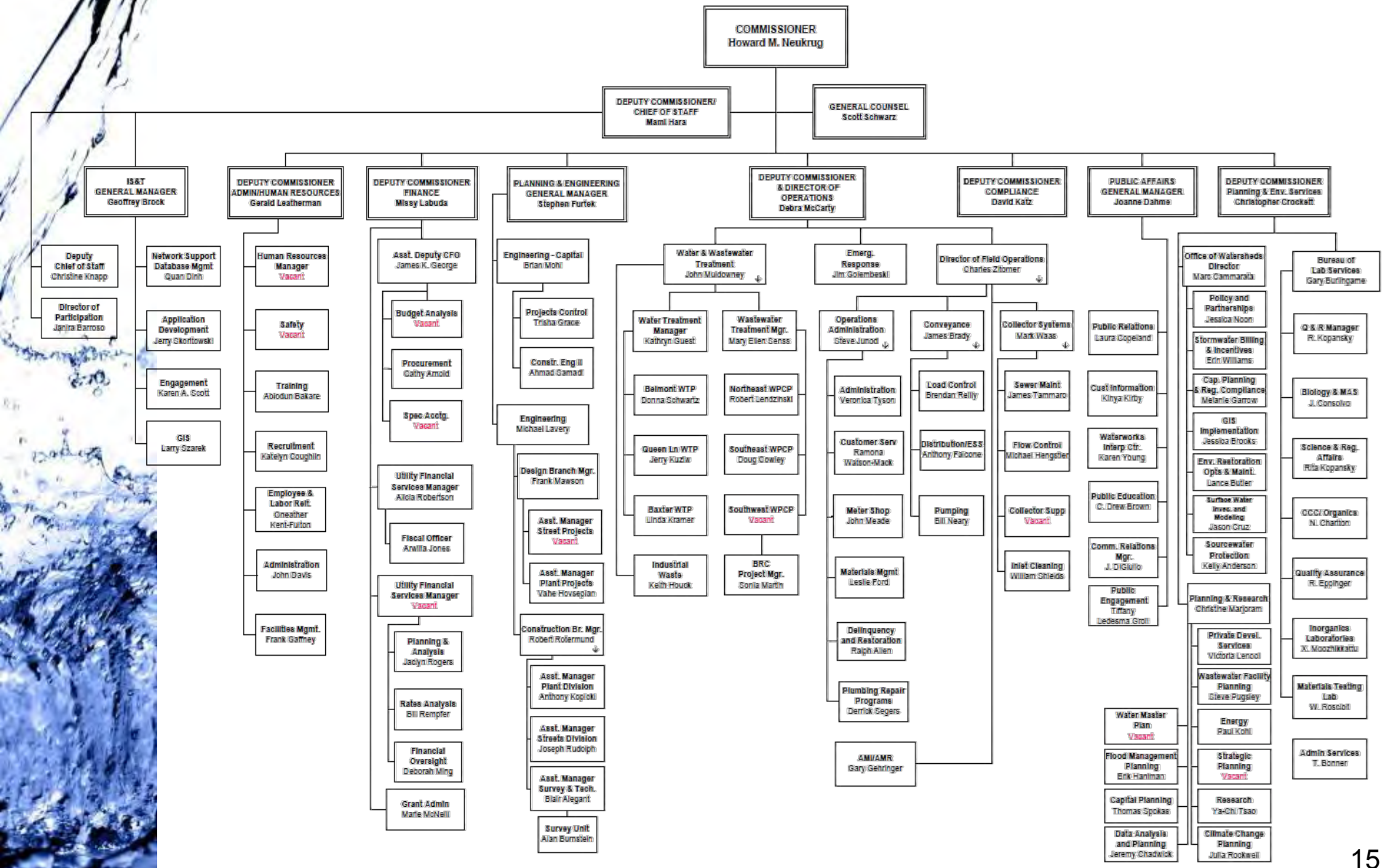

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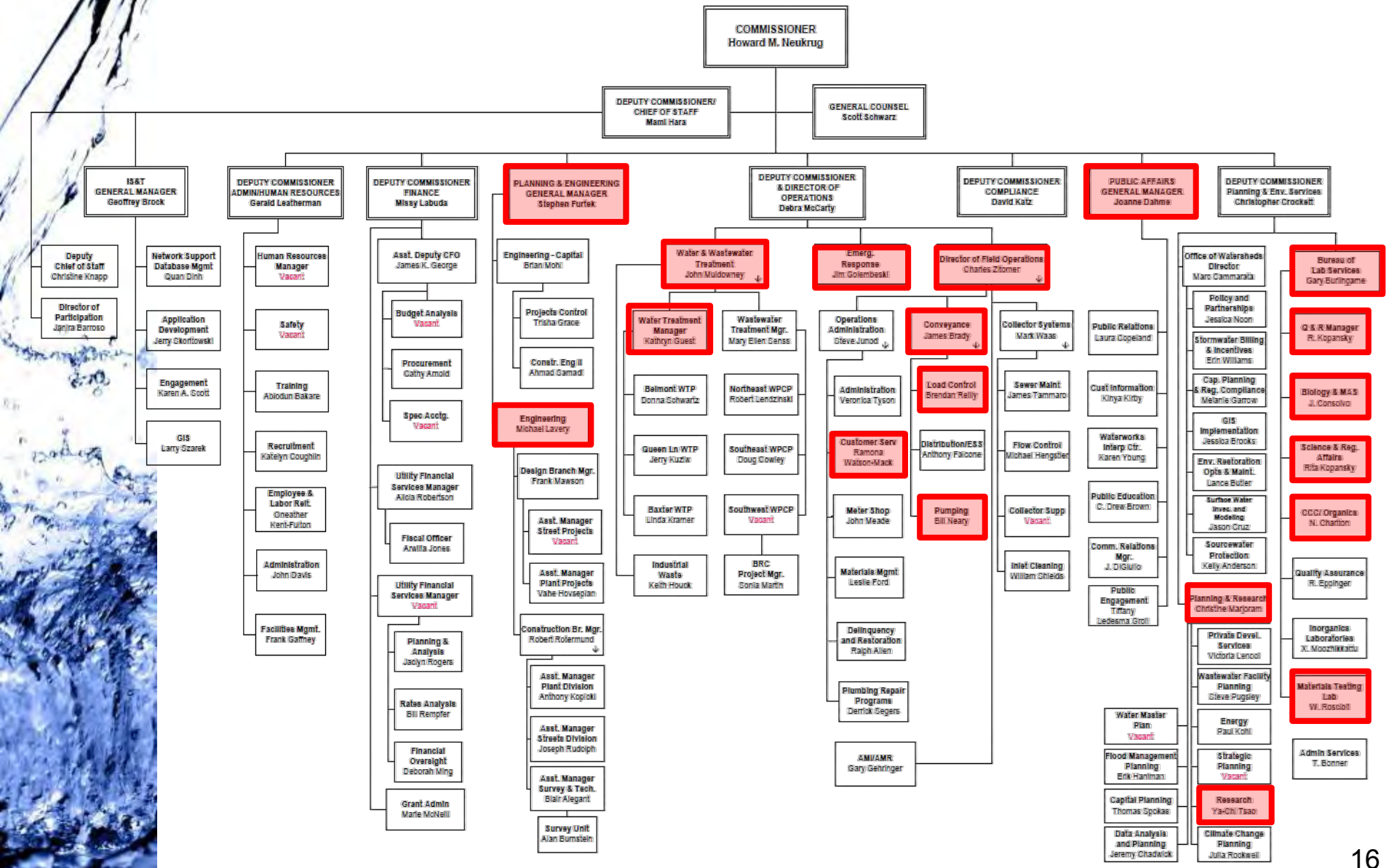


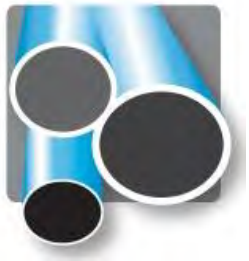
PWD Self-Assessment Process: SME Interviews

19 PIVs (65 questions for gauging optimization)

- (5) Disinfectant Residual
- (4) Cross-Connection Control
- (2) Customer Complaints
- (2) DBP Control
- (3) Energy Management
- (4) External Corrosion Control
- (3) Flushing
- (5) Hydrant/Valve Maintenance
- (3) Internal Corrosion Control
- (3) Main Breaks
- (2) Nitrification
- (3) Pipe Rehab. & Replacement
- (3) Inorganic Accumulation Control
- (8) Pressure Management
- (3) Security and Online Monitoring
- (4) Storage Tank O&M
- (3) Water Age Management
- (2) Water Loss Control
- (3) Water Sampling and Response

PWD Self-Assessment Process: SME Interviews

- Primary SA team members were determined for each PIV
  - 2-6 SMEs identified/PIV
- SMEs were contacted about the Partnership program
  - Introductory letter/email
- Interviews were scheduled
  - 1st SME interview – *March 13, 2013*
  - Final SME interview – *July 25, 2013*



SME Letter

- Initial method of communication to SMEs
- Included a general overview of PSW DSOP initiatives, highlighting:
  - Distribution system integrity categories
  - PIVs
  - SME PIVs
  - Optimization questions (PSW Self Assessment Guide and WaterRF 4109 questions)
  - Interview request
  - Additional information requests (SOPs, reports, etc.)

Hello,

The Partnership for Safe Water (PSW) is currently working with PWD to help achieve continuous improvement by optimizing operational performance, meaning that all system processes are being performed at the highest level.

In 1995 PSW worked with PWD to implement an optimization program for treatment plants where the program metrics were well defined and enabled PWD's water treatment plants to perform at the highest level.

Today, PSW is working with PWD to implement an optimization program for distribution systems. The program metrics are still evolving and currently PWD is in the Self-Assessment stage of the program. The self-assessment stage involves a team of PWD professionals performing assessment goals for distribution system integrity pertaining to:

- Water Quality Preservation (Disinfectant Residual),
- Hydraulic Reliability (Pressure Management), and
- Physical Security (Main Break Frequency)

Within the Distribution System Optimization Program (DSOP), 19 performance improvement variables (PIVs) have been identified to evaluate the distribution system's optimization status. Based on the assessment of the PIVs, the PWD self-assessment team will develop a list of potential limiting factors (PLFs) that will help develop a multi-year continuous improvement plan to address any areas where improvement is needed.

The 19 PIVs are:

1	Disinfectant Residual	11	Nitrification
2	Cross-Connection Control	12	Pipe Rehabilitation & Replacement
3	Customer Complaints	13	Inorganic Accumulation Control
4	DBP Control	14	Pressure Management
5	Energy Management	15	Security and Online Monitoring
6	External Corrosion Control	16	Storage Tank O & M
7	Flushing	17	Water Age Management
8	Hydrant & Valve Maintenance	18	Water Loss Control
9	Internal Corrosion Control	19	Water Sampling & Response
10	Main Breaks		

You have been identified as a Subject Matter Expert (SME) for the following PIVs:

- Disinfectant Residual (1)
- Flushing (7)
- Storage Tank O & M (16)
- Water Age Management (17)
- Water Sampling & Response (19)

As a distinguished SME, the PWD DSOP team would like to interview you regarding the previously mentioned PIVs. To help jump start the interview process various questions regarding your particular expertise areas have been prepared. The questions are located within two Microsoft Excel documents (attached to this email). There are specific questions for you within each of the three tabs of each excel document. Please review all of them, as this will help move the interview process along. If there are any documents that you think would be useful, please either have them available at the time of the interview or be able to provide us with the location of where the documents can be attained (SOPs, reports, etc.).

Finally, please provide us with your availability ASAP. One or two members of the PWD DSOP team would like to interview you at some point over the next 5 weeks at *your convenience*.

Thank you in advance for your participation in the Partnership for Safe Water Optimization Program!

PWD SME Interview Schedule

PWD DSOP SME Selections - Steering Committee Choices

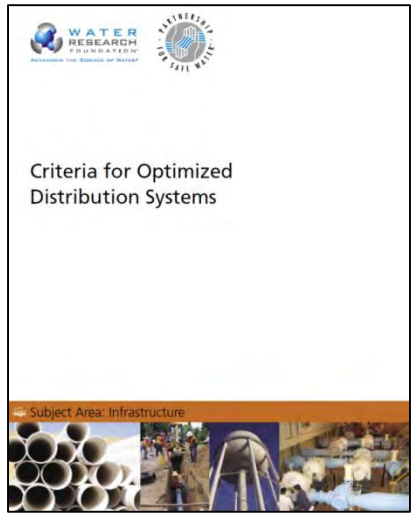
Interviewer	Topic #	PIV	SME #1	Interview Sch.	SME #2	Interview Sch.	SME #3	Interview Sch.	SME #4	Interview Sch.	SME #5	Interview Sch.	SME #6	Interview Sch.
Dennis	1	Disinfectant Residual	Rita Kopansky	Wed, 4/3/13 BLS, 9:30 AM	Kate Guest	Thurs, 6/6/13 ARA, 1:00 AM	David Specht	Thurs, 4/11/13 Load Control 11:00 AM						
Steve Dennis	2	Cross-Connection Control	Nicole Charlton	Wed, 3/13/13 BWTP, 10 AM	Jung Choi	Fri, 4/5/13 BLS, 10 AM								
Dennis	3	Customer Complaints	Lorenzo Lucia	Wed, 5/1/13 BLS, 1:00 PM	Joanne Dahme	Thurs, 4/25/13 ARA, 1:30 PM	Delores Pringle	Thurs, 4/25/13 ARA 11:00 AM	Ramona Watson-Mack	Thurs, 7/25/13 Load Control 10:00 AM				
Steve Dennis	4	DBP Control	Kate Guest	Mon, 6/17/13 BWTP, 2:00 PM	John Muldowney	Fri, 5/17/13 ARA, 10:00 AM	Adam Eyring	Wed, 4/3/13 BLS, 11:30 AM						
Matt	5	Energy Management	Jim Brady	Tues, 5/14/13 ARA, 2:00 PM	Cliff LaHann	Wed, 5/8/13 Load Control, 10:00 AM	Brendan Reilly	Wed, 5/15/13 Load Control, 9:00 AM						
Joe	6	External Corrosion Control	Jim Brady	Fri, 5/17/13 ARA, 10:00 AM	George Stokes	Mon, 4/29/13 ARA, 10:00 AM	Michael Lavery	Fri, 5/3/13 ARA, 10:00 AM						
Janusz	7	Flushing	Rita Kopansky	Wed, 4/3/13 BLS, 9:30 AM	John Vogtman	Wed, 4/8/13 BLS, 10:00 AM	Brendan Reilly	Thurs., 4/25/13 Load Control, 2:30 PM						
Bishel	8	Hydrant & Valve Maintenance	Jose Abraham	Thurs, 4/11/13 Load Control, 9:00 AM	Joe Hinton	Thurs, 4/18/13 Load Control, 9:00 AM	Tony Varano	Tues, 4/2/13 Load Control, 1:30 PM						
Dennis	9	Internal Corrosion Control	John Consolvo	Thurs, 4/4/13 BLS, 9:30 AM	Kate Guest	Thurs, 6/6/13 ARA, 1:00 AM	Matt Smith	Wed, 4/17/13 ARA, 9:30 AM						
Janusz	10	Main Breaks	Jose Abraham	Fri, 5/31/13 Load Control, 12 PM	Kevin McNichol	Wed, 4/10/13 ARA, 10:00 AM	Matt Smith	Wed, 4/10/13 ARA, 10:00 AM	Gerald Stokes	Mon, 6/3/13 Load Control, 7:00 AM	George Kunkel	Tues, 5/21/13 ARA, 12:30 PM	Jeff Simmet	Tues, 5/21/13 ARA, 12:30 PM
Abey	11	Nitrification	Gary Burlingame	Wed, 4/3/13 BLS, 10:00 AM	John Consolvo	Thurs, 4/4/13 BLS, 9:30 AM	Ya-chi Tsao	Wed, 4/10/13 ARA, 10:00 AM						
Jonathan	12	Pipe Rehabilitation & Replacement	Steve Furtek	Wed, 6/26/13 ARA, 10:00 AM	Christine Marjoram	Wed, 6/5/13 ARA, 11:00 AM	Brendan Reilly	Wed, 4/10/13 Load Control, 10:00 AM	Jeff Simmet	Fri, 6/7/13 ARA, 11:00 AM				
Dennis	13	Inorganic Accumulation Control	John Consolvo	Thurs, 4/4/13 BLS, 9:30 AM	Kate Guest	Thurs, 6/6/13 ARA, 1:00 AM								
Joe	14	Pressure Management	Brendan Reilly	Fri, 4/12/13 Load Control, 2:30 PM	Cliff LaHann	Tues, 4/30/13 Load Control, 10:00 AM								
Bishel	15	Security & Online Monitoring	John Vogtman	Wed, 4/3/13 BLS, 8:00 AM	Charles Zitomer	Fri, 4/5/13 ARA, 1:30 PM	Ralph Rogers	Thurs, 4/4/13 BLS, 1:00 PM	Jim Golembeski	Wed, 3/27/13 ARA, 9:30 AM				
Jonathan	16	Storage Tank O & M	Rita Kopansky	Wed, 4/8/13 BLS, 10:00 AM	Bill Neary	Wed, 4/24/13 ARA, 10:00 AM	Cliff LaHann	Tues, 4/16/13 Load Control, 2:00 PM	Ralph Rogers	Thurs, 4/4/13 BLS, 1:00 PM	John Vogtman	Tues, 4/16/13 BLS, 10:30 AM		
Bishel	17	Water Age Management	Rita Kopansky	Wed, 4/3/13 BLS, 9:30 AM	Jose Abraham	Thurs, 4/11/13 Load Control, 9:00 AM	Cliff LaHann	Tues, 4/23/13 Load Control, 10:00 AM	David Specht	Thurs, 4/11/13 Load Control 11:00 AM				
Jonathan	18	Water Loss Control	George Kunkel	Tues, 4/2/13 ARA, 10:00 AM	Tony Varano	Tues, 4/2/13 Load Control, 2:45 PM	Cliff LaHann	Wed, 4/17/13 Load Control, 10:00 AM						
Bishel	19	Water Sampling & Response	Rita Kopansky	Wed, 4/3/13 BLS, 9:30 AM	Gary Burlingame	Wed, 4/3/13 BLS, 1:00 PM	John Vogtman	Wed, 4/3/13 BLS, 8:00 AM	David Specht	Thurs, 4/11/13 Load Control 11:00 AM				

BLS - Bureau of Lab Services
ARA - Aramark Building
BWTP - Belmont Water Treatment Plant

Group#1 - Water Chemistry
Group#2 - Hydraulics
Group#3 - Infrastructure

PWD Self-Assessment Process: SME Interviews

- For each SME interview:
  - Interview meeting notes were recorded
  - Responses to pre-interview questions were recorded
    - PSW Self-Assessment Guidance Manual
    - WaterRF 4109 – Criteria for Optimized Distribution Systems
  - Other documents as needed were obtained
    - SOPs, program manuals, maps, etc.
  - 2-3 SA team members present/interview



PWD Self-Assessment Process: SME Interviews

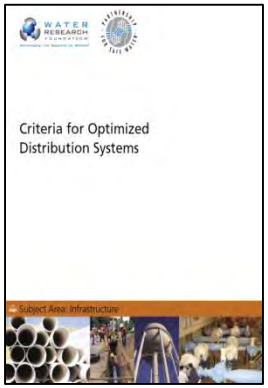
- SME interview questions: Nitrification

Self-assessment Category	Questions for Gauging Optimization	Response		
		Not Optimized	Partially Optimized	Optimized and Documented
Nitrification Control (Systems that utilize chloramine disinfection) (Chapter 3)				
3.27 Nitrification Detection	Are free ammonia, nitrite, and HPC tested routinely? Are action levels established?			
3.28 Nitrification Control	Are disinfectant residuals maintained >0.50 mg/L total chlorine? Are storage tanks monitored in areas lacking circulation? Are zone boundaries and dead ends monitored for nitrification?			

PWD Self-Assessment Process: SME Interviews

- SME interview questions: Nitrification

CHLORINE RESIDUAL - STEP 2							
Chlorine Residual Self-Assessment Checklist							
		Response			Documented		
Self-Assessment Category	Questions for Gauging System and Operational Adequacy	Yes	No	NA	Yes	No	Additional Information or Evaluation Needed
Nitrification Control	If the utility uses chloramine, has system identified and minimized or eliminated areas where total chlorine (chloramine) residuals dissipate quickly or more than typically experienced system-wide?	--	--	--	--	--	--
	Does the chloraminating utility have a program to track and trend nitrification indicators such as free ammonia, nitrite, and HPC-R2A? Please provide data examples with utility action triggers.	--	--	--	--	--	--
	Does the utility monitor and control the system to meet nitrification indicator target levels?	--	--	--	--	--	--
	Are nitrite levels within acceptable levels (based on system specific criteria) even in areas with low chlorine?	--	--	--	--	--	--
	Are HPC levels within normal ranges (based on system-specific criteria) even in areas with low chlorine?	--	--	--	--	--	--
	Does system track flush volume and frequency needed to maintain chlorine residuals and nitrification control?	--	--	--	--	--	--
	Has the utility identified ways to optimize water turnover, and minimize water waste?	--	--	--	--	--	--
	Does utility monitor chlorine residual regularly in areas prone to nitrification and take immediate corrective actions if system-specific targets are not met?	--	--	--	--	--	--
	Is water from storage facilities tested for nitrification indicator parameters and does this testing show that nitrification is controlled?	--	--	--	--	--	--



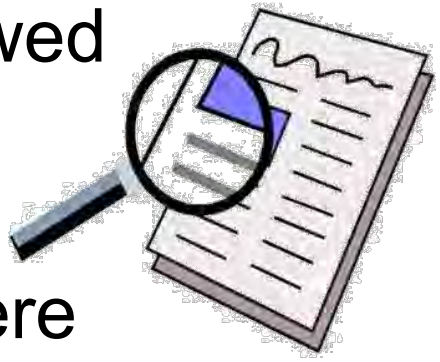
PWD Self-Assessment Process: SME Interview Reports

Subject Matter Expert Interview Summary Sheet

1) PIV (particular topic)
2) Report author (interviewer info)
    a. Date/time
    b. Location
    c. Time spent (meetings, prep, interview, report prep)
3) Interviewee
    a. Name
    b. Civil Service Title
    c. Unit
    d. Working Title
4) PIV
    a. Description of utility specific best management practices and PWD metrics used to measure effectiveness of procedures
        i. Description of PWD protocols/practices/procedures
        ii. If utility practices are guided by regulatory requirements/direct governing bodies include these directives
    b. If the PIV is considered optimized by the *Self-Assessment Guide.*
        i. Prepare and submit a statement supporting that the PIV is "optimized"
    c. If PIV is not optimized, identify Performance Limiting Factors. (PLF's)
        1. Identify areas that need to be achieved to reach optimized status
        2. List the recommended changes\improvements from the SME which will improve performance.
        3. Identify improvements from the interviewer's research/management/subject knowledge.
        4. Categorize PLF's with respect to Improvement Planning
            a. System Design
            b. Operating Procedures
            c. Maintenance Practices
            d. Administrative issues
        5. SME's recommendation on priority for improvement; High, Medium, Low
        6. SME's recommendation on schedule for improvement: Short, Medium, Long term (define short as 1-3 yrs, medium as 4-9 yrs, and Long term as >10 yrs?)
    d. Does SME agree with PSW optimization criteria?
        i. If not, why
5) Recommendations/Comments
6) Attachments
    a. Optimization Assessment Tool (pdf or Excel) from PSW
    b. Self-Assessment Worksheets (pdf or Word) from PSW

PWD Self-Assessment Process: SME Interview Reports

- For each PIV, individual SME summary reports (*slide 24*) were developed and distributed to each SME interviewed
  - Disinfectant Residual
    - 3 Individual SME summary reports



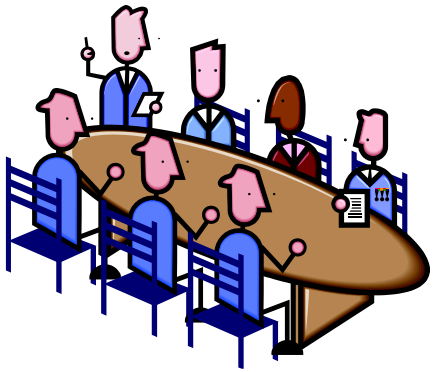
- For the respective PIV, SMEs were requested to review their individual summary report and their fellow SMEs reports
  - Disinfectant Residual
    - all disinfectant residual SMEs reviewed all 3 individual SME reports regarding disinfectant residual

PWD Self-Assessment Process: SME Interview Reports

- SMEs were requested to verify (or clarify) their respective reports
  - Any changes were requested to be made via Microsoft's "track changes" option
- SMEs were requested to review their fellow SME reports for the respective PIV and provide comments as needed
- Changes were incorporated and reflected in the individual SME reports
- For each PIV, following any changes, the respective individual SME reports were compiled into 1 PIV summary report

PWD Self-Assessment Process: SME Interview Reports

- Steering Committee hosted various workshops to review the PIV summary reports and identified:
  - PLFs (potential limiting factors)
    - **14** total PLFs
  - PI^2 (performance improvement initiatives)
    - Not limited to PSW
    - Additional concerns and suggested actions to further enhance optimization
    - **73** total PI^2



PWD Self-Assessment Process: PLF Identification

- During the SA process, a comprehensive summary of questions (*slides 22, 23*) for assessing optimization were examined and responded to as:
  - Optimized & Documented
  - Partially Optimized
  - Not Optimized
- If identified as partially optimized or not optimized:
  - The item must be improved to achieve optimization

    OR
  - Justified as to why it is not an issue for the PWD distribution system

PWD Self-Assessment Process: PLF Identification

- After PLF categories were identified, they were prioritized in order of:
  - Impact
  - Urgency
- Unit(s) were assigned in regards to responsibility for improving the identified PLF
- Impact Categories were identified:
  - Water Quality
  - Cost
  - Main Breaks
  - Security
  - Customer Service
  - Infrastructure Reliability
  - Operational Practices
  - Water Quality Model Updates

PWD Self-Assessment Process: PLF Findings

- SA process identified **14** PLFs (21.5%) & the group(s) assigned to evaluate the issue:

– 1- Disinfectant Residual	BLS, WT, WC
– 2- Main Break Management	P&R, LdC
– 1- Flushing	WC
– 2- Maintain Valves, Hydrants	WC
– 1- Internal Corrosion Control	WC, P&R
– 1- Nitrification Control	BLS
– 3- Post Precipitation Control	BLS, WT, P&R, WC
– 1- Security, E-Management	LdC, WT
– 1- Water Age Management	BLS
– 1- Chapter 4 – Update Model	LdC

BLS – Bureau of Laboratory Services
WT – Water Treatment
WC – Water Conveyance
P&R – Planning & Research
LdC – Load Control

PWD Self-Assessment Process: PLF – Nitrification Control

Self-assessment Category	Questions for Gauging Optimization	Response			Prioritization			Assigned Group(s) (preliminary)	Impacts (preliminary)	PLF Comments
		Not Optimized	Partially Optimized	Optimized and Documented	Impact	Urgency	Priority Total			
					1 - 5	1-2-3	Total			
Nitrification Control										
(Systems that utilize chloramine disinfection)										
Nitrification Control	Are disinfectant residuals maintained > 0.50 mg/L total chlorine? Are storage tanks monitored in areas lacking circulation? Are zone boundaries and dead ends monitored for nitrification?		x		3	2	5	BLS	WQ	Partially Optimized for chlorine residual but Optimized for monitoring of nitrification

- Optimized and Documented in regards to:
  - Routinely monitoring for free ammonia, nitrite, and HPC
  - Establishing action levels associated with nitrification
- Partially Optimized in regards to:
  - Maintaining Cl_2 residual > 0.50 mg/L

PWD Self-Assessment Process: PI^2 Findings

- SA Process identified **73** Performance Improvement Initiatives (PI^2) and the group(s) assigned to evaluate the issue:
  - Water Master Plan Project Team **9**
  - SME statements (NFAR) **7**
  - Unit Manager Assignments **57**

WC – 15	BLS – 14	CA - 11
P&R – 10	HR – 6	WT – 1

Note: NFAR; no further action required

PWD Self-Assessment Process: PI^2 – Summary

PWD Performance Improvement Initiatives (PI^2) - 73 total			
		#	%
Potential Limiting Factor Category	System Design	17	23
	Operations & Maintenance	17	23
	Administrative	39	53
Priority	Low	3	4
	Medium	37	51
	High	33	45
Time Frame	Short Term (1-3 years)	32	44
	Medium Term (4-9 years)	33	45
	Long Term (> 10 year)	8	11

PWD Self-Assessment Process: PI^2 – Nitrification Control

Performance Improvement Variable (Self-assessment Category)	Subject Matter Experts Comments PWD Improvement Initiatives (PI^2)	PLF Category			Priority			Time Frame			Comments from Steering Committee Members at Workshop Meetings (Responsible Party in Bold)
		System Design	Operations & Maintenance	Administrative	Low	Medium	High	Short Term	Medium Term	Long Term	
PIV Category	SME Comments	D	O&M	A	L	M	H	1-3 Yr	4-9 Yr	>10 Yr	
Nitrification											
Budget; staff retention	Staff turnover, especially in SRA (sampling techs and instrument techs) is making it difficult to conduct program responsibilities. Experience and knowledge is lost due to turnover. Options include; Increase pay or provide incentives for staff to stay, increase budget to pay for increased salaries, have HR advertise about in-house position transfer opportunities to BLS. The additional responsibilities that come with being part of DSOP make staff retention even more of a priority.			X		X			X		The Steering Committee decided that PWD's **HR** needs to evaluate a method to keep these positions filled; either upgrade the pay levels or establish an internal training program to produce a pool of candidates. A suitable hiring list must be established to fill existing approved vacancies. **HR** is to be requested to prepare an annual update report and to provide a copy to the PWD DSOP Program Manager.
Capital Investment; replace oversized water mains and valves	Oversized mains lead to longer water age, observations of reduced chlorine residual and the potential for nitrification to occur. Flushing larger mains are only marginally effective. Down-sizing parts of the water distribution system can be an effective solution to lower water age, achieving chlorine residual goals and minimizing nitrification, as long as sufficient fire flow can be maintained. Chlorine residual upkeep is an integral part of DSOP. Finding the money for construction projects that deal with downsizing mains should be a priority.	X					X			X	The Steering Committee discussed this issue and appreciates the importance of the suggestion. The PWD asset management program already considers this issue in the evaluation of water delivery requirements. The SC decided that this issue be evaluated by the project team preparing a **Water Master Plan**. An annual report should be prepared and forwarded to the PWD DSOP Program Manager.

- Budget, training, and capital investment were common concerns among various SMEs interviewed
- Throughout the SA process, many PI^2's were referred to the **Water Master Plan Project** team. Others were assigned to the Unit Managers suggesting the improvement initiative

PWD Self-Assessment Process: Process Resources

- Over 1200 hours of staff time committed during 2012, 2013, and 2014
- Staff hours distribution:
  - 28% Steering Committee
  - 49% Self-Assessment Team
  - 23% Subject Matter Experts

PWD Self-Assessment Process: Program Benefits

- Higher Water Quality
- Regulatory Compliance
- Customer Satisfaction
- Employee Involvement
- Understanding What's Happening
- Creation of an In-house Culture to Achieve Best Practices

PWD Self-Assessment Process: Lessons Learned

- SMEs may have differing perspectives
- Discussions about these perspectives/opinions are imperative so that all SMEs are understood and heard
- SA is not limited to PSW topics/questions and can be utility specific – it's a resource

PWD Self-Assessment Process: Lessons Learned

- Younger professional involvement:
  - Brought talent, enthusiasm and tools to the project
  - Provided them leeway to manage the project as SA team members
  - Beneficial opportunity for learning, information transfer, and networking within the organization
  - Career development potential

PWD PSW DSOP Moving Forward: Phase III Annual Report

- Continuous Improvement plan
  - Active spreadsheets containing tables with PLFs and PI^2s
    - Helps prioritization of PLFs
    - Helps show progress in addressing PI^2s
    - Helps establish action plans and document any changes to further reach distribution system optimization

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Questions?

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