

Exeter–Stratham Intermunicipal Water And Wastewater Study Public Presentation

August 21, 2012

Prepared By Kleinfelder For The
Rockingham Planning Commission



Agenda

- Welcome
- Project Background/Description
- Presentation of Study
- Public Comments & Q&A
- Next Steps
- Adjourn

Background

Both Exeter and Stratham face significant short and longer term capital expenditures for water and sewer.

- Exeter:

- Water supply & treatment (~\$ 6.6M)
- Sewage collection, permitting and treatment (~\$42.6M-\$59.1M)
- Relatively static user base

- Stratham:

- Full implementation of Gateway District will require both water (~\$9.7M) and sewer (~\$15.0M) services
- Small existing user base in District

Background - continued

October 7, 2010, Cooperative Middle School:

*“Community Discussion on the Future of Stratham
and Exeter Water and Waste Water Systems”*

- Detailed Presentations from Exeter and Stratham on specific facility needs and expenditures
- Initial discussion of options for collaboration
- Consensus to explore feasibility of cooperative effort.

Timeline

- Spring 2011: Towns ask RPC to act as facilitator, to develop scope for a feasibility study and seek CZP Grant;
- Summer 2011: Grant denied; Towns continue with scaled back study scope;
- Fall 2011: RPC issues RFP to 7 engineering firms; joint Exeter/Stratham/RPC committee selects Kleinfelder/SEA;
- January – May, 2012: study proceeds; three workshops held: Technical Feasibility; Infrastructure Cost; Financial Collaboration.
- August 2012: Draft Study released

Previous Studies

- Stratham - Fire Suppression System and Potable Water System Study (Wright-Pierce, 2010)
- Stratham – Overview of Water and Wastewater Systems (Stratham Public Works, 2010)
- Stratham – Wastewater Management Concept Plan (Wright-Pierce, 2011)
- Stratham – Groundwater Supply Investigation (Wright-Pierce, 2011)
- Exeter – Water Efficiency and Management Plan (Weston and Sampson, 2011)
- Exeter – Water Supply Alternatives Study (Weston and Sampson, 2010)
- Exeter – Safe Yield Analysis (Aquarion, 2003)
- Exeter – Water System Evaluation Study (CDM, 2002)

Study Objectives

Respond to these questions:

- *Will Exeter have sufficient capacity to share water and/or sewer services?*
- *Is it feasible, from a technical and engineering standpoint to share water and/or sewer services?*
- *Will it be less expensive or more expensive to cooperative than to proceed independently?*
- *If feasible and cost effective, what types intermunicipal agreements and cost sharing approaches can be used?*

Scope of Study

- Assess the feasibility and costs associated with a cooperative approach to collectively meet water and wastewater needs
- Perform demand/capacity analysis
- Identify infrastructure required for interconnections
- Develop capital and O&M costs
- Assess feasibility of different ownership alternatives
- Develop economic model
- Issue summary report, including recommendations

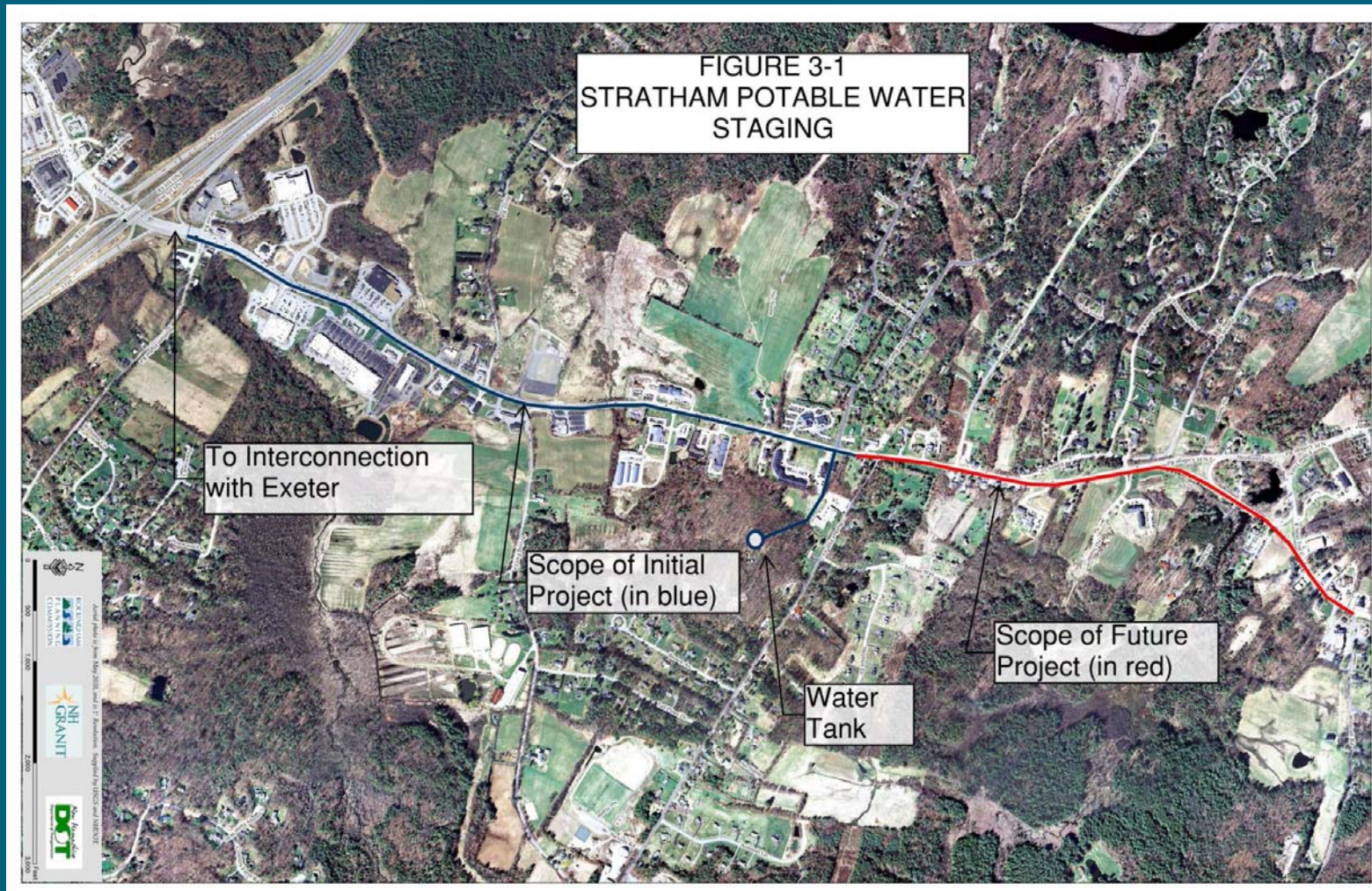
Exeter Water System

- Surface water treatment plant
 - 2.0 MGD capacity (2.3 in winter)
- Three (3) existing groundwater wells
 - Stadium and Gilman wells not currently active
 - Lary Lane well active, though use is limited
- New groundwater treatment plant
 - 1.4 MGD capacity
- Combined capacity = 3.4 MGD

Stratham Future Water System

- No existing municipal water system
 - Rte. 108 corridor currently served by private wells
- Initial phases of new system require:
 - New groundwater well and treatment system
 - New water storage tank off Bunker Hill Ave.
- Assumed Phase 1 includes new water main in Rte. 108 from Exeter town line to Bunker Hill Ave.
- Assumed Phase 2 includes extension of water main in Rte. 108 from Bunker Hill Ave. to Town Center

Stratham Future Water System



Water: Avg. Capacity & Demand

Description	Demand/Capacity (MGD)	
	Existing	Future
Exeter Combined Treatment Capacity	2.0	3.4
Exeter Avg. Day Demand	-1.1 ^a	-1.25 ^b
Exeter Spare Production Capacity (Avg. Day)	0.9	2.15
Stratham Avg. Day Demand – Phase 1 (Initial)	NA	-0.15
Stratham Avg. Day Demand – Phase 1 (Buildout)	NA	-0.35
Stratham Avg. Day Demand - Phase 1 & 2 (Buildout)	NA	-0.6 ^c

a. Exeter Water Supply Alternatives Study by Weston and Sampson, 2010

b. Demand Projections Study referenced in Exeter Water Supply Alternatives Study by Weston and Sampson, 2010

c. Buildout demand projection from Stratham Fire Suppression and Potable Water Study by Wright-Pierce, 2010

Water: Max Capacity & Demand

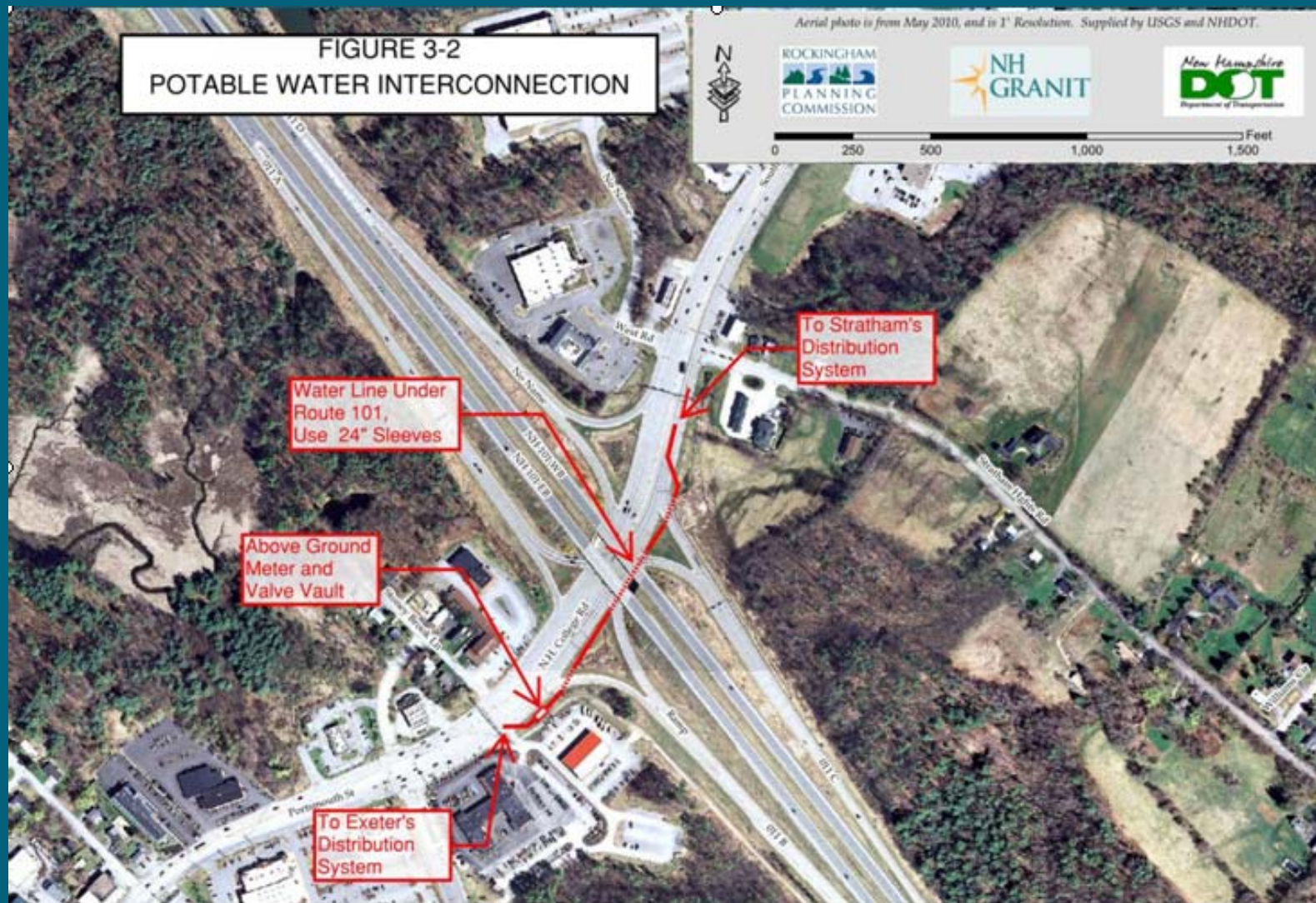
Description	Demand/Capacity (MGD)	
	Existing	Future
Exeter Combined Treatment Capacity	2.0	3.4
Exeter Max Day Demand	-1.7 ^a	-2.0 ^b
Exeter Spare Production Capacity (Max Day)	0.3	1.4
Stratham Max Day Demand – Phase 1 (Initial)	NA	-0.27
Stratham Max Day Demand – Phase 1 (Buildout)	NA	-0.63
Stratham Max Day Demand - Phase 1 & 2 (Buildout)	NA	-1.08 ^c

a. Exeter Water Supply Alternatives Study by Weston and Sampson, 2010

b. Demand Projections Study referenced in Exeter Water Supply Alternatives Study by Weston and Sampson, 2010

c. Stratham Max Day demands based on max/avg day peaking factor = 1.8

Water Interconnection



Summary of Water Evaluation

- Exeter has spare production capacity to meet initial phases of Stratham water system expansion.
- With new GW treatment plant, Exeter will have the spare production capacity to help meet later phases of Stratham expansion based on growth projections.
- Potential expansion beyond Bunker Hill Ave. (i.e. Phase 2) is assumed to occur beyond the 20-year planning period.
- Exeter system does not have hydraulic capacity to provide necessary fire flows to Stratham – Stratham expansion requires new 1.0 MG tank at Bunker Hill for fire/peak flows.
- Water interconnection to consist of meter vault (1.08 MGD capacity, or Stratham future max day) on east side of Rte. 108 at Rte 101.

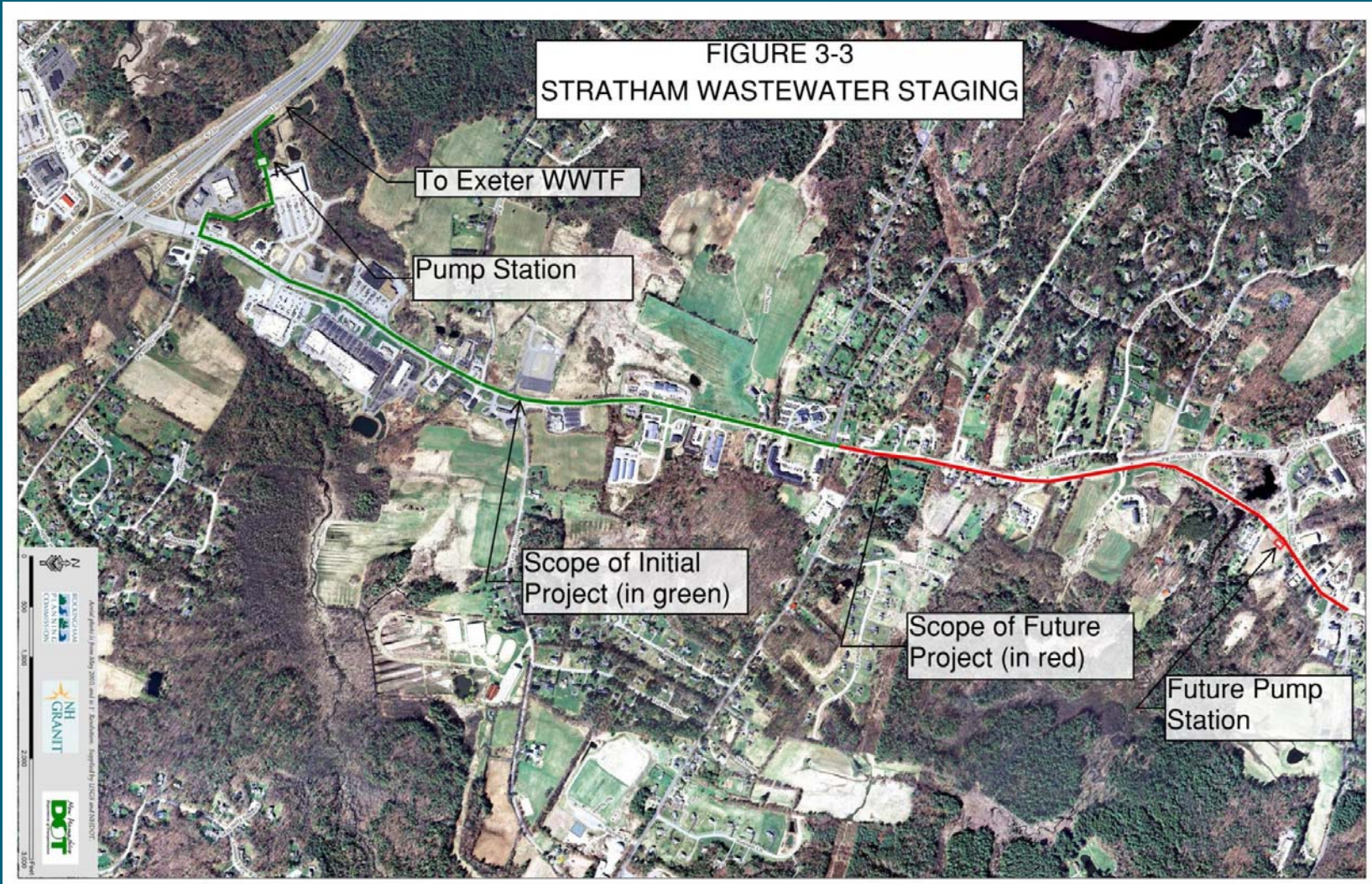
Exeter Wastewater System

- Wastewater treatment facility (WWTF)
 - 3.0 MGD capacity (avg. day)
 - 7.5 MGD capacity (peak)
 - Major plant upgrade required soon to address new nutrient permit limits
- Infiltration/inflow (I/I) significant source of flow at WWTF
- Current Jady Hill Improvements Project will reduce I/I

Stratham Future Wastewater System

- No existing municipal wastewater system
 - Rte. 108 corridor currently served by private septic systems
- Initial phases of new system require:
 - Main pumping station and force main
 - Wastewater treatment and groundwater discharge facility
- Assumed Phase 1 includes new sewer in Rte. 108 from Exeter town line to Bunker Hill Ave.
- Assumed Phase 2 includes extension of sewer in Rte. 108 from Bunker Hill Ave. to Town Center

Stratham Future Wastewater System



Wastewater: Avg. Capacity & Flows

Description	Flow/Capacity (MGD)	
	Existing	Future
Exeter WWTF Capacity (Avg. Day Flow)	3.0	3.0
Exeter Avg. Daily Flow	-2.0 ^a	-2.4 ^b
Exeter Spare WWTF Capacity (Avg. Day Flow)	1.0	0.6
Stratham Avg. Day Flow – Phase 1 (Initial)	NA	-0.17^c
Stratham Avg. Day Flow – Phase 1 (Buildout)	NA	-0.39^c
Stratham Avg. Day Flow – Phase 1 & 2 (Buildout)	NA	-0.66 ^c

a. WWTF operating data for 2010 and 2011

b. Wastewater growth assumed 20% (water growth + 5%)

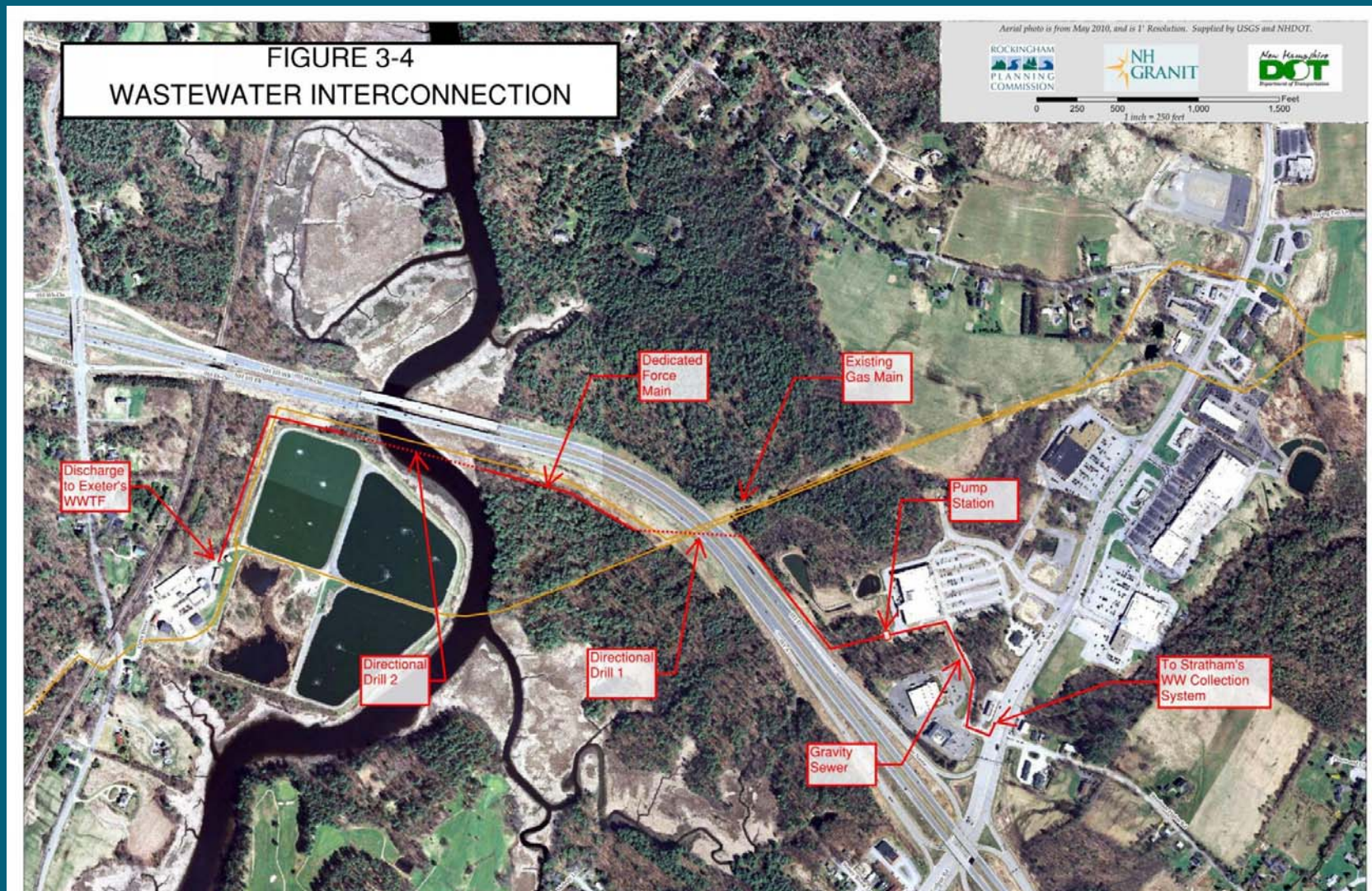
c. Projected Stratham wastewater flows = projected Stratham water demands + 10% allowance for I/I

Wastewater: Peak Capacity & Flows

Description	Flow/Capacity (MGD)	
	Existing	Future
Exeter WWTF Capacity (Peak Flow)	7.5	7.5
Exeter Peak Flow	-6.0	-7.4
Exeter Spare WWTF Capacity (Peak Flow)	1.5	0.1
Stratham Peak Flow – Phase 1 (Initial)	-	-0.45^a
Peak I/I Removal from Jady Hill Improvements	-	0.36
Exeter Spare WWTF Capacity (Peak Flow following Stratham Phase 1/Initial)	-	0.01
Stratham Peak Flow – Phase 1 (Buildout)	-	-0.94^a
Additional Peak I/I Removal Required for Stratham Phase 1 (Buildout)	-	0.48
Stratham Peak Flow - Phase 1 & 2 (Buildout)	-	1.52

a. Stratham peak flows determined by applying appropriate peaking factors to avg. flows from previous slide).

Wastewater Interconnection



Summary of Wastewater Evaluation

- Stratham initial Phase 1 wastewater system expansion in Rte. 108 will generate 0.17 MGD ADF, increasing to 0.39 MGD at buildout (assumed 20 years).
- Exeter WWTF currently has 1.0 MGD ADF spare treatment capacity, 40% of which is assumed reserved for future growth in Exeter.
- Exeter has I/I of approx. 1.0 MGD.
- Exeter WWTF has available capacity to receive flow from Stratham for initial stage of its new collection system, pending I/I removal projections for Jady Hill Improvements.
- Due to inadequate spare peak flow capacity, further removal of I/I from Exeter's system, or potential WWTF modifications, will be needed to receive additional wastewater flows.
- Hydraulic capacity limitations in Exeter system will require a direct interconnection between Stratham and Exeter WWTF (pump station in Stratham and dedicated force main to WWTF).

Economic Model Development

- Financial Collaboration Workshop held to discuss and evaluate possible ownership options (i.e. cost sharing principles)
- Modeled ownership options:
 - Independent Option
 - Collaborative/Capital Investment Option
 - District Option

EXETER/STRATHAM WATER AND WASTEWATER STUDY

SUMMARY OF ECONOMIC MODEL RESULTS

Description of Approach	Annual Unit Cost of Operation (\$/1000 gallons)				Approx. 20 Year Savings Over Independent Approach (\$)	
	Initial		Future		Exeter	Stratham
	Exeter	Stratham	Exeter	Stratham		
Water:						
Independent Option	\$8.83	\$20.91	\$6.30	\$10.11	-	-
Collaborative - Capital Investment Option ¹	\$8.48	\$17.15	\$5.74	\$8.41	\$3,809,117	\$4,229,827
District Option ²	\$8.40	\$16.46	\$5.62	\$9.08	\$4,660,844	\$3,756,795
Wastewater (8 mg/l Assumption):						
Independent Option	\$7.41	\$29.59	\$5.83	\$13.38	-	-
Collaborative - Capital Investment Option ¹	\$7.13	\$13.31	\$5.28	\$7.43	\$6,866,229	\$18,268,842
District Option ²	\$7.05	\$13.65	\$5.20	\$8.00	\$8,157,484	\$17,261,570
Wastewater (3 mg/l Assumption):						
Independent Option	\$10.18	\$29.59	\$8.40	\$13.38	-	-
Collaborative - Capital Investment Option ¹	\$9.72	\$15.44	\$7.50	\$9.39	\$11,175,797	\$14,203,650
District Option ²	\$9.60	\$16.21	\$7.41	\$10.20	\$12,838,747	\$12,580,306

1 20 year savings calculated by applying difference in 'Total Expenses' between Independent Approach and Collaborative - Capital Investment Approach. Difference is based on an average of the difference in Initial Conditions and the difference in Future Conditions.

2 20 year savings calculated by applying difference in 'Unit Cost of Operation' between Independent Approach and District Approach and applying to respective system demands. Difference is based on an average of the difference in Initial Conditions and the difference in Future Conditions.

Recommendations

- Develop Working Group to:
 - Reach consensus regarding preferred ownership option
 - Confirm/modify Capital and O&M cost sharing rationale currently outlined in model
 - Initiate discussions regarding framework for a potential Intermunicipal Agreement (IMA)
- Initiate discussions with NHDES and USEPA
 - Gauge regulatory response to shared wastewater approach and potential permitting ramifications
- Explore potential avenues for funding

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Comments & Questions?

Wrap Up / Next Steps

- Solicit written public comments within the next 30 days. Submit comments to:

Theresa Walker

Rockingham Planning Commission

156 Water Street, Exeter, NH 03833

twalker@rpc-nh.org

- Finalize Report (end of September)
- Hold future joint meeting(s) with governing bodies of Stratham and Exeter to determine preferred option