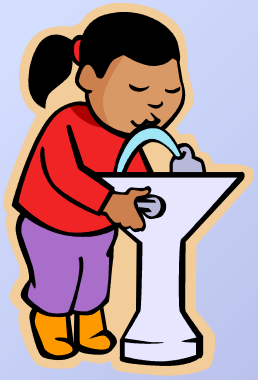
Potable Water Lean Project "The Rookies"
WPLR - Remediation Division

11/19/2010 Phoenix Auditorium

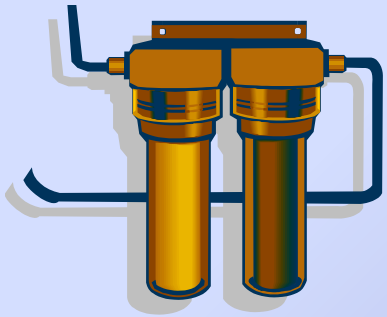
Team Sponsor – Patrick Bowe
Team Champion – Rob Bell
Team Leader – Drew Kukucka
Team Members – Scott Wing, Kevin Neary, Bill Warzecha, Mike Senyk, Drew Kukucka, Carl Gruszczak, Lynn Olson-Teodoro, MaryAnne Danyluk

State of Connecticut
Department of Environmental Protection
Amey Marrella, Commissioner

Lean Journey - Outline



- Project Team Charter
- Current and Future States
- Project Implementation Plan
- Visuals
- Key Performance Indicators (KPI)
- Summary Statements



Potable Water Project Team Charter

Opportunities for Improvements: When DEP is notified of a potentially contaminated well, a plan for sampling the well and provision of potable water is implemented by the Remediation Division. Currently, staff perform this function in many different ways with varying timeframes.

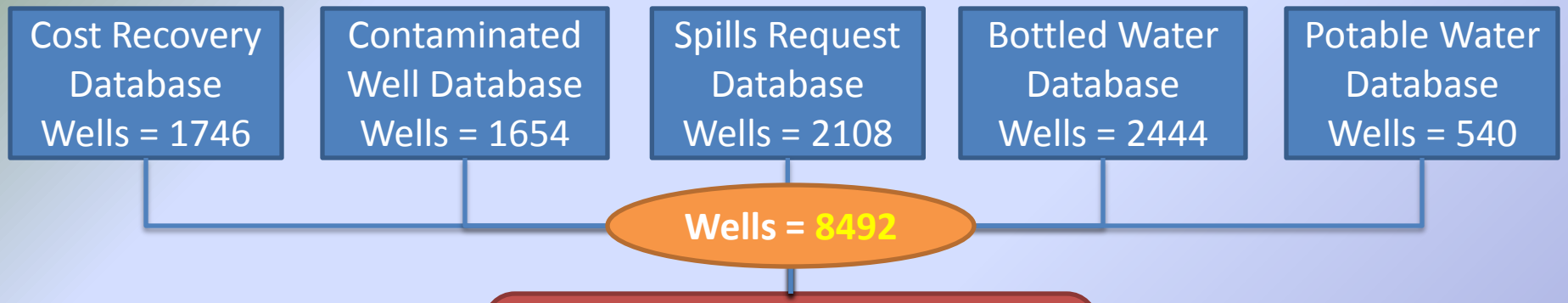
Project Scope: Review both the initial sampling and evaluation of bottled water/filtering processes, as well as the routine sampling process.

Goals (Metrics): Reduce timeframes for sampling and provision of potable water. Eliminate the backlog of wells that are overdue for routine sampling.

Current State

- Inconsistent processes used by staff
  - Provision of bottled water
  - Confirmatory sampling (up to 3 sampling events)
  - Sampling frequency – over/under production
  - Unnecessary lab analyses – over production
- Backlog of wells requiring routine sampling
- Opportunities to reduce waste
  - Lab analysis times
  - Scheduling inefficiencies
  - Conveying analytical results
  - Extraneous review loops

Five S Project

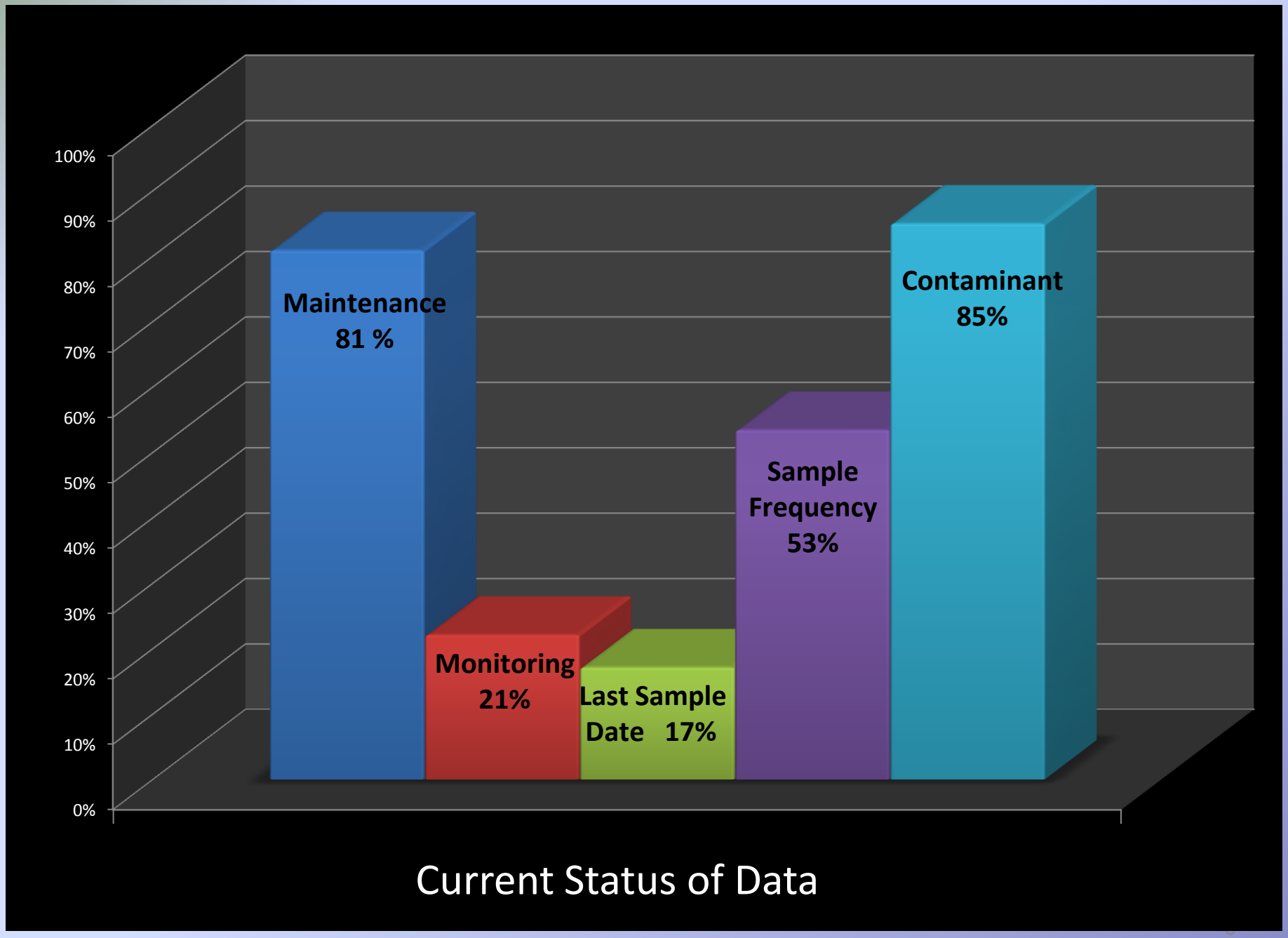


Complete Contaminated Well List
Actual Well = **3582**
60% reduction in actual Wells

"If you can't count it, you can't manage it"

New Items being Tracked
- Filter Installed and Filter Maintenance (Who)
- Actively receiving Bottled Water
- Monitoring (Who)
- Last Sample Date and Sampling Frequency
- Resolution of well

Current Staff project
- Confirm old contaminated wells
- Update new tracking information
- Add new contaminated wells
- Add threatened wells not previously tracked



Current Status of Data

Evaluation of Current Process: Value Stream Mapping (VSM)

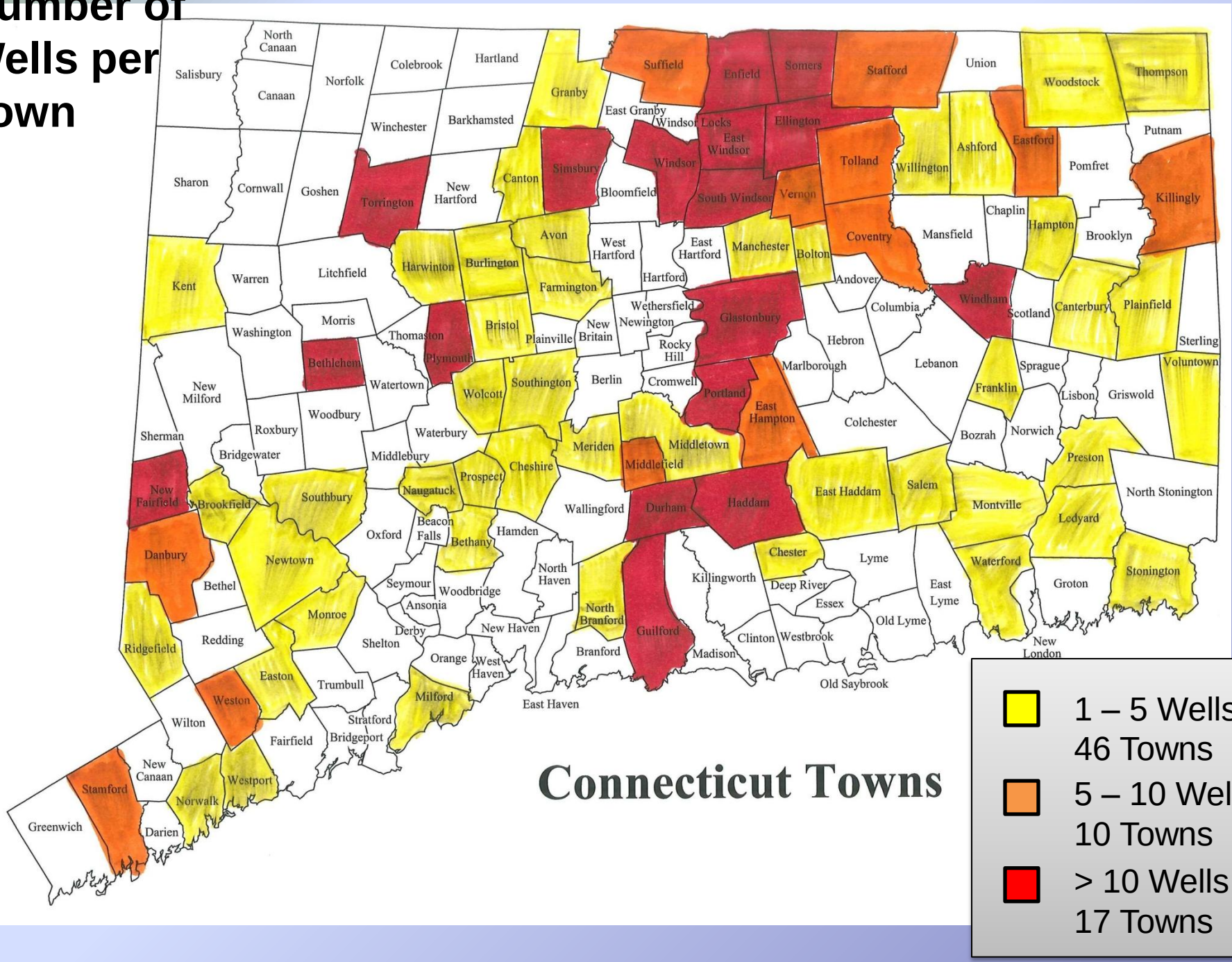
Documentation of the activities and steps, both value and non-value added, in the current process.

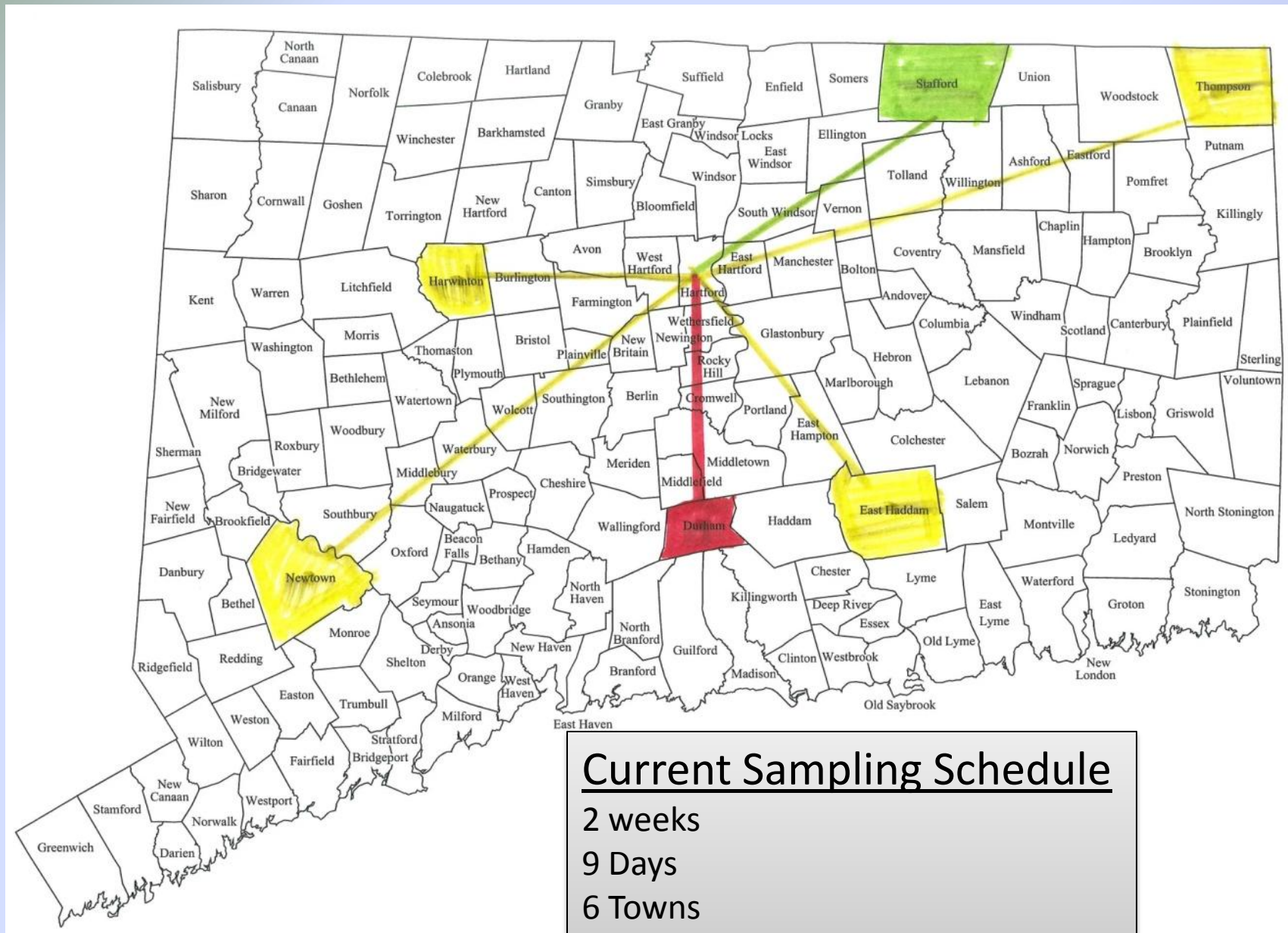
Type of Process	Current # of Processes
Value added = Green	13
No Value Added = Red	71
No Value Added but Necessary = Yellow	53
Waiting Time	43 - 88 Days
Action Time	13 Hours

Analysis of the Current State per VSM

- No protocols for incoming complaints
- Ice machine obtained for sample preservation not currently used by samplers
- Unnecessary lab analyses delaying the receipt of lab reports
- Lab can fax/email analytical results instead of printing and mailing
- Approval memos to OCSRD may no longer be necessary
- Bottled water provision before filter installation may be unnecessary
- Confirmatory sampling may delay action in some cases

Number of Wells per Town





Current Sampling Schedule

2 weeks

9 Days

6 Towns

28 Wells Sampled

3.1 Wells Sampled per day

DPH Lab Site Visit

What happens to water samples once they are dropped off at the lab…

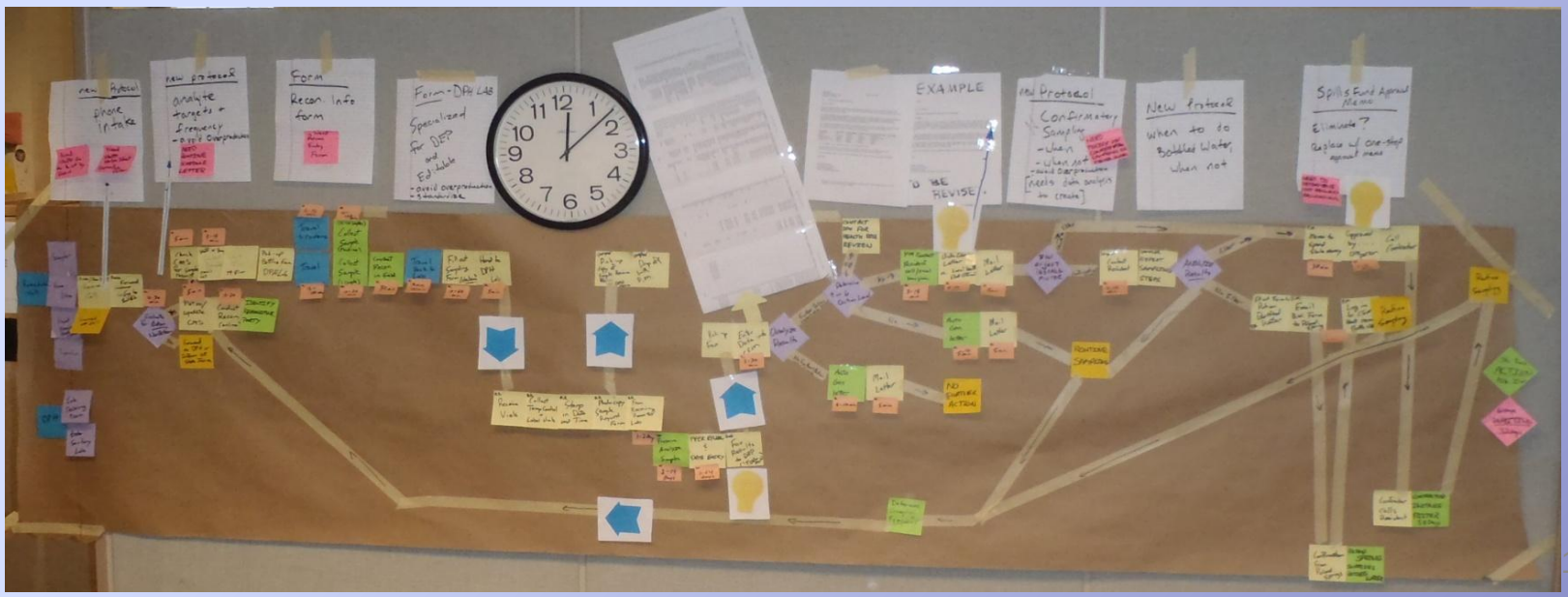
DPH Lab Site Visit – WOW Moments

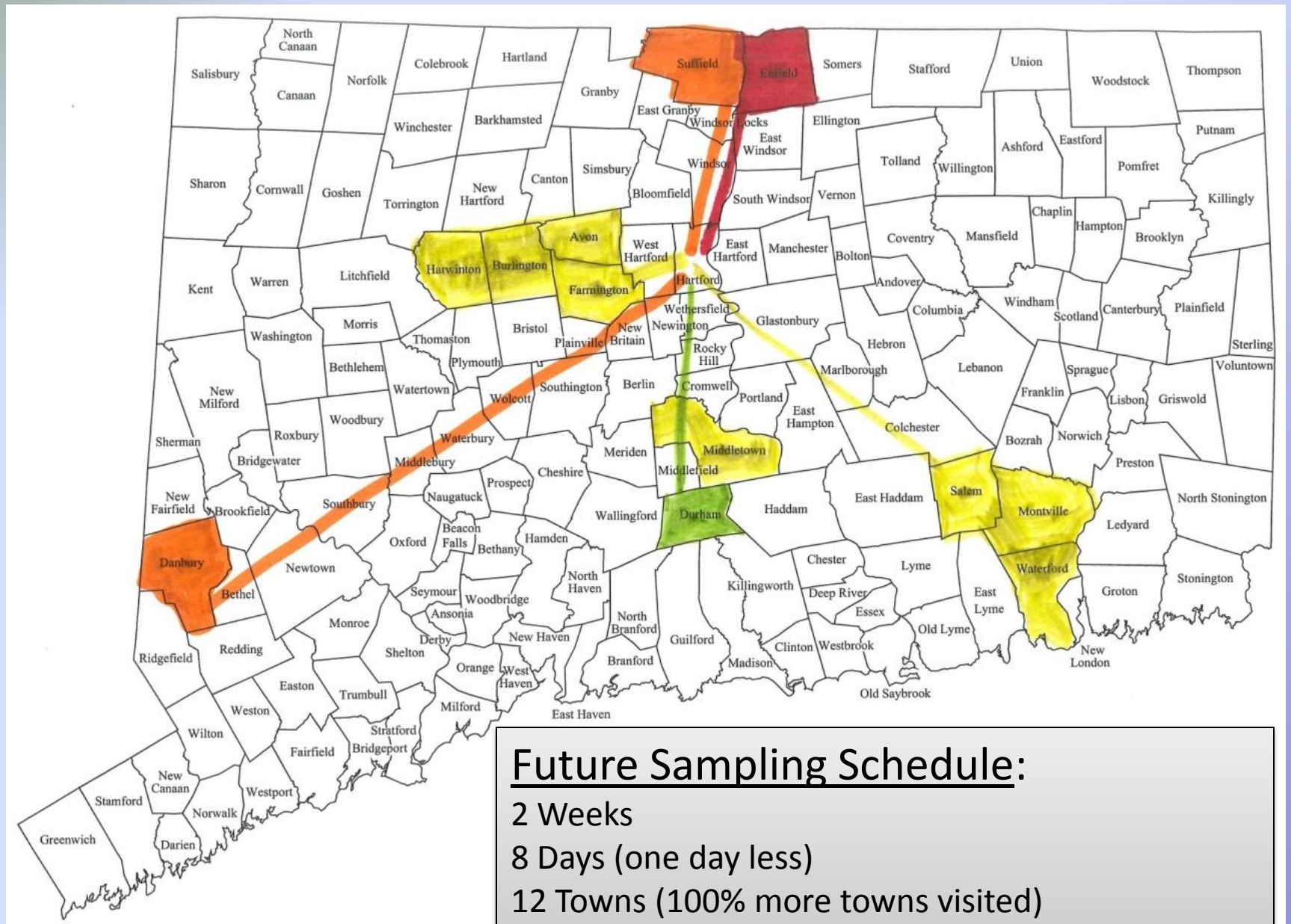
- Can obtain digital copies of request forms – can be tailored to fit DEP's applications
- Certain analyses delay the reporting of all results – DEP to evaluate when those analyses are necessary
- Ability to email or fax copies of the analytical results

Future State per VSM

Comparison of the activities and steps, both value and non-value added, in the current process and the desired future state.

Type of Process	Current # of Processes	Future # of Processes
Value added = Green	13	11
No Value Added = Red	71	0
No Value Added but Necessary = Yellow	53	36
Waiting Time	43 - 88 Days	6 - 32 Days
Action Time	13 Hours	3 - 10.5 Hours
Total	137	54
% REDUCTION IN THE NUMBER OF TOTAL STEPS = 60%		





Future Sampling Schedule:

2 Weeks

8 Days (one day less)

12 Towns (100% more towns visited)

68 Wells Sampled (**140%** more samples collected)

8.5 Wells Sampled per day

Project Implementation Plan

TASK/ACTIVITY	TASK OWNER(S)	PARTICIPANTS	December				January				EXPECTED RESULTS
			Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4	
Task 1. Project Implementation											
Schedule Weekly Meetings	Drew Kukucka	PW Lean Team									Keep team focused and on track of delieverables
Formalize internal policy creating time to work on LEAN	Drew Kukucka	Rob Bell, Jan Czeczotka									
Task 2. Develop SOPs											
Develop 1st procedure for confirmatory sampling for contaminated wells	Bill Warzecha	PW Lean Team									Increase efficiency of intalling filter systems on impacted properties
Eliminate approval loops (OCSRD)	Rob Bell	Betsey Wingfield, Mark DeCaprio, Nancy Schweizer									Increase efficiency of intalling filter systems on impacted properties
Protocol for Ordering Bottled Water	Carl Gruszczak	PW Lean Team									Create consistancy within Remediation speeding up bottled water requests
Develop procedure for streamlining filter procurement	Mike Senyk	PW Lean Team									Increase efficiency of intalling filter systems on impacted properties
Procedure for determining target analytes/appropriate sample frequency	Mike Senyk	Bill Warzecha									Decrease overproduction of sampling
Define Roles for DEP/DPH	Carl Gruszczak	DPH									Decrease duplication of efforts by multiple state agencies
Create electronic flow chart of VSM	Kevin Neary	Drew Kukucka									
Protocol for When to/When Not to Use Bottled Water	MaryAnne Danyluk	PW Lean Team									Decrease overproduction of bottled water
Task 3. Process Improvements											
Ice Machine & Sample Refrigerator (Gladiator)	Scott Wing	Teddy Brightwell, Bldg Management									Speed up gather equipment and sample time
Park Sample Vehicles Close to Starting Locations (Ted)	Teddy Brightwell	Chris Lacas, Lynn Tobin									Speed up gather equipment and sample time
Obtain Digital Copy of DPH Lab Forms & Labels	Scott Wing	Jack Benett, Jeff Curran									Speed up gather equipment and sample time
Task 4. Develop Fact Sheets for Homeowners, Local Health Dept, Building Officials											
Develop protocol for phone calls with residents	Bill Warzecha	PW Lean Team									Decrease the need to recontact resident and standerdize information request
Develop fact sheet for homeowners	Lynn Olson	PW Lean Team									Speed up sampling time
Task 5. Develop Sustainable Database Tracking System											
Develop template for resident result letters	MaryAnne Danyluk	PW Lean Team									Eliminate managers review loop decreasing time to mail letter
Develop New Record Input form for potable well site (Phase I)	Kevin Neary	Dave Madsen									Eliminate multiple database currently in use and help track KPIs
5-S Project - Finish update	Remediation Staff	Kevin Neary									Eliminate multiple database currently in use and help track KPIs

1 to 2 Month Project Tasks

- Eliminate unnecessary Approval Loops (December 15th)
- Obtain Digital Copy of DPH Lab Forms (December 15th)
- Review current Residential Potable Water Fact Sheet (December 30th)
- Develop 5 new Procedures and Protocols (January 15th)
- Phase I Database: Set up new Data Entry Form (January 30th)
- Finish 5 S Project (January 30th)

6-Month Project Tasks

- Develop 4 additional Procedures and Protocols (March 1st)
- Establish system for routine fax/email of lab results (March 15th)
- Develop PW Program Information Toolbox (March 30th)
- DEP Specific Digital Copy of DPH Lab Forms & Labels (April 15th)
- Phase II Database: Redesign existing database (May 30th)

1-Year Project Tasks

- Eliminate Backlog of Routine Sampling (November 30th)
- Develop system to manage sampling site geographically (September 30th)
- Auto generate merge letter for Lab Forms & Residential letters (July 30th)
- Phase III Module - Develop redesigned module (November 30th)

Templates

PROTOCOL FOR ARRANGING BOTTLED WATER AND CONFIRMATORY SAMPLING

1. EVALUATE WATER ANALYSIS RESULTS FROM AN APPROVED STATE DEPARTMENT OF PUBLIC HEALTH APPROVED LAB
2. IF RESULT IS AT OR ABOVE A STATE DRINKING WATER ACTION LEVEL, ARRANGE WITH A STATE APPROVED WATER TREATMENT CONTRACTOR TO INSTALL THE TREATMENT SYSTEM WITHIN 3-4 DAYS; ARRANGE BY PHONE OR E-MAIL
3. IF RESULTS SHOW THAT A CHEMICAL(S) IS IMMINENTLY APPROACHING THE STATE DRINKING WATER AL, A CONFIRMATION SAMPLE WILL BE COLLECTED WITHIN A WEEK. DEPENDING ON THE RESULT, THE PWS WILL DETERMINE WHETHER A TREATMENT SYSTEM GETS INSTALLED OR THE SUPPLY IS MONITORED AT A DETERMINED FREQUENCY
4. ADVISE WELL OWNER TO BUY BOTTLED WATER UNTIL TREATMENT SYSTEM IS INSTALLED AND FOUND TO BE WORKING PROPERLY EXCEPT THAT DEP WILL ARRANGE FOR BOTTLED WATER IN SPECIAL CIRCUMSTANCES WHERE THE RELIANCE OF THE TREATMENT SYSTEM IS QUESTIONABLE
5. IF TREATMENT CAN NOT BE ARRANGED WITHIN 3-4 DAYS, ARRANGEMENTS WILL BE MADE FOR BOTTLED WATER DELIVERIES

PROTOCOL FOR CONDUCTING RECON FOR WELL POLLUTION PROBLEM

1. INTERVIEW WELL OWNER GATHERING AS MUCH INFORMATION ABOUT THE PROBLEM, ie, ADDRESS, LAND USE SETTING, WELL TYPE, POTENTIAL SOURCES OF POLLUTION, KNOWLEDGE OF WHAT MAY CAUSED THE POLLUTION, EXISTING FILTER/TREATMENT SYSTEMS, WELL COMPLETION REPORTS IF AVAILABLE (MAY BE LOCATED AT DEP FILE ROOM, DCP, AND LOCAL HEALTH DEPARTMENT, etc.
2. LOOK AT AVAIABLE ON-LINE LOCATIONAL AND AERIAL MAPS
3. DETERMINE WHETHER THERE ARE ANY EXISTING REMEDIATION DIVISION PROJECTS IN PROXIMITY; IF SO, DISCUSS WITH PROJECT LED
4. REVIEW ON LINE ECOS/NATURAL RESOURCE, GROUND WATER CLASS, PROXIMITY TO PUBLIC WATER, AND SOIL DATABASES TO DETERMINE HYDROGEOLGIC SETTING
5. REVIEW STATE AND U.S. GEOLOGIC SURVEY GEOLOGIC PAPER MAPS IF NECESSARY AND OTHER STATE PUBLICATIONS SUCH AS WATER RESOURCE BULLETINS
6. REVIEW ALL PREVIOUS WATER QUALITY RESULTS AND ASSESS POSSIBLE TRENDS AND SOURCE(S)
7. DETERMINE PROXIMITY TO NEIGHBORING WELLS; VISIT SITE AND VICINITY, DISTRIBUTE CANVAS CARDS
8. APPRISE LOCAL HEALTH DEPARTMENT AND MUNICIPAL OFFICIALS

PROTOCOL FOR DETERMINING ANALYSIS SUITE AND METHODS

1. PWS DETERMINES LIST OF CONTAMINANT(S) OF CONCERN BASED ON EXISITING INFORMATION*
2. IF TREATMENT SYSTEM IS LIKELY NEEDED ALSO TEST FOR PARAMETERS NOTED ON ATTACHMENT 'A' (SEE ATTACHMENT)
3. NOTE THE TYPE AND PURPOSE OF ANY EXISTING WATER TREATMENT OR FILTERS
4. DETERMINE ALL SAMPLING POINTS NECESSARY TO ENSURE DRINKING WATER QUALITY
5. BE CONSISTENT SAMPLING SAME LOCATION EACH EVENT NOTING THE PRESENCE OF TREATMENT AND FILTERS
6. FOLLOW QAPP
7. DETERMINE SAMPLING FREQUENCY

*-TRY TO SAMPLE ONLY FOR NECESSARY PARAMETERS AND CONSTITUENTS OF CONCERN

PROTOCOL FOR SCREENING NEW INCOMING POTABLE WATER PHONE CALLS

1. RECEPTIONIST DIRECTS CALL TO DESIGNATED POTABLE WATER STAFF (PWS) FOR DISTRICT OR SUPERVISOR OR BACKUP POTABLE WATER STAFF.
2. PWS ASSESSES CALL FOR ACTION OR NO ACTION.
3. NO ACTION, ie, NATURALLY OCCURRING SUBSTANCE LIKE RADON,OR BACTERIOLOGICAL, DIRECT CALLER TO LOCAL HEALTH DEPARTMENT/DISTRICT OR DPH-PRIVATE WELL WATER SECTION AT (860) 509-7296.
4. ACTION TO TAKE IF 22A-471 POTENTIALLY APPLIES; DETERMINE EXACT LOCATION AND WHETHER THE ISSUE IS RELATED TO AN EXISTING PROJECT BY CHECKING THE CMS AND FORWARDING TO APPRORIATE REMEDIATION STAFF. COMPILE AS MUCH TECHNICAL INFORMATION FROM WELL OWNER/CALLER AS POSSIBLE ie WELL CONSTRUCTION DETAILS, ALL PRE-EXISTING WATER SAMPLE RESULTS, POTENTIAL SOURCES OF POLLUTION, NOTICEABLE CHARACTERISTICS, ETC.
5. ARRANGE SAMPLING OF WATER SUPPLY INCLUDING AVAILABLE DATES AND TIME WITH DESIGNATED SAMPLING PERSON OR SCHEDULER.

WELL WATER SAMPLING PROTOCOL (VOCs*)

1. ARRANGE WHO WILL SAMPLE, ie, PWS OR DESIGNATED SAMPLER
2. P/U SAFETY GLOVES, GLASSES, ICE, COOLERS, LAB FORMS, SAMPLING VIALS AND CONTAINERS FROM LAB, TEMPERATURE CONTROL, TRIP AND/OR FIELD BLANKS (**CAUTION**-HYDROCHLORIC ACID IN VIALS)
3. DETERMINE SAMPLING LOCATION REPRESENTATIVR OF THE FINISHED WATER
4. REMOVE AERATOR, SCREEN, ATTACHMENTS, ETC., FROM SPIGOT
5. SAMPLE FROM COLD WATER TAP AND LET RUN 5 MINUTES-THEN REDUCE FLOW TO COLLECT SAMPLE
6. REMOVE CAP-DO NOT LET INSIDE OF VIAL, CAP OR THREADS TOUCH ANYTHING EXCEPT WATER BEING SAMPLED
7. FILL VIAL TO RIM AND USE INVERTED CAP TO FILL WATER ABOVE RIM ENSURING NO AIR BUBBLES
8. PLACE CAP CAREFULLY OVER VIAL AND TIGHTEN SO AS TO NOT STRIP THREADS-CHECK TO MAKE SURE NO AIR BUBBLES
9. IDENTIFY SAMPLE, FILL OUT LAB FORMS, FIELD NOTEBOOK, DATES, TIME OF COLLECTION, CHAIN OF CUSTODY IF NECESSARY
10. DELIVER SAMPLES TO LAB SAME DAY, IN APPRORIATE COOLER, KEEP AT
11. 4° C OR LESS-MAX. HOLDING TIME IS 4 DAYS

* WILL DO SIMILAR PROTOCOL FOR ALL OTHER CONSTITUENTS OF CONCERN

[home owner or party receiving results]
[address]

RE: Water Supply Analysis

Dear [Mr.& Mrs.]:

Please find the enclosed copy of the analytical results for the [raw and/or treated] water samples collected [location i.e., sampling port, faucet, spigot, water tank, etc.] from your residence. The water samples were collected by a Department of Environmental Protection (DEP) representative on [date] and were analyzed for the presence of [parameter or analytes i.e., VOCs, metals, etc.) at the Department of Public Health (DPH) Laboratory [or private lab].

In the water samples that were collected, the following compounds were detected at the levels indicated below:**[bold all exceedances]**

Compound	Raw Water Concentration Micrograms per Liter (µg/L)	After 1st Filter Concentration (µg/L)	After 2nd Filter Concentration (µg/L)	Drinking Water Action Level (µg/L)

A Drinking Water Action Level (DWAL) is the concentration of a substance at or above which the Commissioner of the Connecticut DPH has determined there could be a risk to the health of persons consuming the water. A reported concentration of "ND" indicates that the compound was not detected in the sample. A concentrationwith a "<" (less than) designation signifies that there may be a trace amount of this compound in your well that is below the laboratory detection limit.**[include with all sample letters except those where no constituents of concern were detected]**

[paragraph explaining or interpreting the pollutants identified and analytical reports based on state drinking water action levels, federal maximum contaminant levels (MCLs), and ground water protection criteria]

[identify other sampling point location and interpret as above and note whether there is a need to address any maintenance issues such as changing out a filter due to breakthrough or clogged sediment filter]

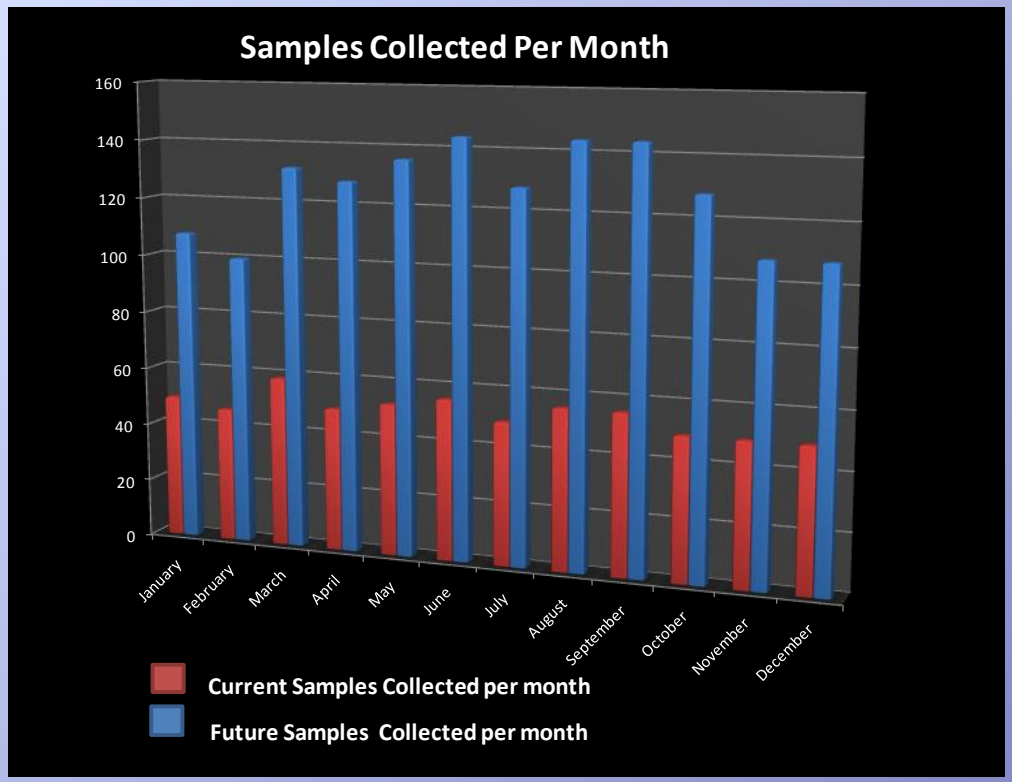
Key Performance Indicators (Metrics)

- Number of Backlogged Sample Sites (currently 200 – 300)
  Goal = no backlog

- Date of Analytical Result Letter mailed/email to Resident
  Goal = 3 Day turnaround

- Well Data Completeness
  Goal = 100% completeness

- # of Houses Sampled per Sampler Work Days
  Goal = 8 samples per day



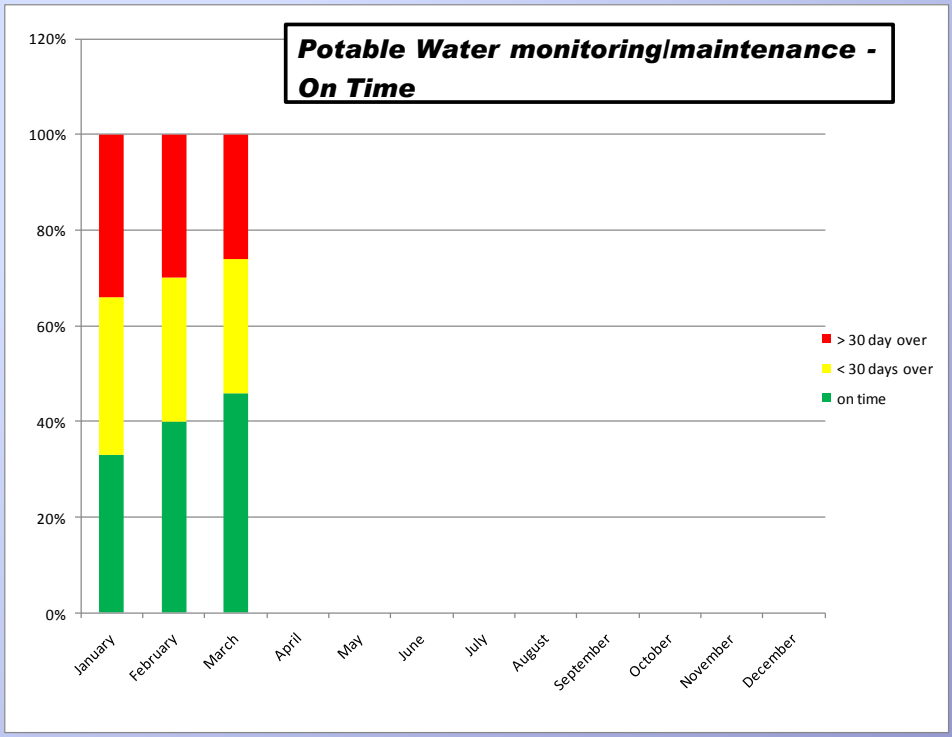
Visuals – Status Boards

Monthly Potable Sampling Tracking

Site Address	Town	Project Manager	Sampling Frequency	Last Sampling Date	Sampling Due Date	Date Sampling Performed
5 Bunker Hill Road	Andover	Richards	Annually	9/9/2009	Sep 2010	
934 Broad Street	Meriden	Brunelli	Quarterly	6/1/2010	Sep 2010	
125 Danbury Road	Ridgefield	Flad	Quarterly	7/17/2010	Oct 2010	
194 Main Street	Salisbury	Gleason	Quarterly	7/24/2010	Oct 2010	
613 Washington Street	Middletown	Robinson	Annually	10/29/2010	Oct 2010	
125 Meadow Road	Rocky Hill	Danyluk	Quarterly	8/5/2010	Nov 2010	11/2/2010
67 Lebanon Avenue	Colchester	Hill	Annually	11/8/2009	Nov 2010	11/4/2010
37 Route 2	Preston	Senyk	Annually	11/12/2009	Nov 2010	
400 Harwinton Avenue	Plymouth	Chen	Quarterly	8/15/2010	Nov 2010	
1120 Federal Road	Brookfield	Gruszczak	Quarterly	8/15/2010	Nov 2010	11/9/2010
1 Roosevelt Drive	Monroe	Wilcox	Quarterly	8/16/2010	Nov 2010	
280 West Street	Rocky Hill	Bedson	Annually	11/17/2009	Nov 2010	11/9/2010
70 Merrow Road	Tolland	Warzecha	Quarterly	8/17/2010	Nov 2010	
565 New Park Avenue	West Hartford	Suarez	Annually	11/19/2009	Nov 2010	11/11/2010
444 John Downey Drive	New Britain	Richards	Quarterly	8/23/2010	Nov 2010	11/16/2010
141 Hebron Avenue	Glastonbury	Hamel	Annually	11/24/2009	Nov 2010	11/11/2010
84 Hopewell Woods Road	Redding	Wilcox	Annually	11/29/2009	Nov 2010	
1788 Barnum Avenue	Stratford	Flad	Annually	11/29/2009	Nov 2010	
384 Main Street	Durham	Richards	Quarterly	8/30/2010	Nov 2010	11/2/2010
57 Callendar Road	Watertown	Gruszczak	Quarterly	8/30/2010	Nov 2010	

Potable Results Letter Tracking

Site Address	Town	Project Manager	Date Results Received	Date Letter Due	Date Letter Sent
45 Church Street	Haddam	Santos	11/12/2010	11/17/2010	11/16/2010
12 Main Street	New London	Senyk	11/15/2010	11/18/2010	
345 Town Street	Danbury	Gruszczak	11/16/2010	11/19/2010	11/18/2010
333 East Street	Torrington	Neary	11/16/2010	11/19/2010	
987 Elm Street	Norwich	Kukucka	11/17/2010	11/22/2010	



Summary Statements

Issues

- Staff frequently reinventing the wheel
- Need to standardize policies and procedures

"WOW" moments

- Lab delays not necessary
- Approval processes cumbersome and not needed
- Computerize forms, letters, schedules, etc…

Successes

- Team communication success
- Guest involvement crucial and productive
- Promotion of LEAN concepts to other agencies

Acknowledgements

Commissioner, Amey Marrella
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Jack Bennett, DPH
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George Purple, DEP UST Enforcement
Dave Madsen, OIM

Remediation Staff:
Camille Fontanella
Ted Brightwell
Jan Czeczotka
Chris Lacas
Pat DeRosa
Carolyn Fusaro
Rob Robinson
Peter Hill
Jon Goldman
Ray Frigon
Gil Richards
Jessica Stefanowicz