Dover, New Hampshire, City Council
Water System Facilities Improvements
July 29, 2015

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AGENDA

- System Overview
- Slide Show of Facilities (quick)
- Needed Improvements
- Approach
- Phase I Project

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SYSTEM OVERVIEW

City of Dover Water System

- 28,000 people served
- 2.4 million gallons produced on average day
- 8 wells
- 3 water treatment facilities
- 2 artificial recharge facilities
- 2 water storage tanks
- 1 booster pumping station

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Calderwood Well

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Campbell Well

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Isinglass Recharge

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Hughes Well

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Bouchard Well

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French Cross Road WTP

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Smith Well

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Cummings Well

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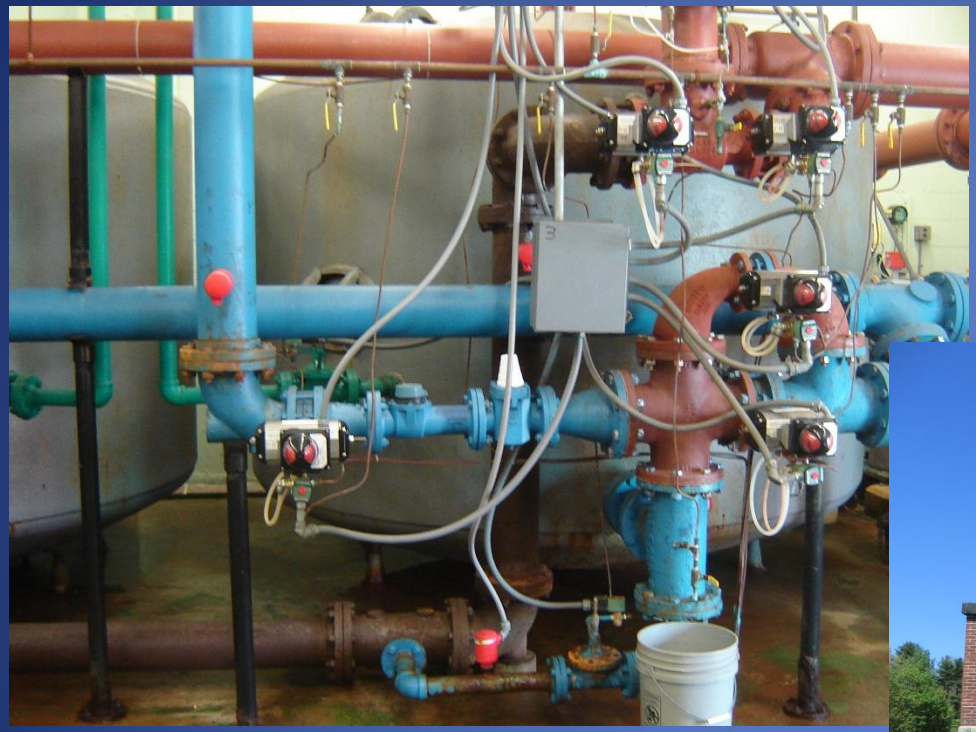
Lowell Ave. WTP



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Griffin Well

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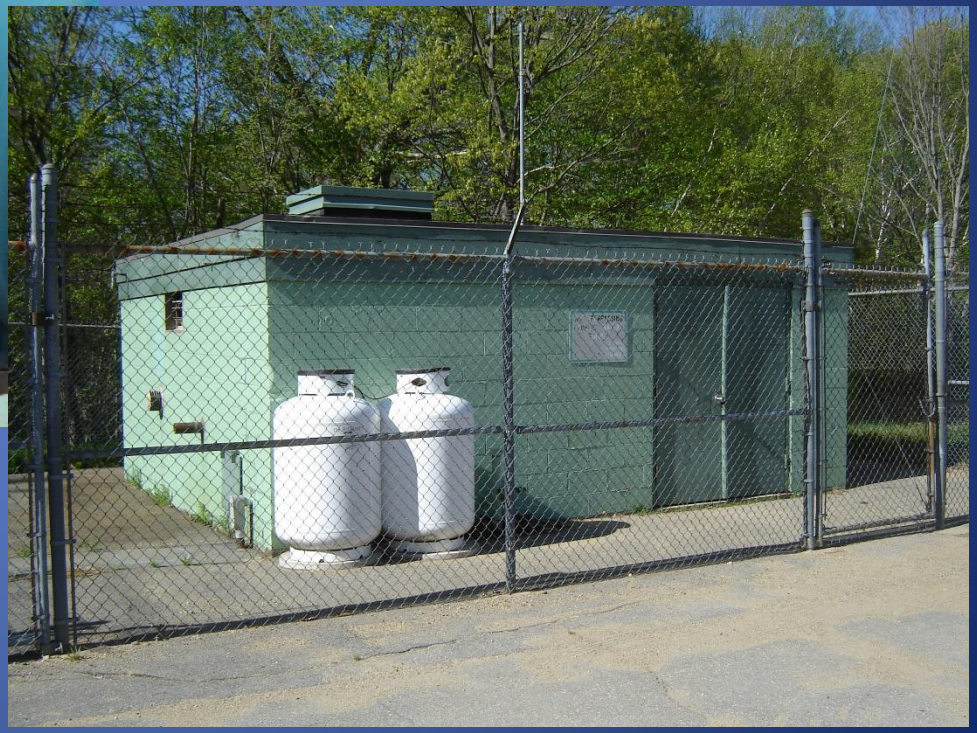
Griffin WTP

Ireland Well



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Bellamy Recharge

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Garrison Hill Reservoir

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North End Booster Pumping Station

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North End Tank

NEED FOR PROJECT

Need for Project

- Some facilities over 50 years old
- NHDES Sanitary Survey deficiencies (health and safety)
  - Chemical containment
  - Eye wash and shower
  - Online water quality monitoring instruments
- Process inefficiencies (energy use, water use)
- Building inefficiencies (HVAC) and code violations

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2011 Facilities Plan Summary

- Three Phases (short, intermediate, long)
- Total: $9M
- Did not include the following major components:
  - Willand Pond Wells
  - New Pudding Hill Wells
  - Lowell Avenue WTP filtration system replacement
- A lot of new challenges have developed

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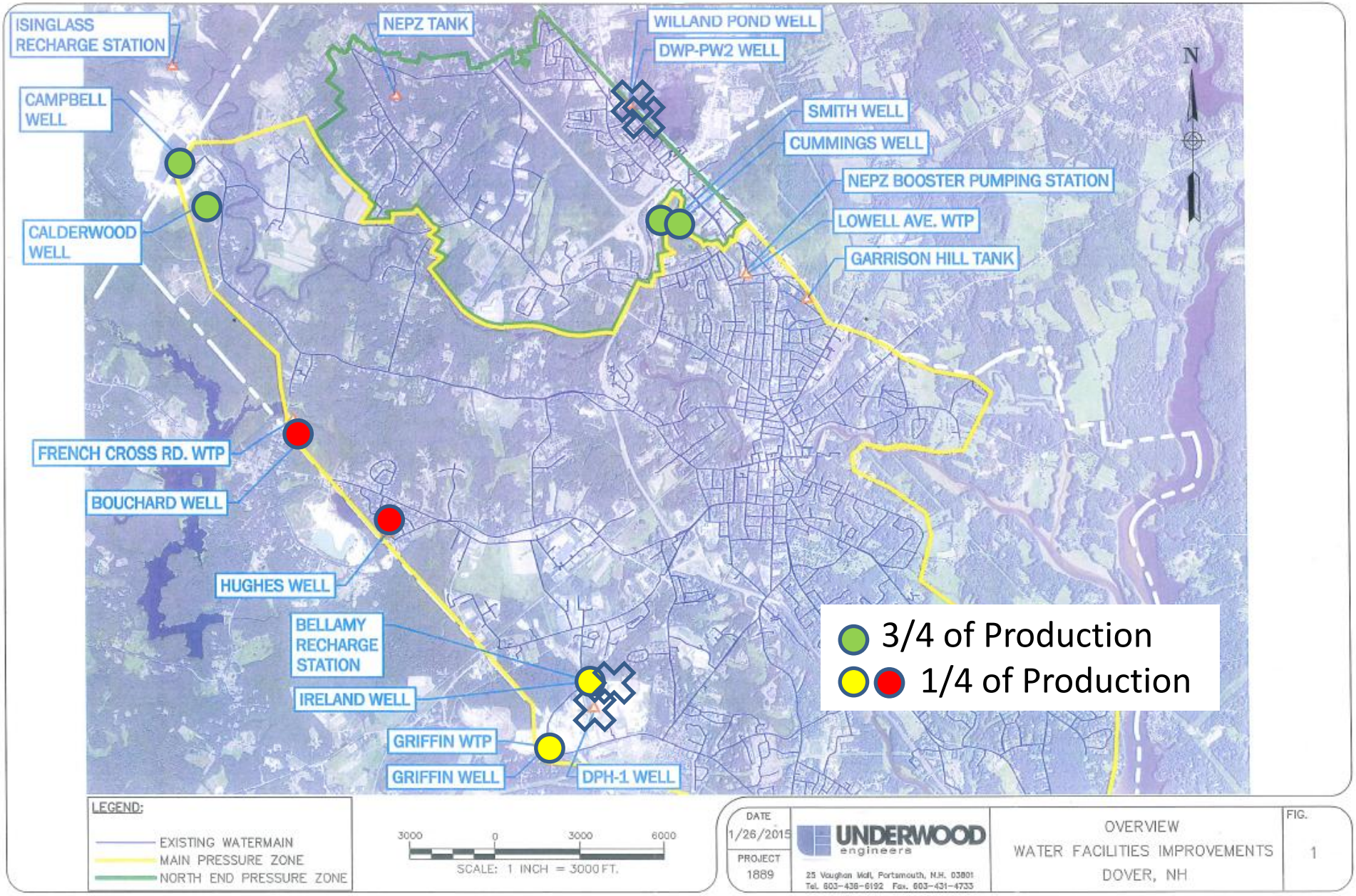
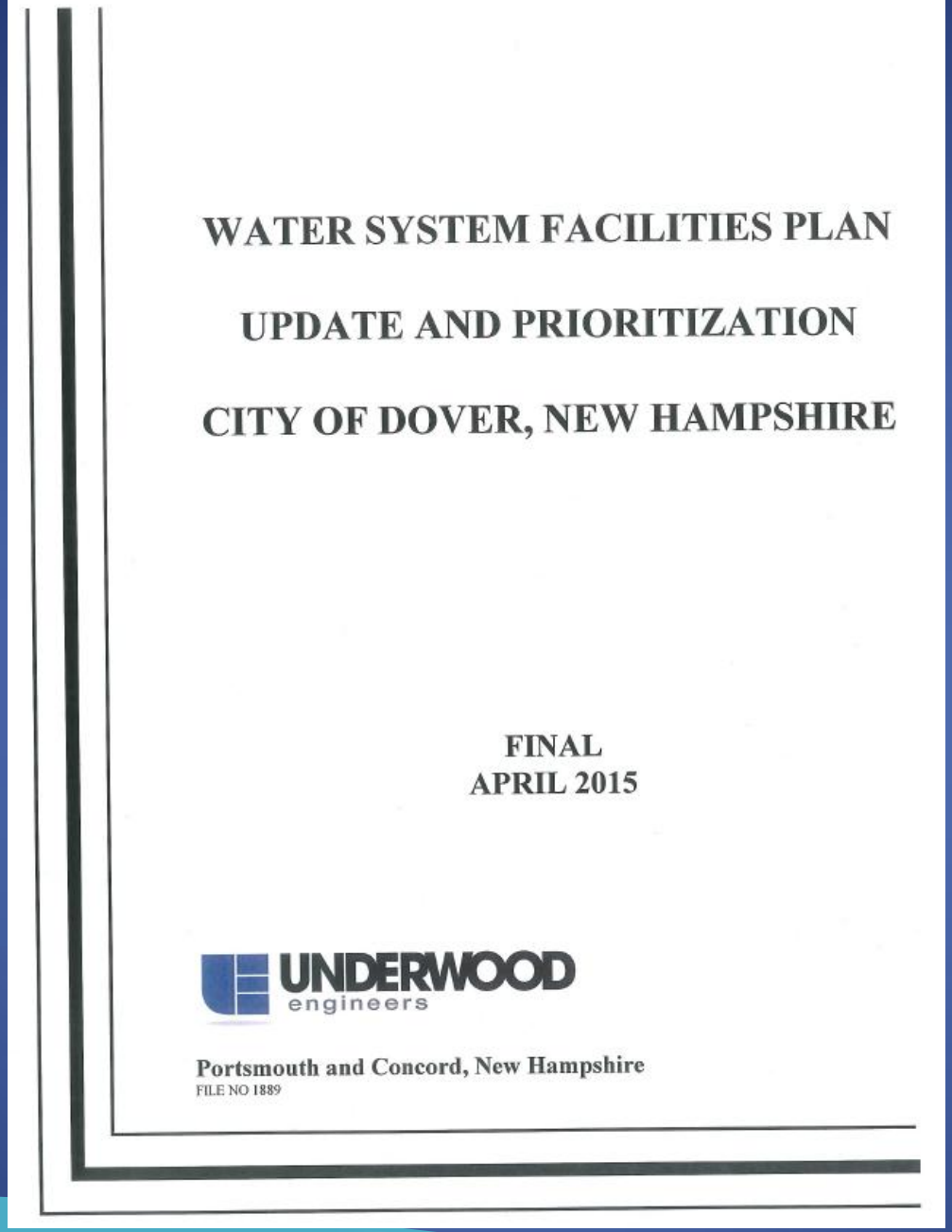

ISINGLASS RECHARGE STATION
NEPZ TANK
WILLAND POND WELL
DWP-PW2 WELL
CAMPBELL WELL
SMITH WELL
CUMMINGS WELL
NEPZ BOOSTER PUMPING STATION
CALDERWOOD WELL
LOWELL AVE. WTP
GARRISON HILL TANK
FRENCH CROSS RD. WTP
BOUCHARD WELL
HUGHES WELL
BELLAMY RECHARGE STATION
IRELAND WELL
GRIFFIN WTP
GRIFFIN WELL
DPH-1 WELL
N
3/4 of Production
1/4 of Production
LEGEND:
EXISTING WATERMAIN
MAIN PRESSURE ZONE
NORTH END PRESSURE ZONE
3000 0 3000 6000
SCALE: 1 INCH = 3000 FT.
DATE 1/26/2015
PROJECT 1889
UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733
OVERVIEW
WATER FACILITIES IMPROVEMENTS
DOVER, NH
FIG. 1

APPROACH


WATER SYSTEM FACILITIES PLAN
UPDATE AND PRIORITIZATION
CITY OF DOVER, NEW HAMPSHIRE
FINAL
APRIL 2015
UNDERWOOD
engineers
Portsmouth and Concord, New Hampshire
FILE NO 1889

Project Priorities

- Maintain Existing Infrastructure
  - Manage supplies and facilities proactively
- Cost-Effectiveness
  - Efficient use of resources
- Keep Things in Context / Big Picture
  - Invest in most valuable supplies
  - Understand vulnerable supplies
- Develop a Specific Phased Priority Program
- Well Management Plan and Monitoring Program

Coordination With Other Projects and External Factors

- Willand Pond Wells
- New Well in Pudding Hill Aquifer
- Pudding Hill Artificial Recharge
- Ireland Well Replacement
- Barbadoes Pond water levels impacts

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Table 3. Normalized Costs for all Recommended Improvements through Long-Term

Facility	Yield or Treatment Capacity (gpm)	Notes	Normalized Cost ($/gpm)
WELLS			
Calderwood Well	600		$1,800
Campbell Well	400		$2,700
Hughes Well	350		$9,400
Bouchard Well	600		$100
Smith Well	600	Note 6	$300
Cummings Well	300	Note 6	$3,200
Griffin Well	500		$300
Ireland Well	600		$1,500
POTENTIAL NEW SUPPLY PROJECTS - PHASE II TIMEFRAME			
Willand Pond Wells	600		$5,500
DPH-1 Well (new Griffin Well)	500	Note 5	$3,400
POSSIBLE FUTURE SUPPLIES		Note 1	
Bedrock Well - Day Property	100	Note 2	$28,300
Interconnect w/ Somersworth	556	Note 3	$2,800
Bedrock Wells - Other		Note 4	
TREATMENT PLANTS			
French Cross Road WTP	1000	Note 7	$37
Lowell Avenue WTP	1177		$2,600
Griffin WTP	500		$4,600
RECHARGE FACILITIES			
Isinglass Recharge	1500		$300
Bellamy Recharge	3600		$300

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ended Improvements through Long-Term

reatment (gpm)	Notes	Normalized Cost ($/gpm)
600		$1,800
400		$2,700
350		$9,400
600		$100
600	Note 6	$300
300	Note 6	$3,200
500		$300
600		$1,500
HASE II TIMEFRAME		
600		$5,500
		$3,400

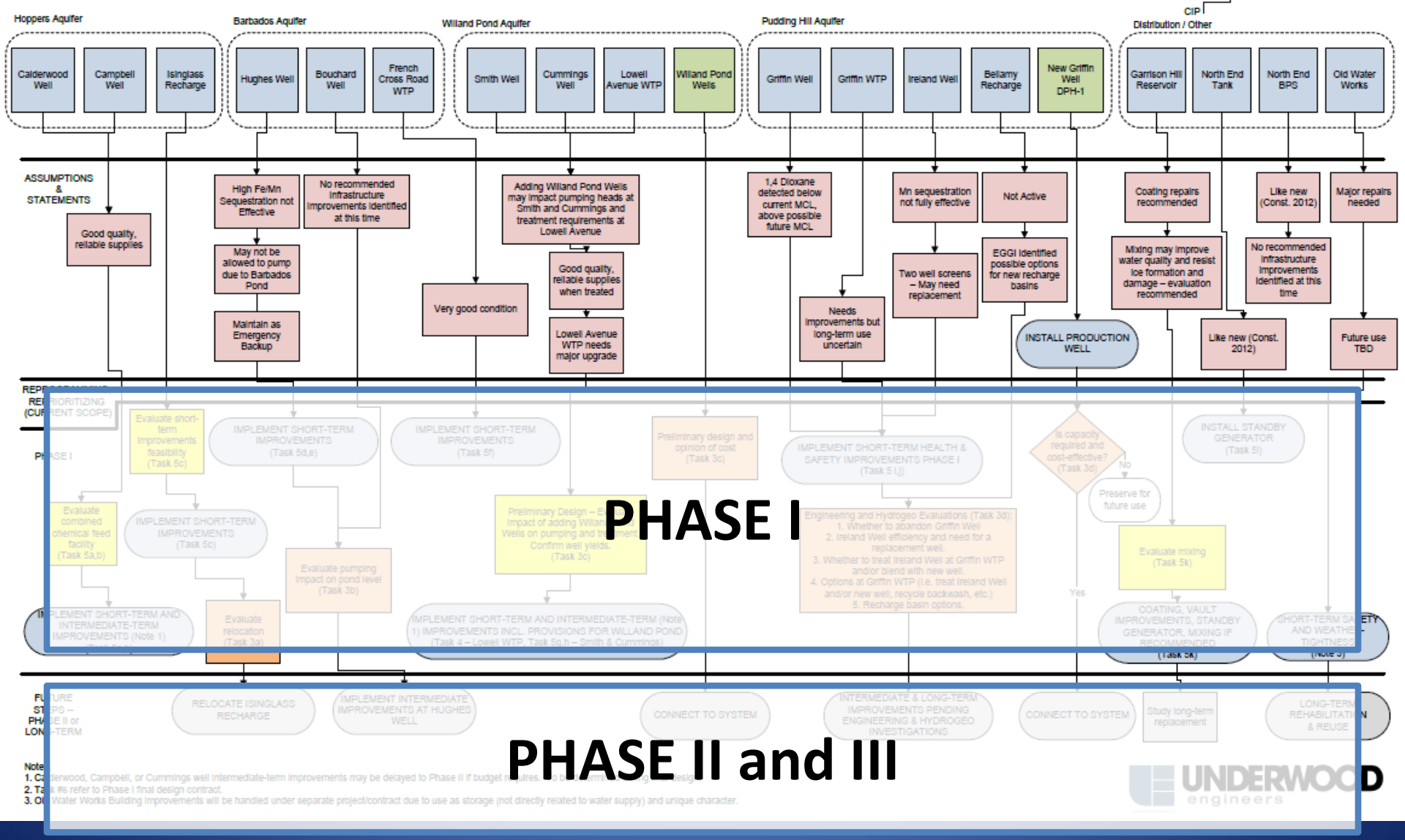
What this Means

- Invest appropriately or delay facilities that may not be needed or may be impacted by other projects:
  - Hughes Well: Bouchard impacts (vice-versa)
  - Pudding Hill Aquifer: New wells and Griffin WTP
- Consider future projects in current design
  - Lowell WTP: (Willand Pond wells)

DRAFT

3/23/15

City of Dover, NH Water Facilities Action Plan – Phase I



Improvements Program Summary

Phase	Cost	Schedule
I	**$7.3M**	**2015 to 2017**
II	$8.3M	2017 to 2020
Long-Term	$5.4M	2025+
Total (Planning)	$21.0M	

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PHASE I

Phase I Summary

- Includes 14 sites (out of 16 total)
- All include at least short-term improvements (safety, etc.)
- 10 sites will be “done” if budget allows
  - Calderwood
  - Campbell
  - Lowell WTP
  - Smith & Cummings
  - French Cross WTP & Bouchard
  - Garrison Hill Reservoir
  - North End Tank and Booster Sta.
- Includes planning for Phase II, Energy Audit, Rates, Public Info
- Future work will be required on rest of sites

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Phase I Funding

- $6.5M DWSRF loan
  - Low interest
  - 15% principal forgiveness ($975,000)
- Phase I estimated cost $7.3M
  - Project to be bid with additive alternates
  - Some elements may move to Phase II

Phase I Schedule

- Design – 2015
- Bidding/Award – Spring 2016
- Substantial Completion (Wells) – Fall 2016
- Substantial Completion (Lowell WTP) – Spring 2017

- Note: Smith and Cummings Wells will be temporarily unavailable during construction of Lowell WTP.

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Questions and Answers