



French River Water Quality Investigation

Eastern Connecticut Conservation District
February 29, 2016

*This project is funded in part by CT DEEP through a
US EPA Clean Water Act §319 Nonpoint Source grant program.*

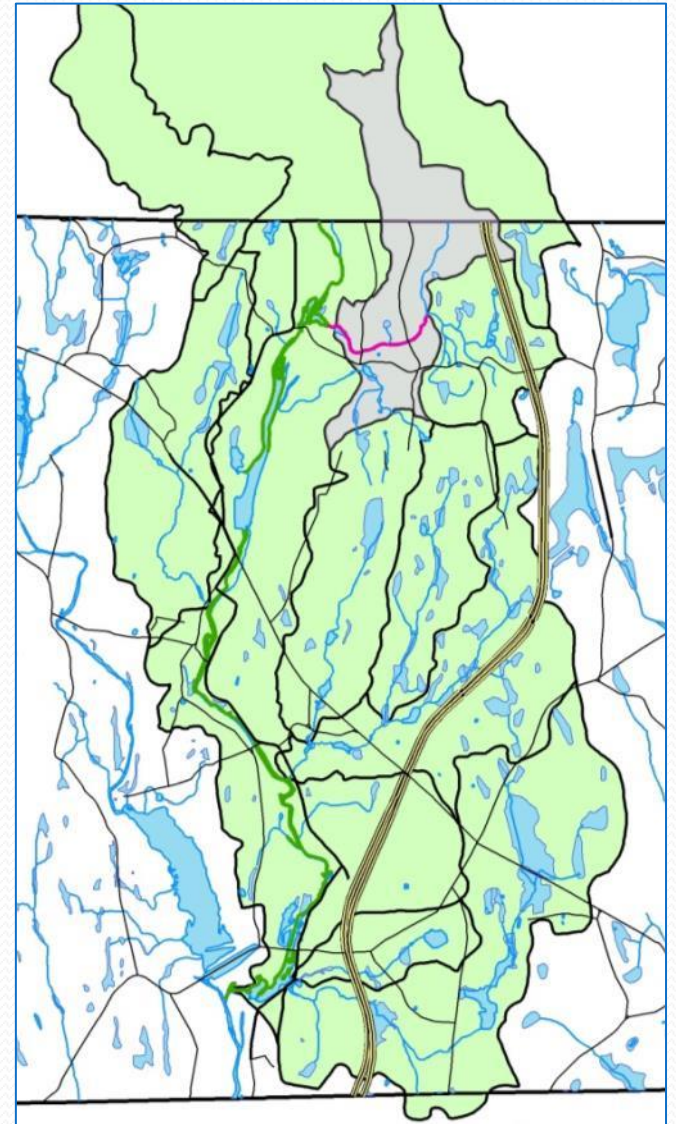
Project Partners

- Town of Thompson
- The Last Green Valley
- Northeast District Department of Health
- CT Dept. of Public Health
- CT Dept. of Energy & Environmental Protection
- US Environmental Protection Agency



Quick Outline

- Why are we investigating the French River?
- Bacteria Sampling Results
- Priority restoration list
- Implementation project
- Next Steps



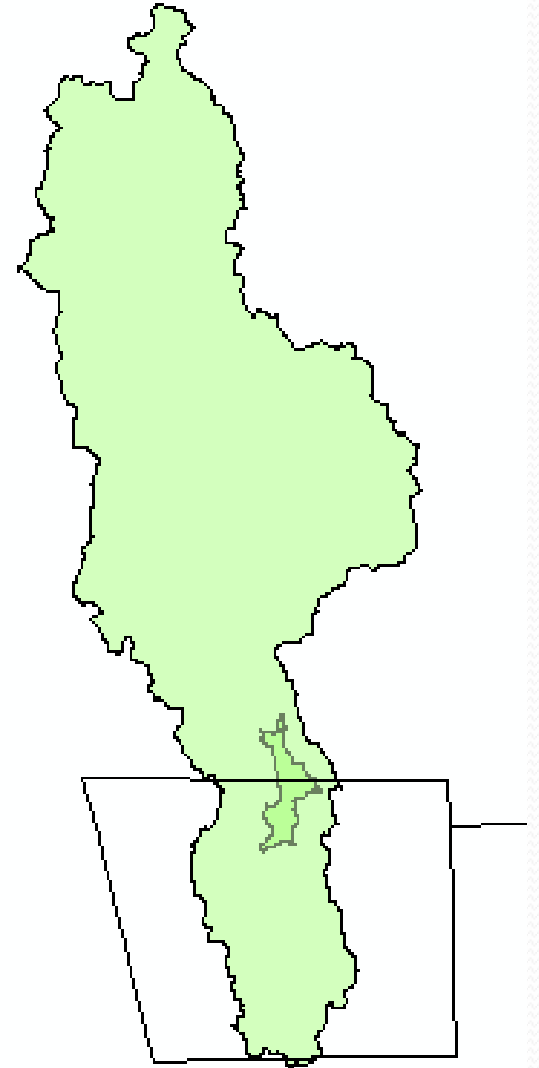
Project Watersheds

French River:

16.9 sq. miles
in Thompson
(101 sq. miles in total)

Long Branch Brook:

0.9 sq. miles in
Thompson
(1.5 sq. miles total)



Water Quality Impairment



French River - 2010 CT IWQR

Waterbody Name	French River-01	Waterbody Segment ID	CT3300-00_01
Location	From mouth at confluence with Quinebaug River (just DS of West Thompson Flood Control dam), US to North Grosvenordale Pond outlet dam (just US of Buckley Hill Road crossing), Thompson.	Waterbody Segment Size	4.61 Miles
Impaired Designated Use	Recreation		
Cause	Escherichia coli	Potential Source	Source Unknown
Category	5		

Long Branch Brook - 2012 CT IWQR

Table 3-4. Connecticut Impaired Waters List (EPA Category 5)

Waterbody Segment ID	Waterbody Name	Waterbody Type	Waterbody Size	Units	Impaired Designated Use	Cause	Comment
CT3300-02_01	Long Branch Brook (Thompson)-01	River	0.96	Miles	Recreation	Escherichia coli	Potential sources include permitted and non-permitted stormwater, insufficient septic systems, agricultural activity, nuisance wildlife/pets

CT Water Quality Standards

2011 Connecticut Water Quality Standards

APPENDIX B: WATER QUALITY CRITERIA FOR BACTERIAL INDICATORS OF SANITARY QUALITY SEE ALSO STANDARDS # 23 AND 25

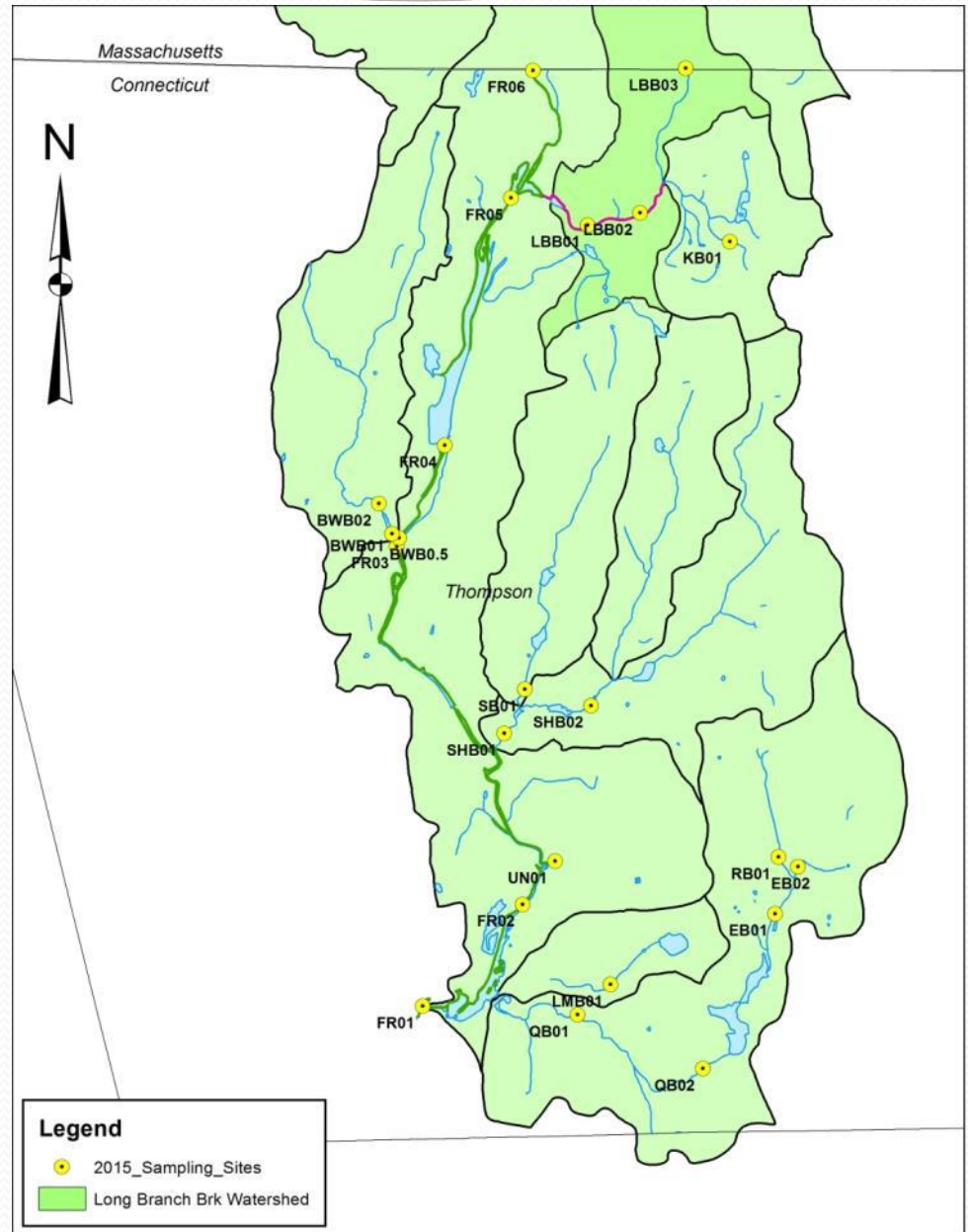
DESIGNATED USE	CLASS	INDICATOR	CRITERIA
Freshwater			
Drinking Water Supply ⁽¹⁾			
Existing / Proposed	AA	Total coliform	Monthly Moving Average less than 100/100ml Single Sample Maximum 500/100ml
Potential Recreation ⁽²⁾⁽³⁾	A	---	-----
Designated Swimming ⁽⁴⁾	AA, A, B	<i>Escherichia coli</i>	Geometric Mean less than 126/100ml Single Sample Maximum 235/100ml
Non-designated Swimming ⁽⁵⁾	AA, A, B	<i>Escherichia coli</i>	Geometric Mean less than 126/100ml Single Sample Maximum 410/100ml
All Other Recreational Uses	AA, A, B	<i>Escherichia coli</i>	Geometric Mean less than 126/100ml Single Sample Maximum 576/100ml
Saltwater			
Shellfishing ⁽⁶⁾			
Direct Consumption	SA	Fecal coliform	Geometric Mean less than 14/100ml 90% of Samples less than 31/100ml
Indirect Consumption	SB	Fecal coliform	Geometric Mean less than 88/100ml 90% of Samples less than 260/100ml
Recreation			
Designated Swimming ⁽⁴⁾	SA, SB	Enterococci	Geometric Mean less than 35/100ml Single Sample Maximum 104/100ml
All Other Recreational Uses	SA, SB	Enterococci	Geometric Mean less than 35/100ml Single Sample Maximum 500/100ml





2015 Bacteria Sampling Results

Bacteria Sampling Sites



French R. Bacteria Sampling Results

DATE	6/9/2015	6/16/2015	6/23/2015	6/30/2015	7/7/2015	7/14/2015	7/21/2015	7/28/2015	geomean
FR01	20	420	140	85	41	31	86	86	74
FR02	75	63	110	110	110	52	170 (D=160)	120	101
FR03	130	51	200	31	20 (D=10)	31	74	75 (D=41)	47
FR04	<10	10	73	<10	<10	<10	20	<10	14
FR05	41	230	63	20	31	63	63	75	57
FR06	75	300	74	52	52	150	52	96	87
LBB01	20	560	110 (D=52)	10	<10	84	20	10	36
LBB02	20	360	160	85	74	31	<10	41	56
LBB03	<10	280	170	63	20	98	52	63	61
KB01	84	880	98	85	31	63 (D=73)	20	110	83
SHB01	96	320	53	31 (D=20)	98	160	1400	320	124
SHB02	10	63	41	41	<10	20	31	<10	22
SB01	41	98	63	31	31	10 (D=10)	75	41 (D=20)	33
BWB0.5								820	---
BWB01	86	200 (D=230)	130	110	340	110	84	85	135
BWB02	20	73	41	110	<10	<10	41	41	32
UN01	10	150	120	41	10	73	20	31	37
LMB01	41 (D=30)	230	84	63	41	270	52	830	96
QB01	160	410	330	220	110	370	790	1100	338
QB02						2100	280 (D=170)	170	361
RB01						110	120	31	74
EB01						160	97	---	125
EB02						110	300	98	148
Wet/Dry?	dry	wet	dry	dry	dry	dry	dry/wet*	dry	dry

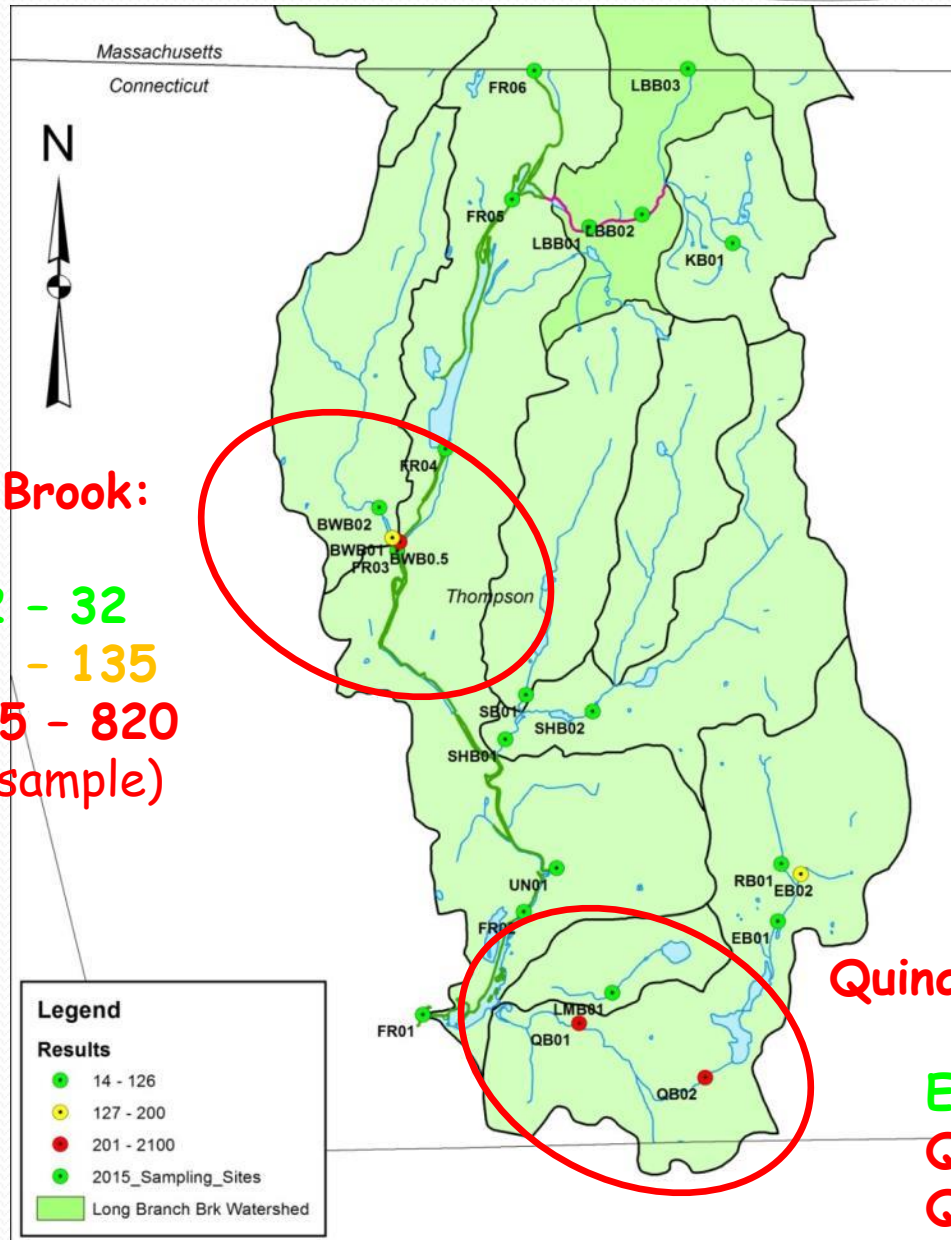
D indicates duplicate sample

* Began to rain midway through sampling

Bacteria Hotspots

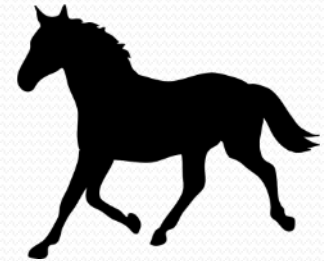
Backwater Brook:

BWB02 - 32
BWB01 - 135
BWB0.5 - 820
(single sample)

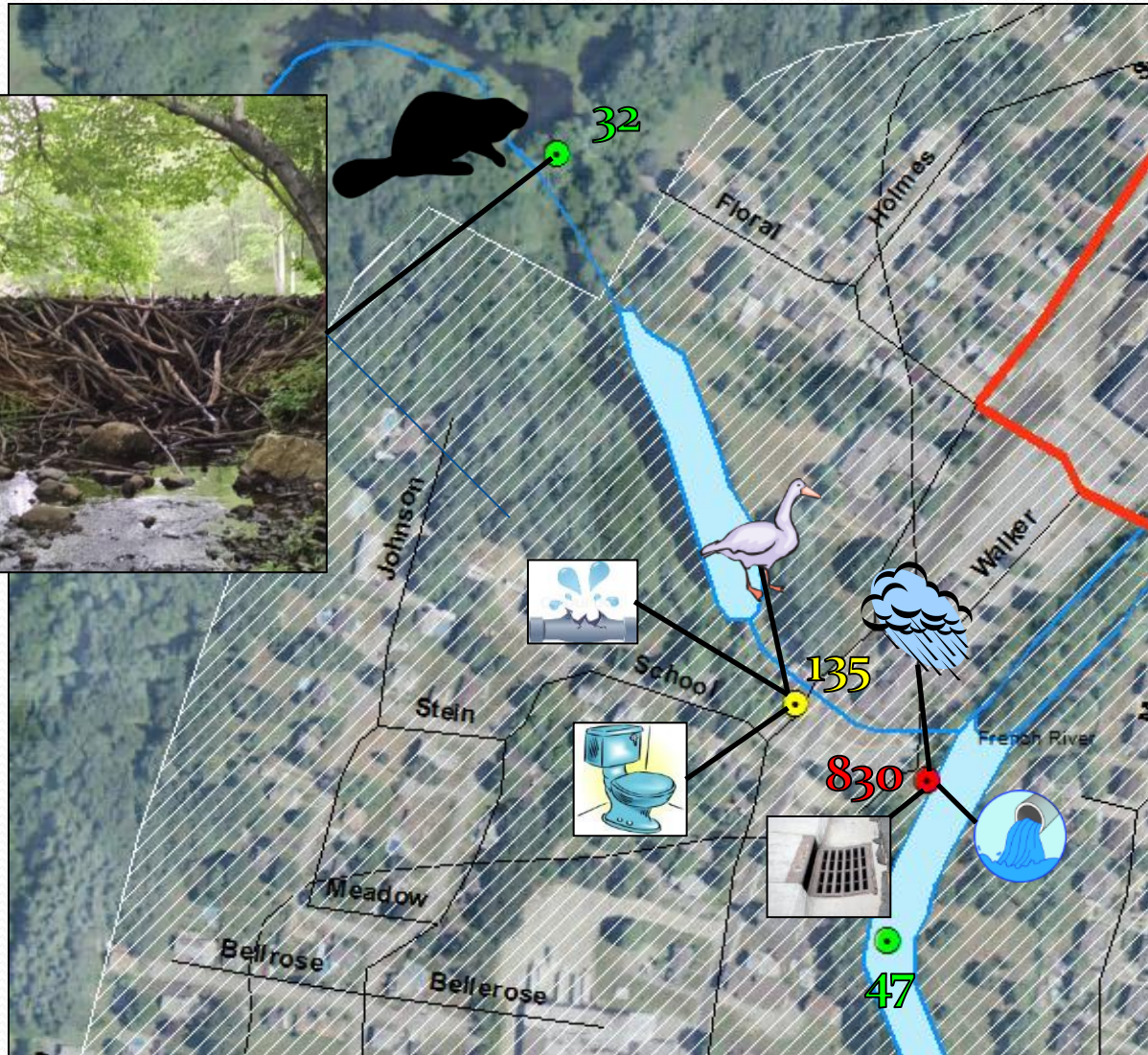


Possible Sources?

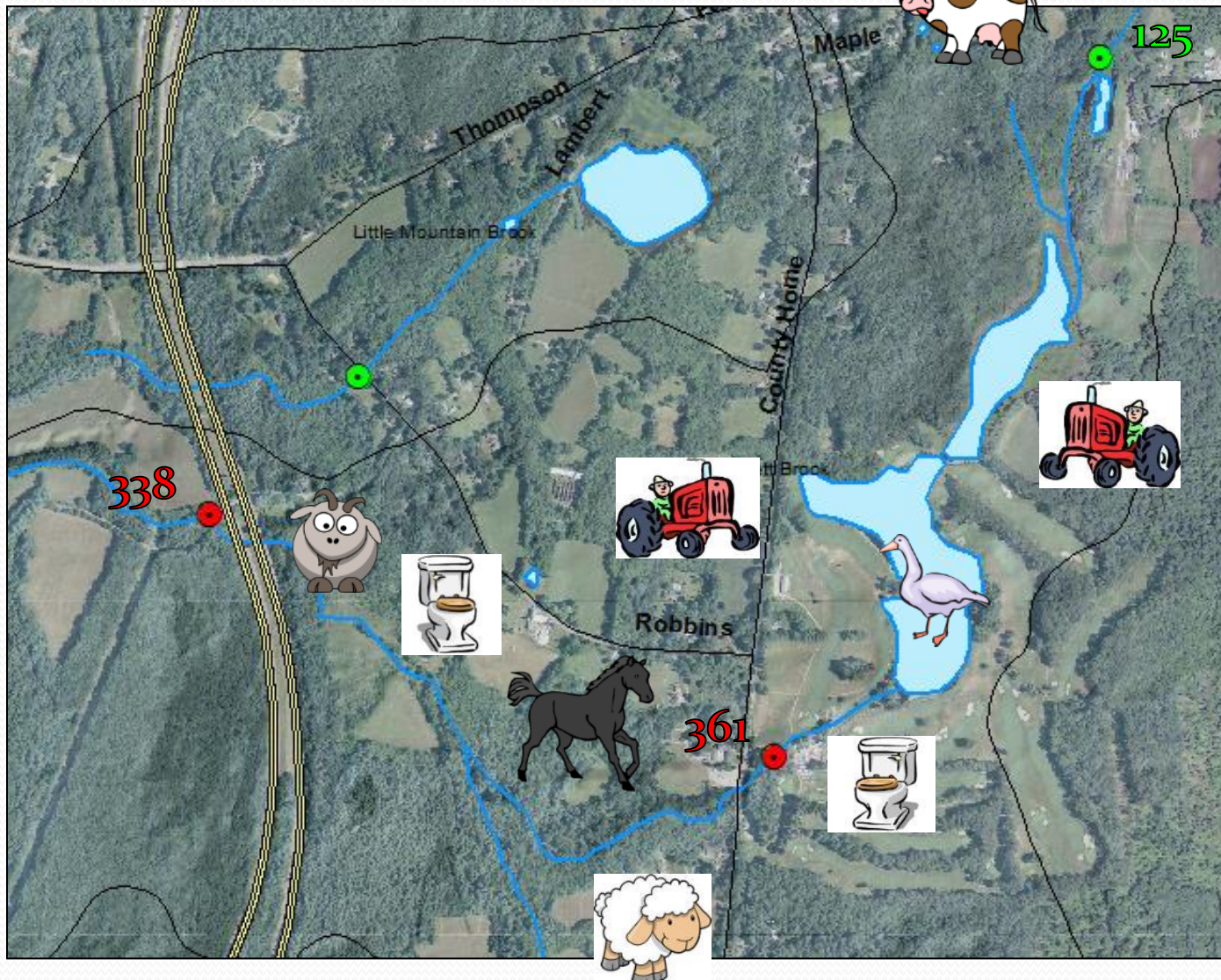
- Septic systems/sewers
- Illicit discharges
- Municipal "housekeeping" practices
- Land management practices/uses
- Livestock
- Pets
- Wildlife



Backwater Brook



Quinatissett Brook



Priority Restoration List

- Areas of greatest need
- Most likely bacteria source location
- Best retrofit potential
- Most effective anticipated result
- Site visibility/educational benefit



French River Priority Restoration List

- f) **Develop priority restoration list.** The Contractor shall submit a list of prioritized bacteria sources for further investigation and identify the locations of the highest priorities for use within the Watershed Plan.

Priority Site	Site/ Waterbody	Site Location	Possible Bacteria Source	*Bacteria Geomean (cfu/100ml)	Reduction Needed	Suggested Management Action(s)
1	Backwater Brook (BWB01)	downstream of the Duhamel Pond outlet near Main Street, North Grosvenordale	Waterfowl; unsewered properties; illicit discharges	135	7%	Investigate if any properties abutting pond are not sewered; illicit discharges; remove waterfowl
2	Backwater Brook at French River (BWB0.5)	end of culvert at French River, Thompson Public Library property, ~30 ft north of foot bridge	Main St and Library storm drain system; illicit discharges; sewer leaks	820 (single sample)	42% (single sample)	Investigate storm drain connections to culverted brook; illicit discharges; sewer lines
3	Quinatissett Brook (QB02)	downstream of Reams Pond at golf course, County Home Road (State RT 21)	Septic system at golf course of unknown location, age and design; waterfowl	361	186.5%	Septic system dye test; locate septic system; Bacteria DNA test; manage waterfowl
4	Quinatissett Brook (QB01)	at Ballard Road crossing, near Interstate RT 395 overpass	horses on Robbins Road; goats on Ballard Road (? - may be gone); septic systems	338	168%	Promote manure BMPs; identify/ evaluate failing/ underperforming septic systems

* The 2013 Connecticut Water Quality Standards establish water quality criteria for indicator bacteria, including E. coli, which is the preferred indicator bacterium for fresh waterbodies. For recreational contact, excluding designated and non-designated swimming areas, the single sample maximum is 576 colony-forming units (cfu) per 100 milliliters of water and the maximum sample set geometric mean is less than 126 cfu/100 ml.

U.S. Post Office

big retention

RG #1

RG #2

THOMPSON TOWN HALL
(815 RIVERSIDE DR.)

RAIN

RAIN

RAIN TO SCHOOL

ROUTE 12

RIVERSIDE DRIVE

FRANK RIVER

LOCATION MAP

FRANK RIVER



Thompson Town Hall
815 Riverside Drive
N. Grosvenordale, CT

Town Hall Stormwater Treatment Retrofit Plan

Land Use Office
August 2012

Vegetated Roof



www.1000funfacts.com

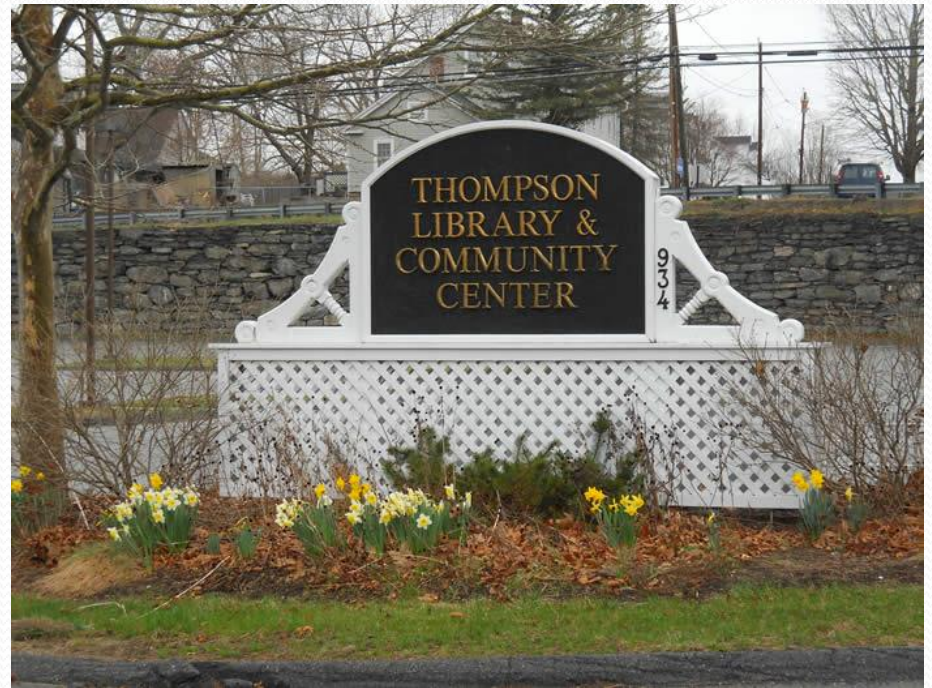


recovergreenroofs.com

Implementation Project

Thompson Public Library:

- Pervious pavers
- Roof runoff capture
- Rain garden
- Tree filters
- Good housekeeping practices



Thompson Public Library

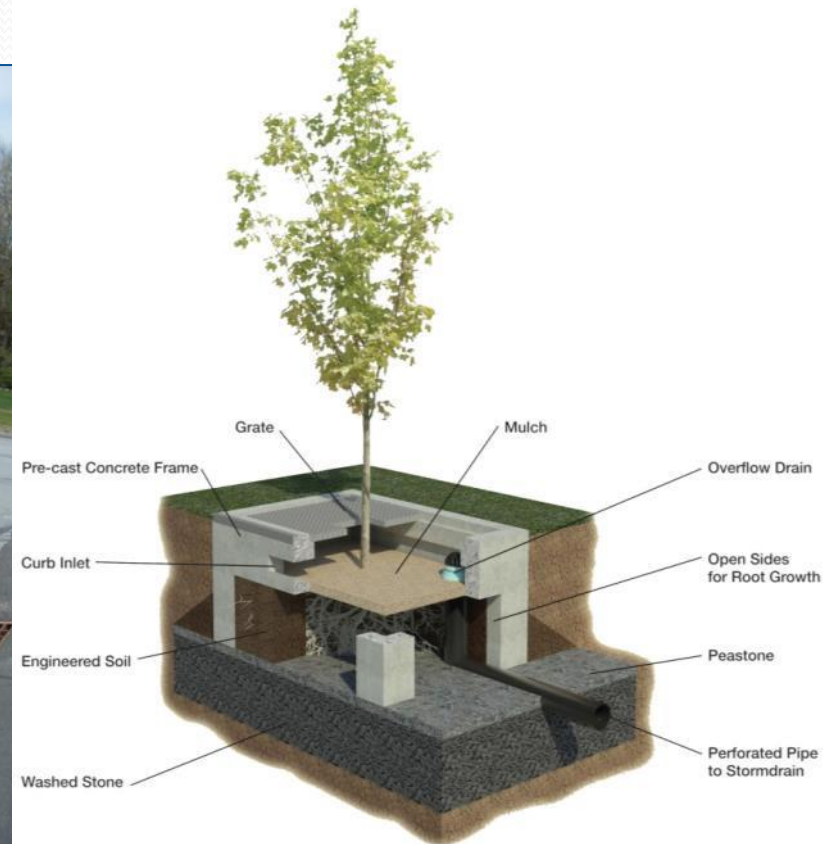
Possible Stormwater Management Practices



Rain Gardens/Bioretention



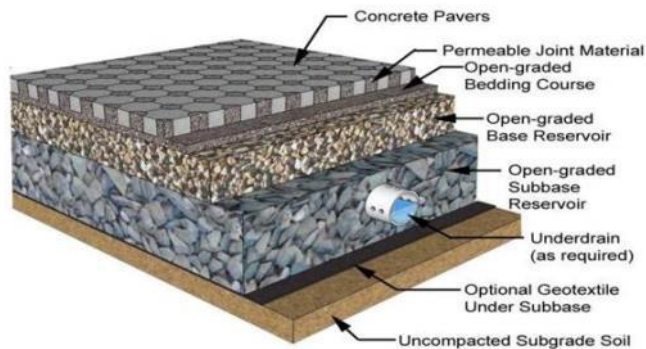
Tree Filters



Pervious Pavement



www.pavementinteractive.org



dict.space.4goo.net



www.marylandconcrete.com



www.terram.com

Roof runoff capture & reuse

Rain barrel



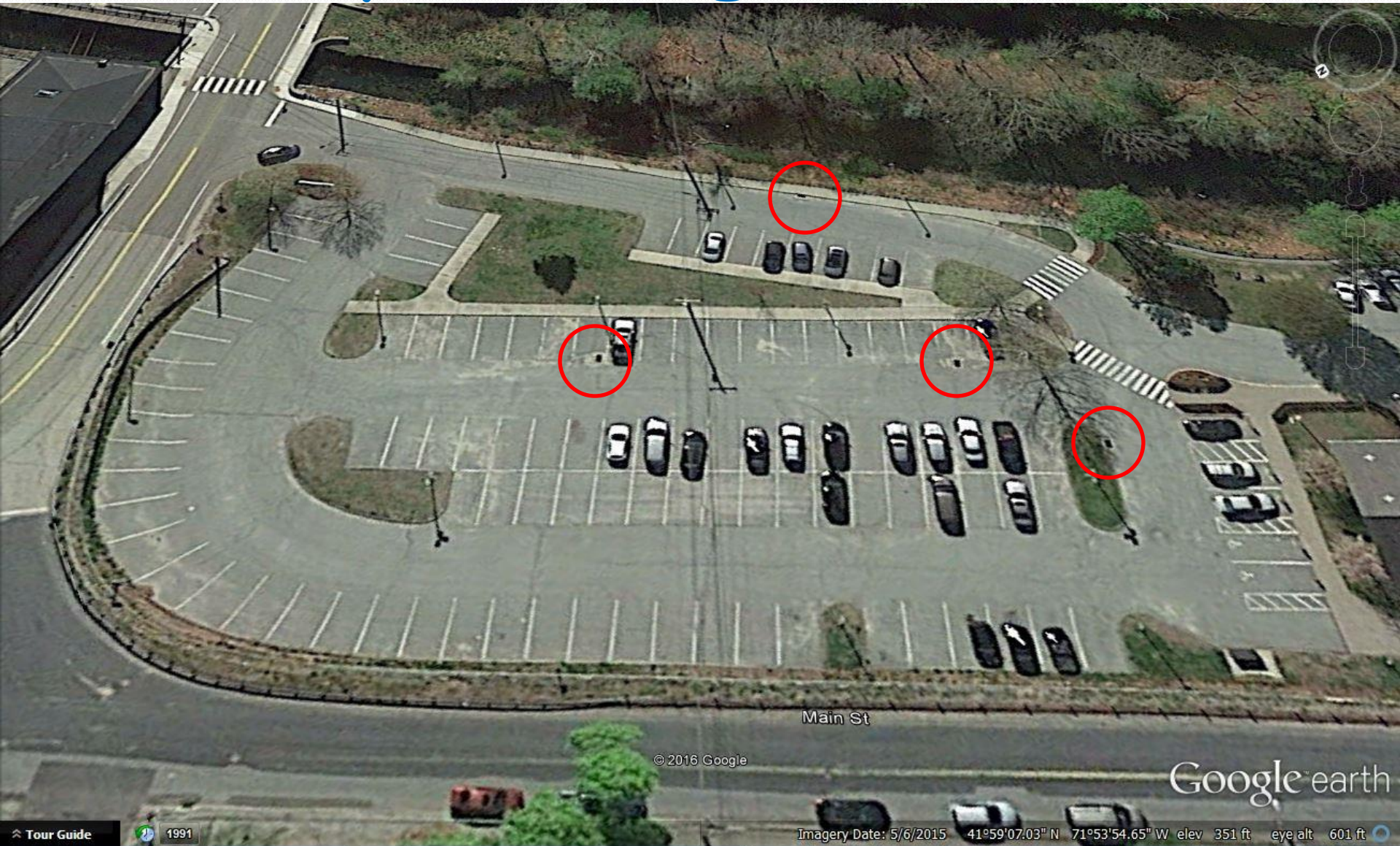
ferncreekdesign.org

Rain chain & planter box



www.absolutebodo.com

Library Parking Lot - ???



Dry well/seepage pit



Next Steps

Winter/Spring 2016:

- Review bacteria sampling results
- Identify priority restoration areas
- Prepare priority restoration list in consultation with stakeholders

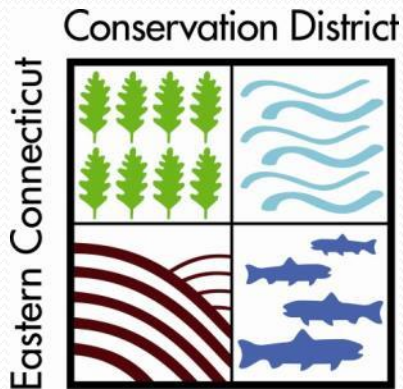
Fall/Winter 2016/17:

- Prepare draft watershed management plan
- Review with stakeholders
- Select/plan one priority restoration item

Spring/Summer 2017:

- Prepare final draft of watershed management plan
- Conduct one priority restoration item





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