



TOWN OF CHESTER BOARD OF SELECTMEN  
WATER COMMISSIONERS & ZONING BOARD OF APPEALS  
15 MIDDLEFIELD RD  
CHESTER MA 01011

**Monday February 8, 2021 at 6:00pm**

Remote meeting

Signing of warrants and meeting minutes done before the meeting

#1 Presentation of proposed strategic water plan from Dr. Gullick of Water Compliance Solutions. Discussion and possible vote to accept.

**Public Comments and questions (everyone must identify themselves before asking questions)**

**Meeting will adjourn**

*Any other matters not reasonably anticipated by the Chair at least 48 hours before the meeting.*

Please join my meeting from your computer, tablet or smartphone.

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Join from a video-conferencing room or system.

Dial in or type: 67.217.95.2 or inroomlink.goto.com

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# *Strategic Planning for the Chester Water Department*

*Chester, MA*

*February 8, 2021*



**Richard W. Gullick, PhD**  
Water Compliance Solutions, LLC  
Leominster, MA  
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# Objectives

**The Chester Board of Selectmen want to improve:**

- *water quality*
- *customer satisfaction*
- *regulatory compliance*

**Water Compliance Solutions, LLC** was tasked with facilitating development of a Strategic Plan to help guide the future operations of the Chester water system and meet these goals

# Tasks

- Response to MassDEP Sanitary Survey inspection
- **Strategic Plan**
- Asset management plan
- Operations and Maintenance Plan for the distribution system
- Treatment process evaluation
- Data management, liaison, administrative assistance, more

# Water Compliance Solutions, LLC

- Water industry executive, manager, scientist, operator
- BS, MS Public Health, PhD Environmental Engineering
- Licensed drinking water treatment operator (MA, RI, VA, NJ)
- Experienced with large and small water systems
- 2 years experience working with Chester Water Dept.
- Contracted with Chester for July 2020 to June 2021



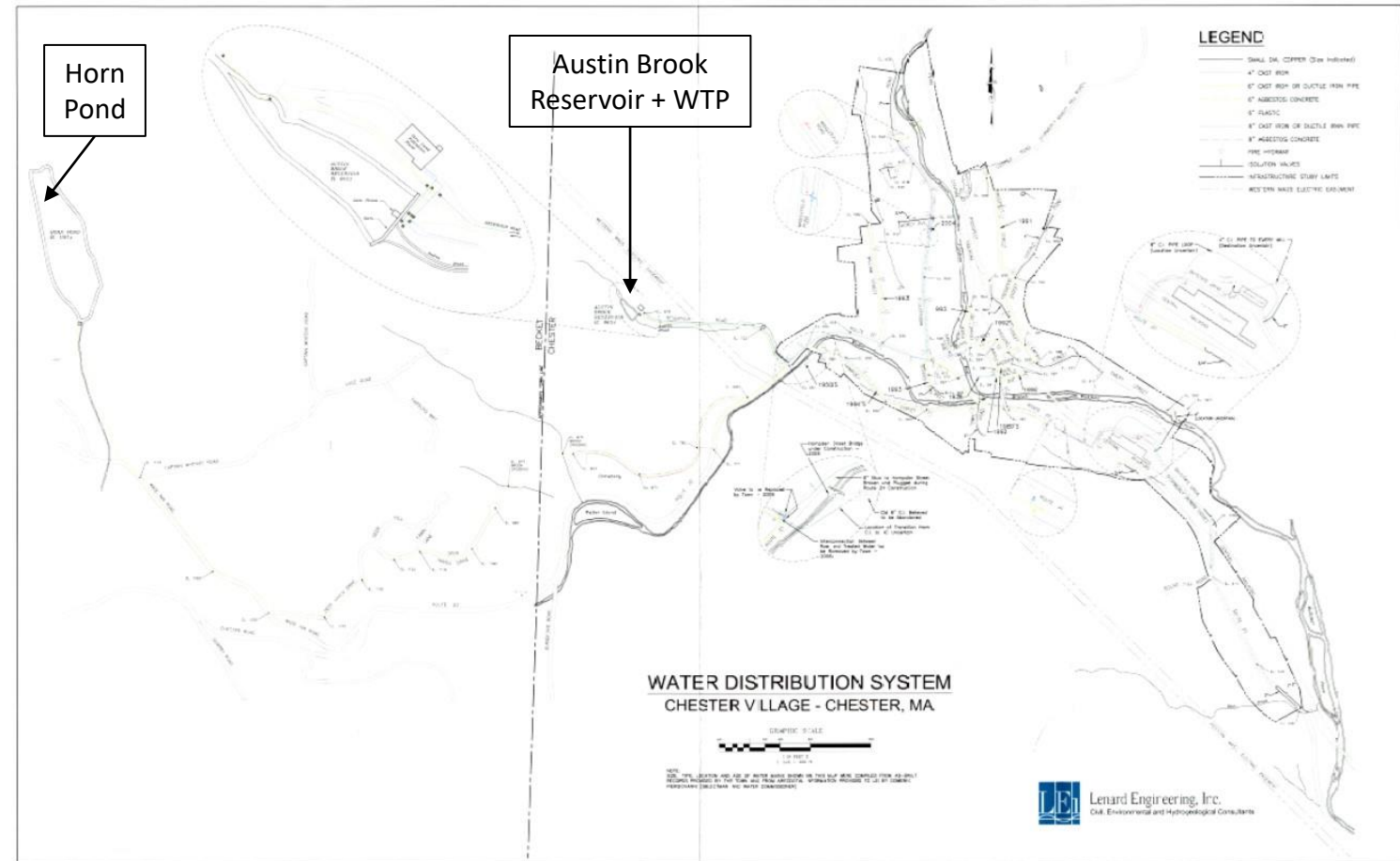
*Richard W. Gullick, PhD*





# Chester Water System

- Serves ~700 people via ~252 connections
- Averages ~45,000 gallons/day
- Two high-quality source waters
- Small, undeveloped watersheds
- No storage tanks; storage is in clearwell (chlorine contactor)
- MassDEP inspections identified regulatory compliance issues



# Source Waters

	Horn Pond	Austin Brook Reservoir
Source water	Primary supply	Backup supply
Volume (million gallons)	41	1.1
Safe yield (gpd)	170,000	70,000
Elevation (feet)	1,194	851
Watershed area (mi <sup>2</sup> )	1.25	0.6
Watershed land use	mostly undeveloped	mostly undeveloped

# Horn Pond



**Currently primary source;  
gravity flow from Horn Pond to treatment plant to town**



# Horn Pond





# Austin Brook Reservoir



**Backup source; requires raw water pumps**





**Gatehouse Building**



**Finished Water Building**



# Treatment Processes

## 1. FILTRATION

- Three slow sand filters remove particles and microorganisms
- Filter #3 has granular activated carbon (GAC) layer to remove natural organic matter (NOM)



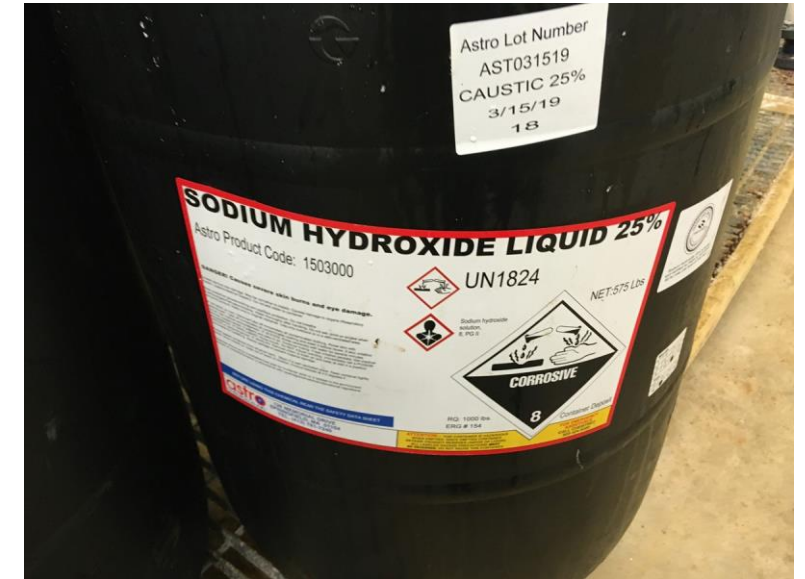
## 2. DISINFECTION

- Sodium hypochlorite added before and after clearwell
- Primary disinfection in plant, residual chlorine for dist. system

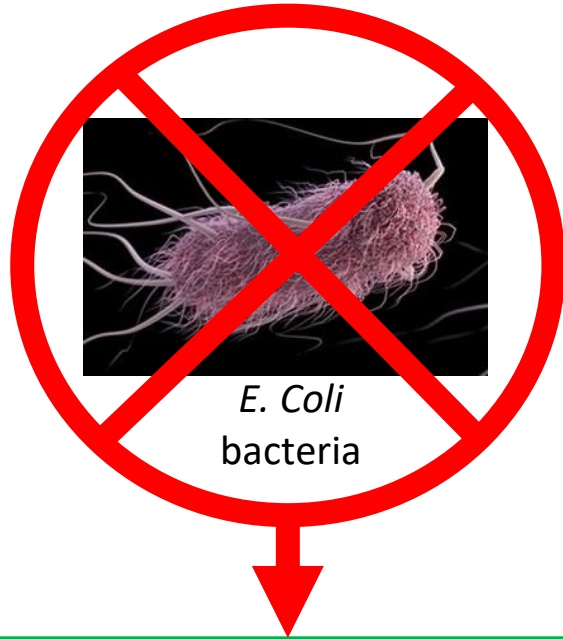


## 3. pH ADJUSTMENT

- Increase pH with sodium hydroxide
- Provides corrosion control



# Got issues?



*E. Coli*  
bacteria



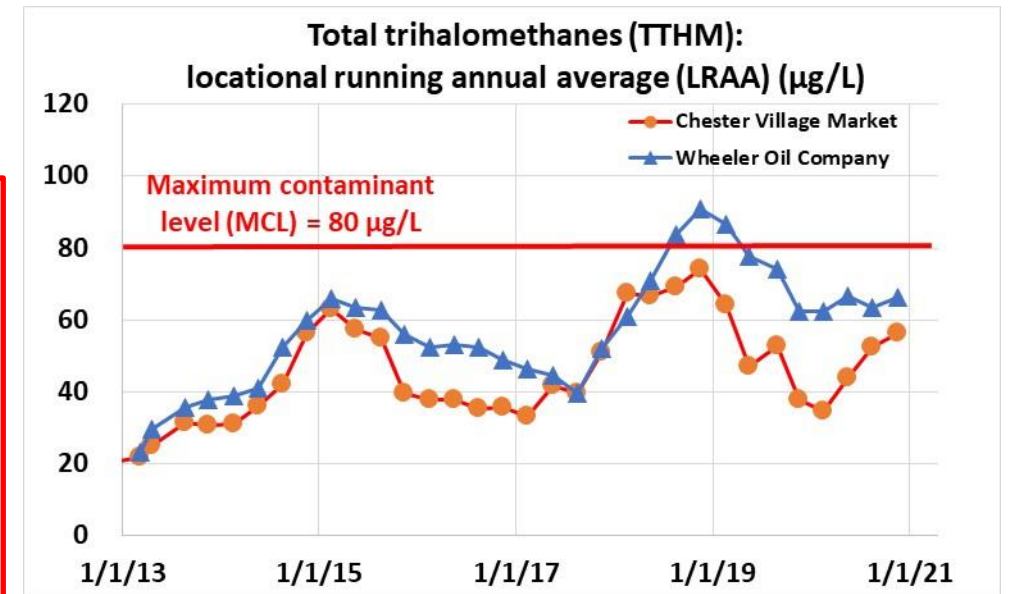
It's a balancing act – meeting  
disinfection requirements  
while controlling  
disinfection byproducts...

**WE WANT BOTH!**

Occasional  
colored water  
(yellow to  
brown)



Exceeded MCL  
for TTHMs in  
2018/19  
(chloroform)





# Strategic Planning Process



- Data evaluations, interviews, file search
- Five workshops with Strategic Planning Committee in fall 2020

Strategic Planning Committee:	
Town Staff	Kathe Warden, Kathy Engwer
Chester Water Improvement Committee (citizen volunteers)	Bob Daley, Rich Holzman, and Tom Bean
Water Commissioner/Selectman	Rich Holzman
Facilitator	Rich Gullick

# Prioritized Areas for Improvement

## Product quality

## Customer satisfaction

- Direction and support from town leadership
- Management system and accountability
- Treatment operations and record keeping
- Water quality data collection, verification, evaluation, and reporting
- Succession planning for certified operators
- No current plan for retaining institutional knowledge



## VISION

*Be a regional leader in rural drinking water supply, with our customers having high confidence and satisfaction in the quality of their water.*

## VALUES

The Chester Water Dept. is committed to the following values:

*Integrity  
Responsibility  
Accountability  
Collaborative*

## MISSION

*Our mission is to apply sustainable and cost-effective approaches to consistently deliver high quality water.*

# Proposed Strategic Plan

## PRIMARY DESIRED OUTCOMES

- \* Consistently good water quality*
- \* High customer satisfaction*
- \* Exceptional value*

# Four Goal Areas

## **Leadership and Management**

To provide adequate administration, oversight, and record keeping

## **Operational Optimization**

To consistently, reliably, and efficiently deliver high-quality water

## **Fiscal Responsibility**

To provide service in an economical and sustainable manner

## **Communication**

To share knowledge of operational results and system issues, and to improve public perception



# Strategies:

## Leadership and Management

1. Identify all necessary tasks (Activity list and schedule)
2. Investigate alternate organizational structures to accomplish tasks
3. Develop and implement new managerial system for the selected organizational structure
4. Develop job descriptions for all positions
5. Prepare a plan for staff succession

# Strategies:

## Operational Optimization

6. Install SCADA trends for all monitored parameters
7. Reestablish remote read-only capability for SCADA
8. Conduct regular instrument verifications and calibrations
9. Conduct semi-annual flushing
10. Conduct independent audit of the treatment processes, and implement any necessary improvements
11. Consider installing an aeration system to remove THMs
12. Consider installing treatment to remove manganese

# Strategies:

## Fiscal Responsibility

13. Develop an Asset Management Plan
14. Conduct full-cost budgeting
15. Conduct Rate Study and establish equitable rates
16. Ensure expenses and income are properly accounted for
17. Actively collaborate with a variety of organizations to leverage free and low-cost services



# Strategies:

## Communication

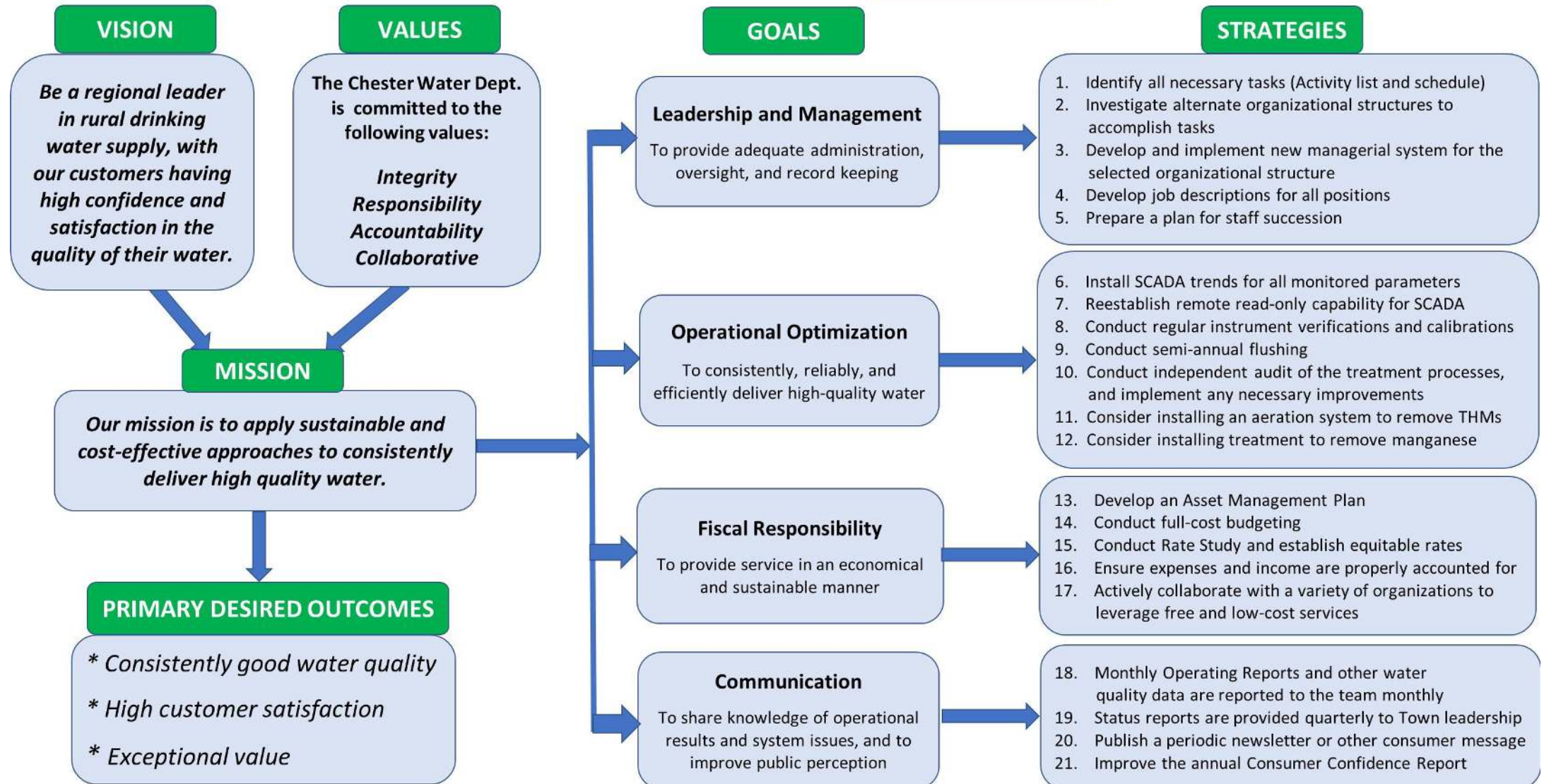
18. Monthly Operating Reports and other water quality data are reported to the team monthly
19. Status reports are provided quarterly to Town leadership
20. Publish a periodic newsletter or other consumer message
21. Improve the annual Consumer Confidence Report

# PROPOSED STRATEGIC PLAN

## CHESTER WATER DEPARTMENT



Version 12/31/2020





# Alternate Organizational Models (#2)

- **Current system**
- **Highway Dept. assumes responsibility for water system** (perhaps as a Dept. of Public Works?)
- **Regionalization compact** with nearby water system(s)
  - Pioneer Valley Planning Commission investigating options
  - UMass-Amherst class case study report

# Management System (#3) and Succession Planning (#5)

- “Department of Public Works” approach
- Highway Dept. assumes full responsibility for the water system, including administrative duties, treatment plant, and distribution system operations
- Staff learn the skills, do the work, gain experience, and qualify for licenses
- Highway Dept. staff are already doing some of the distribution system O&M and cleaning the slow sand filters
- Designate one department employee to work as the water system leader; other staff can also train and get experience
- Primary and Secondary Certified Operators are part of department staff, reporting to the Foreman
- Staff get trained by the Primary and Secondary Certified Operators
- Must employ or contract with Certified Operators, at least until staff get licenses

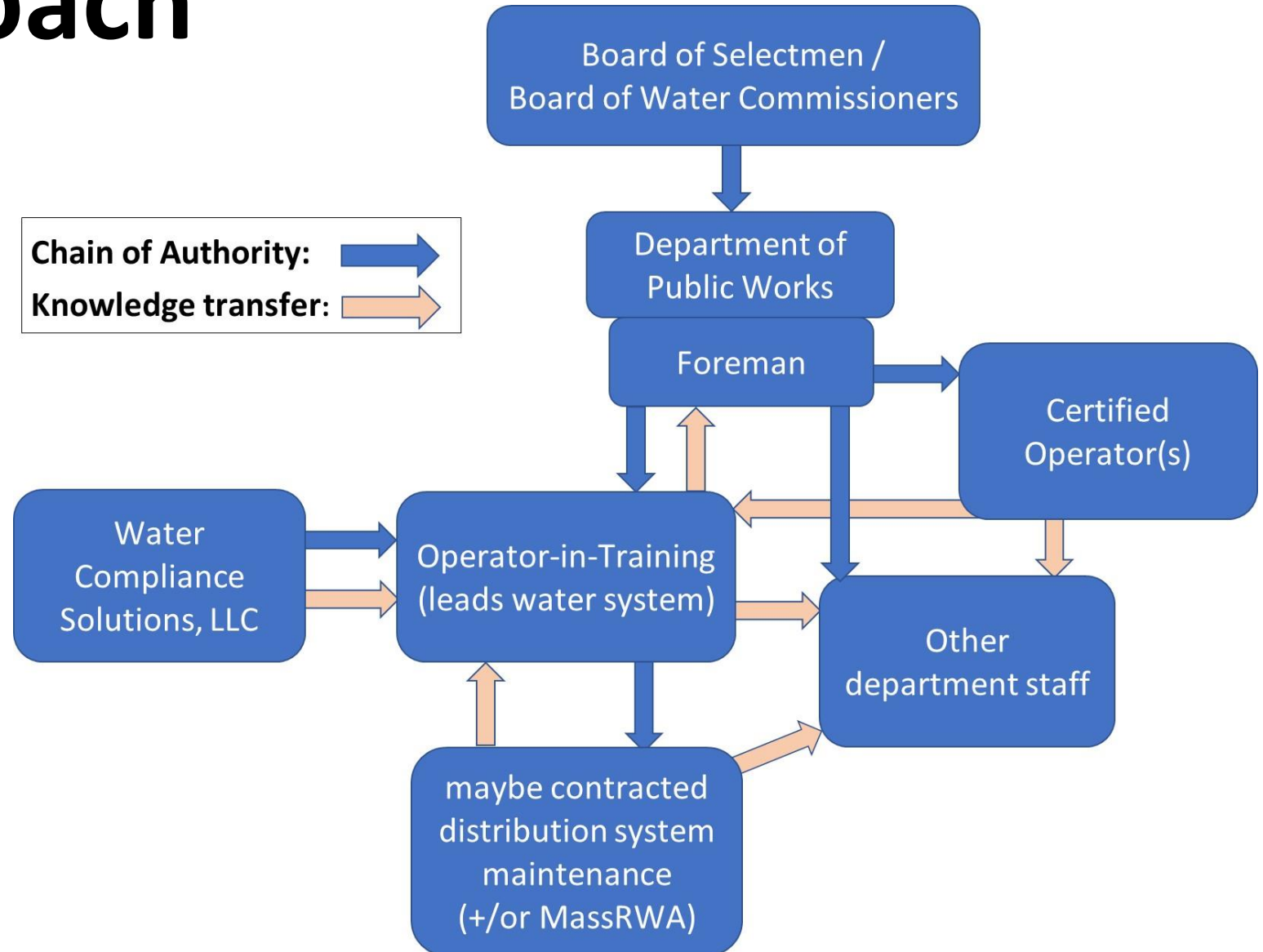


**WCS provides a strong foundation** with organization, direction, and guidance, effectively serving as the superintendent, trainer, professor, mentor, and more!



# DPW approach

- ✓ **Fast-track approach to develop Chester's own staff of trained and licensed drinking water operators**
- ✓ Staff get experience in Chester from the Certified Operator(s) and Water Compliance Solutions
- ✓ Short-term investment, with long-term benefits and payoff
- ✓ Work gets done, experience is gained, all facets of operations improve, and knowledge is retained within the town



# Operator-in-Training responsibilities

- Gets involved in everything “water”
- Reports to DPW Foreman
- Leads the water system under guidance and supervision from Water Compliance Solutions
- Has responsibility for making sure everything gets done
- Leads distribution system work
- Completes numerous Activity List tasks, led and taught by Water Compliance Solutions
- Trains with Certified Operator daily, and learns the nuts and bolts of the treatment plant
- Learns about different technical, operational, regulatory, managerial, and administrative aspects of the public water supply business
- Completes operator training class
- Obtains treatment and distribution system operating licenses ASAP
- Shares learned knowledge with other staff, helping them also become licensed certified operators



# Alternative operator license requirements

- a) 1 year full-time experience required (2,000 hours, or 250 eight-hour days) for both treatment and distribution licenses (with 2 years college)
- b) Special Provision for Small System Operators: Work on each treatment and distribution for “any part of a day” for 250 days (with 2 years college), which may be concurrent
- c) A “Temporary Emergency Certificate” to operate may be obtained from licensing Board; valid to operate for six months (not renewable)
- d) The licensing Board “may waive the education and/or experience requirements in exceptional situations as determined by the Board”

# How do they get that experience?

- **Simple – do the work, and credit the time**
- **Count experience time already earned**
- **If the staff can't go somewhere to get experience to learn the necessary skills, then bring the experience to them!**

- ✓ **Treatment license:** Operator-in-training (OIT) shadows the Certified Operator daily (2 hours is required each day)
- ✓ **Distribution license:** OIT responsible for and is involved in all distribution system work
- ✓ **Additional experience:** will be gained from other water system work supervised by Water Compliance Solutions
- ✓ **Outside contractors:** Use MassRWA and/or hire system maintenance contractors for short term service (e.g., hydrant flow tests, unidirectional flushing); staff accompany them for training
- ✓ **MassRWA:** currently helps with leak detection, rebuilding pumps, and finding service lines and shut off valves

# Advantages

- Most sustainable alternative
- Very economical over long term
- Can reduce or eliminate costs for contracting with licensed operators
- More internal control and accountability
- Less reliance on contract operators
- An organization can't succeed without knowledge
- Knowledge needs a place to live and thrive, so it can pass down through generations and grow over time
- The Operator-in-Training's "learn-as-you-go" approach will accomplish a lot of neglected work, while simultaneously learning skills, gaining required experience, and preparing for licensing exams



# More Advantages!

- When the water system does not require attention, staff time may be used for other work needs
- Local staff can fulfill emergency response requirements (residence within one hour of Chester)
- Uses homegrown talent (like a baseball's farm system instead of free agency)
- A compelling window of opportunity:
  - Water Compliance Solutions, LLC already involved
  - Strategic Plan has been developed and should be implemented
  - Be prepared for when the current operator retires
  - Highway Dept. staff enthusiastic
  - An employee is taking the required operator training class starting today (2/8/21)

# Increases effectiveness of WCS' work

- The work I've done is often not taken advantage of since there is really no one to share it with, follow up, and move it forward
- This plan would provide someone for me to give organizational structure, templates, and knowledge to
- My work could then take hold and root, allowing it to grow
- If you hired me as a quarterback, there is no runner to hand off to or receiver to throw the ball to
- Tasks that have been neglected would be completed, allowing us to move on to other issues sooner
- Operator-in-Training would help implement the Strategic Plan and complete the Activity List tasks

The speed and degree of success is in Chester's hands. The more you do, the more I do. The more you study, the more I teach. The more you complete, the more I assess and guide. The more you get done, the more I can do other things, and the more I can lead you to do and learn.

**That is how you quickly achieve the vision.**

# Requirements for DPW approach

1. As the regular supervisor, the Foreman is responsible for ensuring the water system work is completed
2. Operator-in-Training serves as the “Water Dept.” leader
3. Foreman and Operator-in-Training must ensure water system work receives appropriate priority
4. Weekend work and off-hour emergency responses for staff
5. DPW conducts regular meetings with consultant, Foreman, Operator-in-Training, Certified Operator, and other staff to report progress, have training, and do work (1 to 2 years)



# Requirements for DPW approach (cont.)

6. Commit 50 - 100% of one staff member's time to do water work for one year (Operator-in-Training)
7. Replace that work time with additional help hired for the department
8. Office space/work station, computer with internet, e-mail, printer/copier/scanner/fax machine, and cell phone
9. Laptop computer at water treatment plant
10. Continuing education
11. CMELD continues meter reading and billing

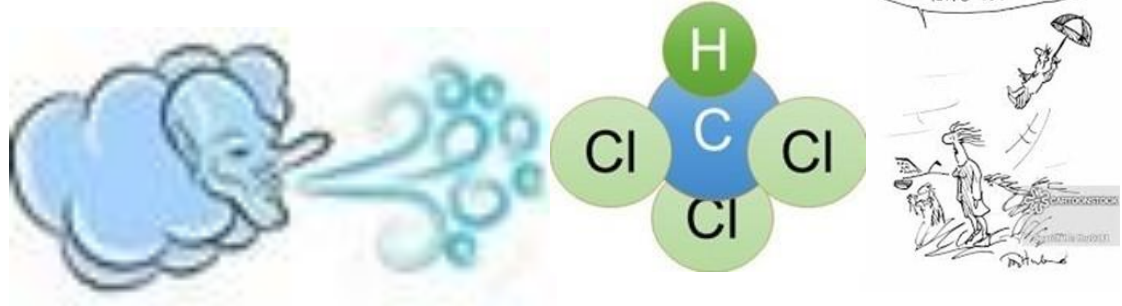
# Recommended Management System

## ❖ Fast-track approach to improved management and for developing Chester's own staff of licensed drinking water operators:

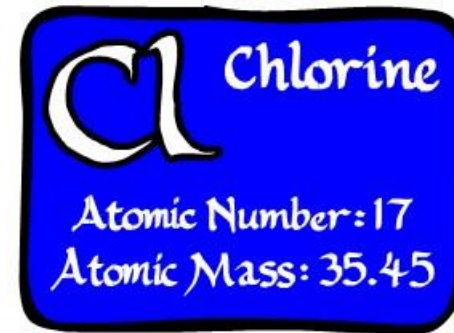
- Highway Dept. assumes responsibility for water system
- Dedicate 50-100% of one employee's time to water system for 1 year
- Staff to become licensed certified operators
- Primary and Secondary Certified Operators report to Foreman

# Primary Treatment Recommendations

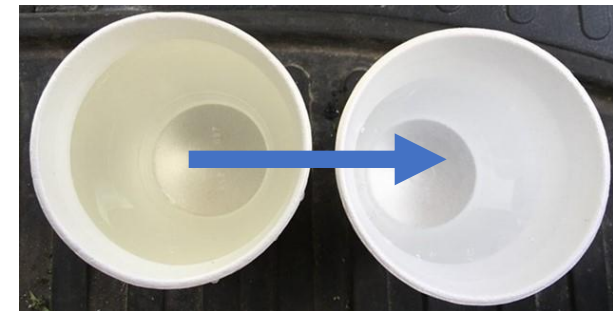
1. Install **aeration** in the clearwell for trihalomethane reduction – *literally blow them away!*



2. If aeration is installed, **then increase chlorine dose** for improved disinfection (while monitoring for HAAs + THMs)



3. Install oxidation/filtration for **manganese removal** to eliminate or reduce color





# Additional Expenses for 2021-2022

- Contracting with licensed operator(s) if current operator retires or is otherwise unavailable
- Increased staff time, especially short term, but will save \$\$ over time on contract operators
- Water quality monitoring (DBPs, TOC, Mn)
- Distribution system maintenance contractor(s) (e.g., hydrant flow tests)
- Design and construction of aeration system
- Design and construction of manganese removal system
- Consultation with Dr. Robin Collins (UNH)
- Consultant to lead and implement the 21 strategies, train and tutor staff, develop SOPs, update the operations manual, and catch up on numerous other water system needs (Water Compliance Solutions, LLC)

❖ **After one to two years, regular operating costs should be less than they are now!**

# 2021-2022 Preliminary Cost Estimates for Implementing the Strategic Plan

**up to 15 of the  
21 strategies  
have no added  
\$\$ cost!**

\* Estimated costs are over and above the current budget and expenses already contracted for. Does not include facility repairs such as needed for Filter #1, staff time costs, or contracts for Certified Operators if needed.

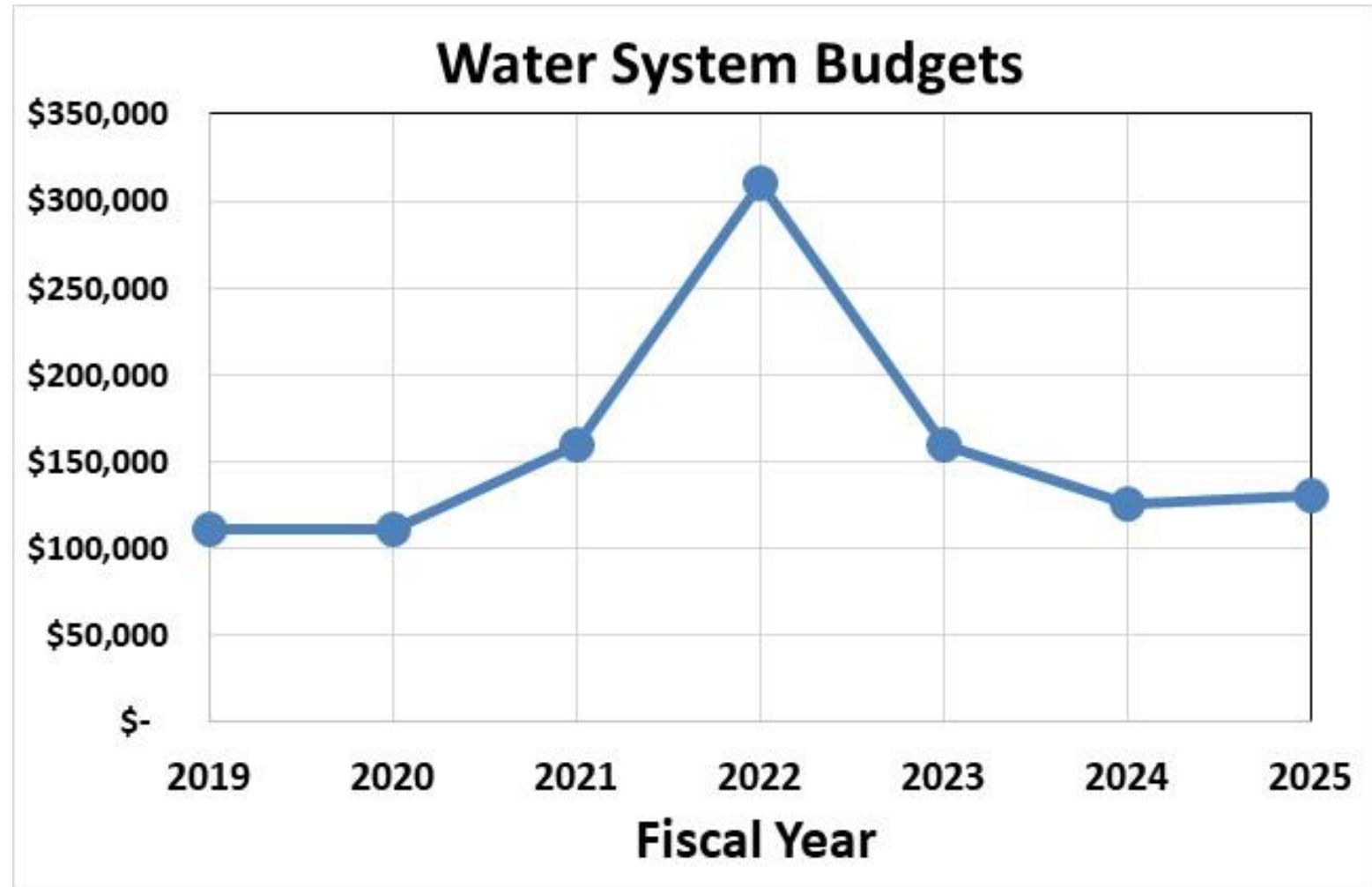
^ These estimates do not include detailed design, permitting, or construction of the aeration or manganese removal systems

# Includes the treatment process audit (#10)

Est. costs*	ID#	Strategy	Priority
\$6,000	6 + 7	SCADA programming	Essential and urgent
\$6,000	8	Instrument calibration contract	Essential and urgent
\$5,000	10	Water quality monitoring	Essential and urgent
\$10,000^	11	Investigate aeration system for THMs	Highly desired
\$10,000^	12	Investigate oxidation/filtration system for manganese	Essential for eliminating color and improving confidence
\$5,000	11 + 12	Water quality monitoring for new treatment system startup	Essential after the systems are installed; NA beforehand
\$5,000	10, 11, + 12	Collaboration with Dr. Robin Collins (UNH)	moderate
\$9,000	1, 3, + 9	Distribution system maintenance	low
\$9,400	13	Facility maintenance and improvements	low
\$69,600#	All	Consultant (Water Compliance Solutions, LLC)	We'll get it done...
\$135,000 = TOTAL ESTIMATED COSTS (plus installation of new treatment systems)			

# Comparing past and future water budgets

- Future costs should approximate current costs
- Water quality will be much better!
- Improved administration, supervision, record keeping, customer communications, and much more!



Note - draft budgets do not include installation of aeration or manganese treatment systems



# Timeline for Strategic Plan

## Duration?

- Approximately 2-year program
- Most Strategic Plan initiatives would be completed in 2021; more activities in 2022
- Operator-in-Training should qualify for licenses in one year or less

## Starting date?

- ✓ I have **already started key initiatives**
- ✓ **Today** the drinking water operator course starts (Feb. 8 – Apr. 26)
- ✓ **Tomorrow** staff should start training with the plant operator
- ✓ **Tonight** – is the Board on board?

# Recommendations to Board of Selectmen

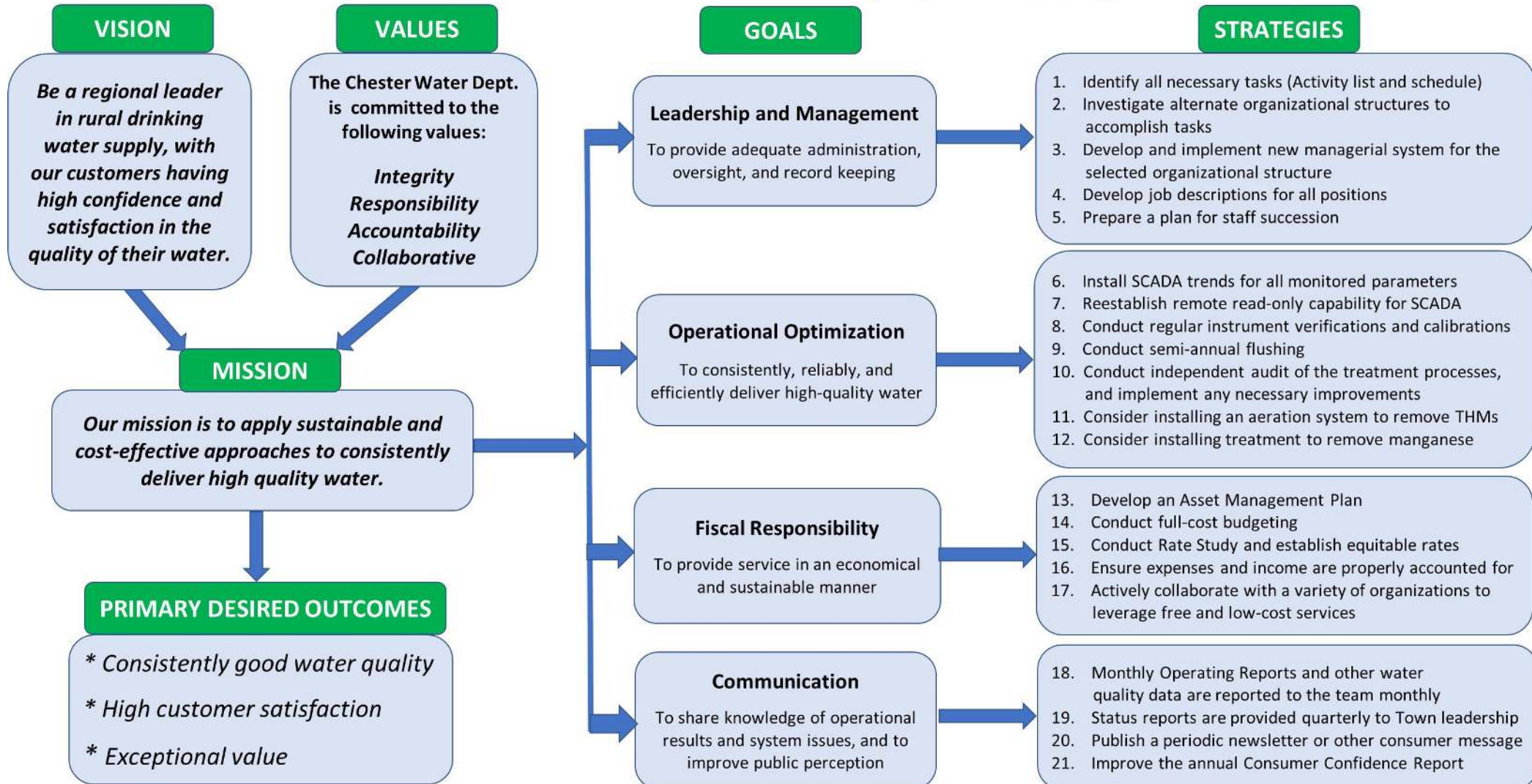
- ✓ Vote to adopt the proposed Strategic Plan
- ✓ Support the Strategic Plan with the necessary budget and staffing resources
- ✓ Have the Highway Department assume responsibility for the water system ASAP
- ✓ Appreciate the positive results!

# PROPOSED STRATEGIC PLAN

## CHESTER WATER DEPARTMENT



Version 1/22/2021







***PROPOSED***  
**STRATEGIC PLAN**  
**for the**  
**CHESTER WATER DEPARTMENT**  
**TOWN OF CHESTER, MASSACHUSETTS**

**DRAFT**

Prepared by:

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856-404-0484

February 3, 2021

## INTRODUCTION

Having a plentiful, high quality, and economical drinking water supply is essential for any community's health, welfare, and future development. With a goal of improving water quality, customer satisfaction, regulatory compliance, and operational sustainability, the Chester Board of Selectmen tasked Water Compliance Solutions, LLC with facilitating development of a Strategic Plan to help guide the future operations of the Chester water system. The Chester Water Department provides an average of about 45,000 gallons per day to approximately 252 customer connections in the downtown Chester area, and is subject to regulation by the Massachusetts Department of Environmental Protection.

The Strategic Plan was developed in collaboration with town staff and citizen volunteers during the second half of 2020, and was approved by the Chester Water Improvement Committee (CWIC) for consideration by the Chester Board of Selectmen and Chester Board of Water Commissioners. It should be noted that this is only a proposal, and until their approval is granted it has no official mandate or directive.

The proposed Strategic Plan is based on establishing a desired vision of what the future will be like for the Chester water system and its customers, and developing a plan that, if implemented, would be expected to attain that vision. The Strategic Plan answers three key questions – where are we now, where do we want to be, and how do we get there? Implementation of this proposed Strategic Plan is expected to help the Town of Chester improve water system operations to achieve consistently high water quality and increase consumer confidence and satisfaction.

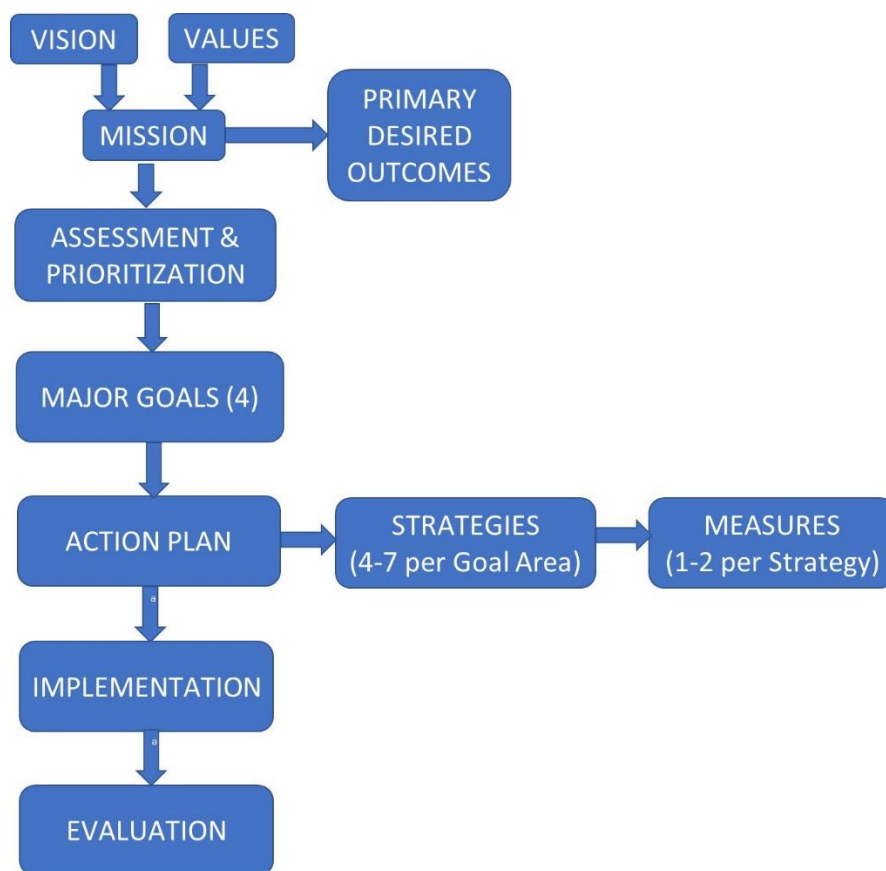
## METHODOLOGY

A Strategic Planning Committee was formed to guide development of the Strategic Plan, and included town staff (Kathe Warden and Kathy Engwer) and volunteer members of the Chester Water Improvement Committee (Bob Daley, Rich Holzman, and Tom Bean), and was led by Dr. Rich Gullick of Water Compliance Solutions, LLC. The group developed the plan during a series of five (5) workshops, each two to three hours long, as listed below in Table 1. The current Certified Operator declined to participate in the planning sessions.

**Table 1. Strategic Planning Workshops**

Meeting #	Date	Agenda
1	8/27/20	Introduction to water system basics (by RCAP Solutions)
2	9/24/20	Vision, values, mission
3	10/1/20	Revisit vision, values, mission; start assessment
4	10/15/20	Assessment + prioritization; goals
5	11/19/20	Finalize goals, strategies, and metrics; discuss organizational/management structures and activity list

The strategic planning process used is outlined in Figure 1. The planning was started by establishing a vision for the water system, and defining the organization's core values. Based on those, a mission statement was developed to provide general direction. Next, an assessment of the water system's operation and management was conducted, and the identified issues were prioritized. Based on these results, four high-level goal categories were identified to support achieving the vision.



**Figure 1. The Strategic Planning Process**

An Action Plan consisting of twenty-one (21) separate strategies was then developed by Water Compliance Solutions to help accomplish the goals. The actions, initiatives, and projects selected for these strategies focused on low-cost solutions wherever possible. Each strategy includes identification of the responsible parties for the various programs and activities, necessary resources, timelines, and specific metrics for measuring success. Throughout the process, attention was paid to ensuring the discussions and proposed activities were addressing the vision, and if needed the vision can be modified to account for limitations in resources or a change in objectives. The completed draft plan was reviewed by the Chester Water Improvement Committee and approved for presentation to the Board of Selectmen and Board of Water Commissioners. Once



the Action Plan has been developed and approved, the next step is to implement the actions, and then assess the success of the work for meeting the desired outcomes and achieving the vision.

It was important for the strategic planning process to methodically identify what the actual problems are that need to be solved, by thoroughly vetting all possibilities, and asking as many levels of “why” as were necessary to expose the actual fundamental cause of the symptoms that need improvement. Anecdotal evidence was to be avoided without support of reliable data or other documentation. Only after the true underlying causes of the various issues have been identified can the most economical and sustainable solutions reliably be selected. Otherwise solutions may be suggested to mask problems or deal only with symptoms and not the underlying cause.

### **Vision, Values, and Mission Statements**

A vision statement describes “where” an organization wants the community, customers, and/or organization to be in the future, or the “state” or “condition” they hope to produce. A mission statement is the roadmap for accomplishing the organization’s vision. Values are a code of conduct that the organization and its staff are expected to live by during the mission, and contribute to the success of the vision.

#### ***Vision statements:***

- reveal the big-picture target of an organization or effort
- harness all of the organization's foresight into one impactful statement
- describe at a very high level the desired long-term results of the organization's efforts
- are future-based and meant to inspire and give direction to employees of the organization rather than to customers
- provide a concrete way for stakeholders, especially employees, to understand the meaning and purpose of the business

#### ***Mission statements:***

- describe the organization’s purpose and role within the service area
- clarify the what, who, and why of a company
- are based in the present and designed to convey why the business exists to both members of the company and the external community
- may include a general description of the organization, its function, and its objectives

#### ***Values:***

- are basic and fundamental beliefs that guide or motivate attitudes or actions
- are beliefs about good behavior and what things are important
- articulate an organization’s deeply held beliefs, norms, and qualities, which drive day-to-day activities

## Assessment and Prioritization

In order to thoroughly assess the current status of the water system's operation and management, workshop discussions were held based on each of the following topic areas to stimulate critical thought and analysis about the various strengths and weaknesses.

1. the critical elements of a public water system
2. ten key management areas
3. common challenges for utility managers
4. current trends for Chester's overall environment, and potential trends for the future
5. Chester's limitations and obstacles
6. technical, managerial, and financial assessment (using RCAP Solutions' survey)

Based on the assessment results, four high-level goal areas were identified to help achieve the vision and desired outcomes. Four to seven specific strategies (action items) were then identified for each goal area, for a total of 21 strategies. To improve the likelihood of success, each strategy was designed to be specific, measurable, attainable, relevant, and timely (SMART). With that in mind, the objective and expected impact of each strategy were identified and described, and then one or more metrics were assigned to help measure success. Suggestions for the following were also identified:

- Completion deadline
- Who's responsible to complete
- Who's responsible to confirm completion
- Resources needed
- Additional financial costs
- Primary challenges and critical success factors
- Relative level of difficulty

## ASSESSMENT RESULTS

The strategic planning process identified the perceived current strengths and weaknesses of the Chester Water Department. Shown below are the subject areas that were evaluated by Water Compliance Solutions and the Strategic Planning Committee. **Highlighted** subjects are those considered as most needing improvement. Those subjects are all then captured within the four goal areas to be addressed.

### 1. Critical Elements of a Water System

- Source waters
- Raw water intakes and pipelines
- Treatment system
- **Treatment operations and maintenance**
- Distribution system
- **Distribution operations and maintenance**

- Finished water storage
- Pumps, pump facilities, and controls
- Compliance with SDWA and other regulatory requirements
- Monitoring, reporting, data verification, and record keeping
- Technical, managerial and financial operations

## 2. The Ten Key Management Areas (EPA/USDA)

*Goals:*

1. Product Quality
2. Customer Satisfaction

*Methods:*

3. Operational Optimization
4. Financial Viability
5. Operational Resiliency (in terms of succession planning for sustainability)
6. Employee and Leadership Development (for sustainability)

*Benefits from consistently good water quality and service:*

7. Community Sustainability & Economic Development
8. Stakeholder Understanding and Support

*Already in good condition for Chester:*

9. Water Resource Adequacy
10. Infrastructure Stability

## 3. Common Challenges for Utility Managers (per RCAP training)

- Aging Infrastructure
- Rate issues:
  - long-term strategy
  - prioritize demands for expenditures
- Customer satisfaction and confidence with services and rates
- Operational issues:
  - Labor costs and material costs
  - Regulatory compliance and new requirements
- Workforce complexities:
  - Attracting and retaining staff
  - Succession planning
  - Knowledgeable and engaged Board members

## 4. Current trends for Chester's overall environment, and potential trends for the future

- A static population in the area limits funding and staffing opportunities
- An attitude by some that “it’s not my job” affects the ability to effectively use shared services
- Much institutional knowledge has been lost over the years, and there is no current plan for documenting and retaining the information known to the current Certified Operator who is nearing retirement

## **5. Chester's limitations and obstacles**

- A key ongoing long-term problem has been a lack of supervision and accountability, since there currently is no structured management or oversight for the Water Department
- With no one really in charge (other than the Certified Operator), communication between the Certified Operator and management has been too limited
- There is a small but committed group of Town leaders
- Other than the Certified Operator, there is limited knowledge in the Water Department and town government about water treatment plant operations
- There is a shortage of available Certified Drinking Water Operators in western Mass.

## **6. Technical, Managerial, and Financial Assessment**

The Technical, Managerial, and Financial (TMF) Assessment survey completed in July 2019 by RCAP Solutions staff was reviewed. Having completed the five discussion areas above, there was nothing new left for the TMF assessment to add. This dialog emphasized many of the same points as had already been discussed about the management structure, operations, water quality, finances, and regulatory compliance.

## **PROPOSED STRATEGIC PLAN**

A summary of the proposed Strategic Plan is provided in Figure 2. A more detailed list of the 21 strategies is included as Table 3. Several strategies are already in progress, or are activities that should already be part of standard operating procedures for a water utility. Some are quite simple, while others are capital projects.

Strategy #1 involves identifying all of the necessary tasks for management and operation of the water system, along with schedules and deadlines, who is responsible for each task, and the associated expectations. A draft of the Activity List has already been developed.

Strategy #2 involves investigating two alternate organizational structures, including (1) placing water system responsibility with the Chester Highway Department, and (2) a regional compact with other nearby water systems for utility operations, management, and administration. The Activity List being developed for Strategy #1 includes separate lists for who would be responsible for each task under both of these management alternatives, in addition to the current structure.

An environmental engineering class from the University of Massachusetts at Amherst recently completed a case study on the Chester Water System, including an evaluation of alternative regionalization models. The Pioneer Valley Planning Commission is taking the lead on discussions with other nearby water systems about potential regional collaborations. Both efforts are of no financial cost to Chester.



## FINANCIAL COSTS

In order to support the mission and achieve the desired vision, Chester will need to provide additional attention, resources, and funding to the Water Department. Substantial positive change cannot be expected without additional investment into water system operations. But with resolve, effort, and some additional funding, the vision of the proposed Strategic Plan can be met through application of low-cost solutions.

Estimates of the additional costs for implementing the proposed Strategic Plan's different strategies are provided in Table 2. Up to 15 of the 21 strategies have zero additional cash costs, as they use town employee labor, or are already budgeted or contracted for.

**Table 2. Preliminary Cost Estimates\* for Implementing the Proposed Strategic Plan**

Strategy from Proposed Strategic Plan	Strategy #	Estimated costs**	Priority
SCADA programming	6 + 7	\$6,000	Essential and urgent
Instrument calibration contract	8	\$6,000	Essential and urgent
Water quality monitoring	10	\$5,000	Essential and urgent
Investigate aeration system for THMs <sup>^</sup>	11	\$10,000	Highly desired
Investigate oxidation/ filtration system for manganese <sup>^</sup>	12	\$10,000	Essential for eliminating water color and improving consumer confidence
additional water quality monitoring for startup period of two new treatment systems	11 + 12	\$5,000	Essential after the treatment systems are installed; not applicable beforehand
Collaboration with Dr. Robin Collins (UNH)	10, 11, + 12	\$5,000	Moderate
Contracts and tools for distribution system maintenance (e.g., hydrant testing, valve exercising, flushing)	1, 3, + 9	\$9,000	Low
Facility maintenance and improvements, computers/printer	13	\$9,400	Low
Consulting support (lead, organize, implement the 21 strategies, training and tutoring, and catching up on various other water system needs)	All	\$69,600	We'll get it done...
TOTAL =		\$135,000	

\* Assumes the proposed Treatment Process Audit (#10) is included in the next contract with Water Compliance Solutions, LLC, which is included in the table. This does not include needed repairs to structures such as Filter #1.

\*\* Estimated costs are over and above the current budget and expenses already contracted for. Also does not include contract operations if needed.

<sup>^</sup> These estimates do not include detailed design, permitting, or construction of the aeration or manganese removal systems

The largest new expense would be the design and implementation of a manganese removal system, the cost for which will be determined as part of Strategy #12. Another capital expense would be design and installation of an aeration system for removal of trihalomethanes (Strategy #11). Aeration systems are highly effective and can be relatively inexpensive to install, providing a high benefit/cost ratio. Consultant services are needed for leading and organizing, implementing the 21 strategies, developing standard operating procedures (SOPs) and updating the operations manual, training and tutoring staff, and catching up on numerous other water system necessities.

## IMPLEMENTATION OF THE STRATEGIC PLAN

Adoption of this proposed Strategic Plan by the Chester Board of Water Commissioners and the Chester Board of Selectmen should be intended as a sign of commitment to providing the necessary resources to implement the plan in a timely manner. Once approved, one of the first steps would be to focus on Strategy #2 to select an organizational structure for future operations, and then set up the new management system (Strategy #3), including establishing job descriptions (Strategy #4) and task assignments (Strategy #1) for all levels of the organization. While that is being worked on, progress can be made on the other strategies, many of which are relatively simple yet productive.

I believe that implementing this Strategic Plan, along with sound standard operating procedures, is the fastest and most economical path forward for Chester to realize their vision for the water system and...

***“Be a regional leader in rural drinking water supply, with our customers having high confidence and satisfaction in the quality of their water.*”**

# PROPOSED STRATEGIC PLAN

## CHESTER WATER DEPARTMENT



Version 1/4/2021

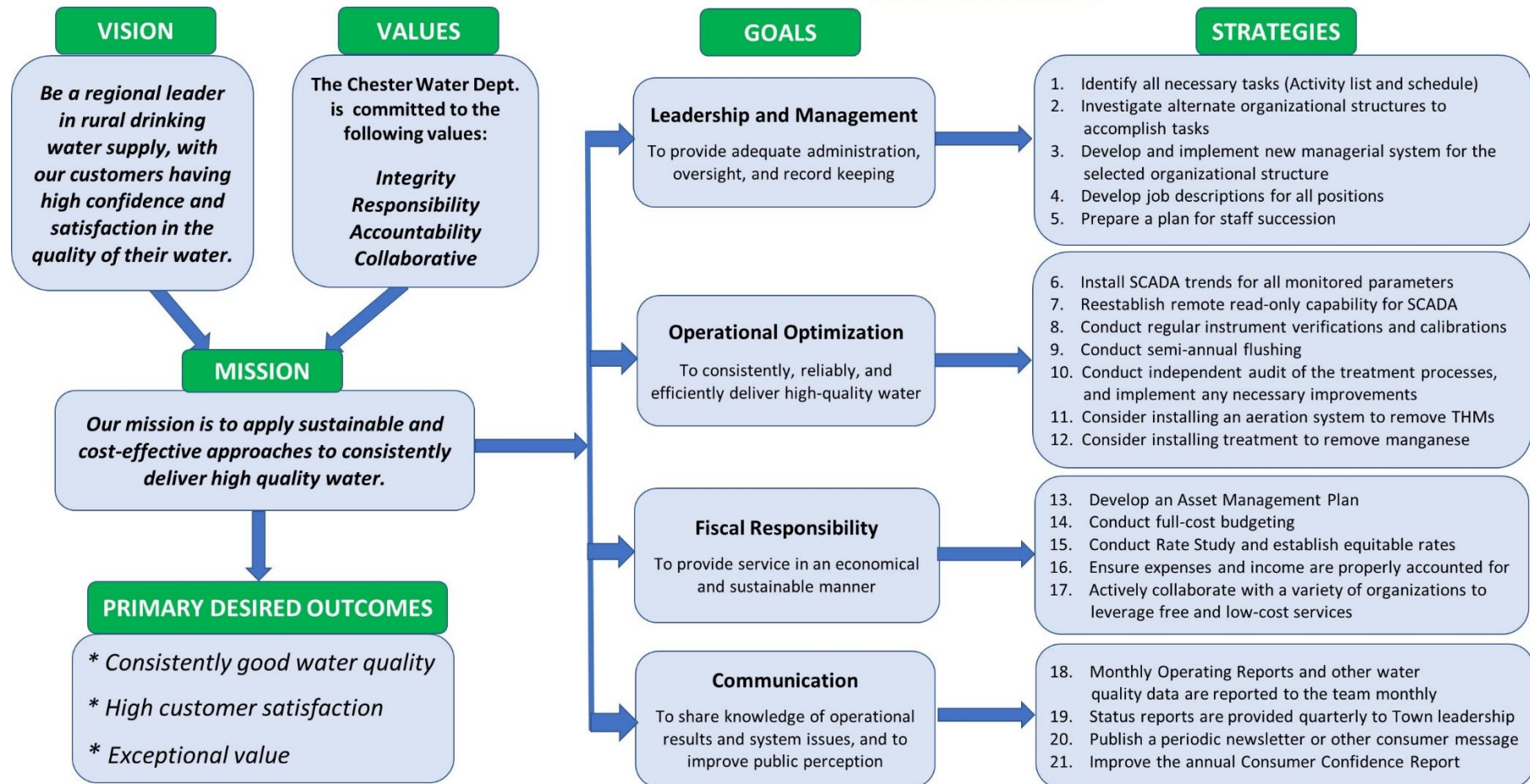


Figure 2. Summary of Proposed Strategic Plan

**Table 3. Details of the Proposed Strategic Action Plan**

PROPOSED STRATEGIC PLAN		CHESTER WATER DEPARTMENT	Updated 1/22/21	
GOAL AREA	#	STRATEGIES	OBJECTIVE AND EXPECTED IMPACT	METRICS
<b>LEADERSHIP AND MANAGEMENT</b> – To provide adequate administration, oversight, and record keeping	1	Identify all necessary tasks, who is responsible, and associated expectations	Avoid missing important tasks and deadlines, and reduce conflicts between team members	Complete the Activity List
	2	Investigate potential organizational structures, including (a) Hwy Dept as lead, and (b) regionalization for operations and admin/management	Provide improved administration and accountability	Complete evaluation describing the options for a new organizational structure
	3	Develop and implement a managerial system that includes a well-defined chain of command with resulting supervision and oversight of all work areas	Improve accountability and managerial oversight	Complete new organizational chart, with description of oversight responsibilities
	4	Develop job descriptions for all positions (or for all sets of responsibilities)	Clarify staff responsibilities, reduce conflicts, and help ensure all necessary tasks are done	Completed job descriptions for Board approval (at minimum, for Operator)
	5	Prepare a plan for staff succession	Provide sustainability; methodology may depend on organizational structure used	Succession plan is completed



#	FREQUENCY	COMPLETION DEADLINE	RESPONSIBILITY TO COMPLETE	RESPONSIBILITY TO CONFIRM SUCCESS	RESOURCES	ADDITIONAL COSTS	PRIMARY CHALLENGES AND CRITICAL SUCCESS FACTORS	LEVEL OF DIFFICULTY
1	Once (review annually)	Mar-21	Rich Gullick + Kathe Warden	Kathe Warden	none	\$0	thinking of all necessary tasks to include; attitude of "that's not my job"	Low
2	Once	(a) Mar-21 (b) Dec-21	(a) Rich Gullick + town staff; (b) PVPC	Kathe Warden	none	\$0	Regionalization is a big effort, and may encounter political resistance	Low (High to implement)
3	Once	Apr-21	Board of Water Commissioners	Kathe Warden	none	\$0	Board decisiveness; acceptance by Certified Operator; attitude of "that's not my job"	High
4	Once (review annually)	Jun-21	Rich Gullick + Kathe Warden	Kathe Warden	none	\$0	thinking of all different aspects to include in the list	Low (once jobs are decided)
5	Once	Dec-21	Board of Water Commissioners	Kathe Warden	none	\$0	finding available and affordable Certified Operators if needed	High

GOAL AREA	#	STRATEGIES	OBJECTIVE AND EXPECTED IMPACT	METRICS
<b>OPERATIONAL OPTIMIZATION –</b> To consistently, reliably, and efficiently deliver high-quality water	6	Develop SCADA trends for all monitored parameters	Improve information provided by SCADA system at the water treatment plant	Trends are created for all process parameters measured
	7	Reestablish read-only capability for SCADA via internet	Allow for outside data review and interpretation	Staff can remotely access current SCADA data and trends to monitor water quality at any time
	8	Conduct regular instrument verifications and calibrations	Ensure integrity of online water quality and flow meter data	a. Implement new record-keeping forms for verifications b. Establish contract for calibrations by an outside firm
	9	Conduct unidirectional high-velocity flushing each spring and fall	Improve water quality via flushing (reduced color)	Spring 2021 and Fall 2021 flushings are conducted, and results are shared with Water Commissioners
	10	Conduct an independent audit of the treatment processes (filters, chlorine and pH adjustment) and associated record keeping, and implement any necessary improvements	Assure that the processes are operated to the best of their design ability, and to log results in a manner that provides the necessary information to people other than the Operator	a. Chlorine and pH ChemADD forms are accurate b. Chlorine dosing is confirmed c. Filtration procedures confirmed
	11	Consider installing an aeration system for removal of trihalomethanes (e.g., spray aeration in the clearwell)	Improve water quality in an area where there had been exceedances of the Maximum Contaminant Levels	a. preliminary engineering estimates b. Board makes decision c. obtain financing d. engineering evaluation, design, and MassDEP approval e. system constructed and operational
	12	Consider installing a treatment system for removal of manganese	Reduce or eliminate colored-water episodes	a. preliminary engineering estimates b. Board makes decision c. obtain financing d. engineering evaluation, design, and MassDEP approval e. system constructed and operational

#	FREQUENCY	COMPLETION DEADLINE	RESPONSIBILITY TO COMPLETE	RESPONSIBILITY TO CONFIRM SUCCESS	RESOURCES	ADDITIONAL COSTS	PRIMARY CHALLENGES AND CRITICAL SUCCESS FACTORS	LEVEL OF DIFFICULTY
6	Once (review annually)	Apr-21	Operator	Rich Gullick	none	\$ for SCADA contractor	Operator cooperation	Low
7	Once	Apr-21	Operator	Rich Gullick	none	\$ for SCADA contractor	Operator cooperation	Low
8	Once for contract; Continuous for operations	Apr-21 Apr-21	Operator	Rich Gullick	none	\$\$ for contract	Operator cooperation	Moderate
9	semi-annual	May-21 Oct-21	Operator	Rich Gullick	hydrant wrench, diffuser	\$0	Operator cooperation	Low
10	Once (repeat every five years)	Feb-21 Jun-21 Jun-21	Consultant, with Operator	Rich Gullick	SCADA data	\$\$	Access to SCADA data; Operator cooperation	Moderate
11	Once	Apr-21 May-21 Jun-21 Sep-21 Nov-21	TBD	TBD	consulting guidance, engineering firm	\$\$\$	Board commitment	High
12	Once	Apr-21 May-21 Jun-21 Sep-21 Nov-21	TBD	TBD	consulting guidance, engineering firm	\$\$\$\$	Board commitment, funding	High

GOAL AREA	#	STRATEGIES	OBJECTIVE AND EXPECTED IMPACT	METRICS
<b>FISCAL RESPONSIBILITY –</b> To provide service in an economical and sustainable manner	13	Develop an Asset Management Plan	Provide information for the Capital Improvement Plan (CIP) and budget process	Complete Asset Management Plan (AMP)
	14	Conduct full-cost budgeting - identify the full costs of operating the system, establish a budget for 2021-2022, and decide how to acquire the necessary funds	Determine necessary financial support to complete the Strategic Plan and achieve the vision	Complete budget, including changes per Strategic Plan
	15	Conduct Rate Study and establish equitable rates	Provide adequate funding for operations, and to ensure customers pay a fair rate compared to the general town contribution	Establish new rate schedule by July 1, 2021 (using the new budget and a survey of other systems' water rates)
	16	Ensure expenses and income are properly accounted for	Helps to confirm appropriateness of the budget, and to ensure that all owed monies are collected	Reviewed accounting procedures, expense tracking, and income stream accounting
	17	Actively collaborate with a variety of organizations to leverage free and low-cost services (e.g., PVPC, MassRWA, RCAP Solutions, and UMass)	Saving money leveraging free and low-cost services	At least three collaborations in 2020-2021. Report on success to Board.



#	FREQUENCY	COMPLETION DEADLINE	RESPONSIBILITY TO COMPLETE	RESPONSIBILITY TO CONFIRM SUCCESS	RESOURCES	ADDITIONAL COSTS	PRIMARY CHALLENGES AND CRITICAL SUCCESS FACTORS	LEVEL OF DIFFICULTY
13	Once (update every five years)	Mar-21	Rich Gullick	Kathe Warden	none	\$0	Operator cooperation	Moderate
14	Annual	Apr-21	CWIC	Kathe Warden + Rich Gullick	none	\$0	acquiring the necessary budget information	Low
15	Once (update as needed or ≤ every 5 years)	Jun-21	RCAP Solutions Kathe Warden + Rich Gullick Board of Comm.	Rich Gullick	need to survey rates for nearby water systems	\$0 (if done by RCAP or internally)	public acceptance	Moderate
16	Continuous	Jun-21	TBD	Kathe Warden	none	\$0 (if done internally)	acquiring the necessary information; cooperation from CMELD Billing Department	Moderate
17	Continuous	Jun-21	Rich Gullick	Kathe Warden	none	\$0	none	Low

GOAL AREA	#	STRATEGIES	OBJECTIVE AND EXPECTED IMPACT	METRICS
<b>COMMUNICATION</b> – To share knowledge of operational results and system issues, and to improve public perception	18	Monthly Operating Reports (MORs) and all other water quality data are reported to the team on a monthly basis	Improve accountability and communication between the operations and leadership team	MORs and other data results are submitted by the Operator to the team by the 10 <sup>th</sup> of the month
	19	Operator reporting quarterly to Board of Commissioners/ leadership team/CWIC	Improve accountability and communication between the operations and leadership team	A written and/or in-person progress report presentation is given by the Operator to the Board during 1st quarter 2021
	20	Establish a periodic newsletter or other announcement (e.g., a billing insert) informing consumers and other Town residents about plans made, improvements implemented, and other actions taken	Improve customer confidence via news of improvements and via the town's confidence in the water supply	The first announcement/ newsletter is completed during 1st quarter 2021
	21	Improve the annual Consumer Confidence Report (Water Quality Report) to more directly address the customers' concerns and to promote a positive image of water quality and the Water Department	Improve customer confidence via news of improvements and via the town's confidence in the water supply	The 2021 CCR contains new, energizing language and photos/illustrations

#	FREQUENCY	COMPLETION DEADLINE	RESPONSIBILITY TO COMPLETE	RESPONSIBILITY TO CONFIRM SUCCESS	RESOURCES	ADDITIONAL COSTS	PRIMARY CHALLENGES AND CRITICAL SUCCESS FACTORS	LEVEL OF DIFFICULTY
18	Continuous	Feb-21	Operator	Kathe Warden	none	\$0	Operator cooperation	Low
19	Continuous	Mar-21	Operator	Kathe Warden	none	\$0	Operator cooperation	Low
20	Semi-annual (2x per year)	Mar-21	Board of Water Commissioners	Kathe Warden	none	\$0	none	Low
21	Once (then simple annual updates)	Jun-21	Rich Gullick	Kathe Warden	none	\$0	none	Low