Appendix C – Farmland Conversion Form

U.S. DEPARTMENT OF AGRICULTURE — Form AD-1006

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	1. Date of Land Evaluation Request **May 31, 2006**	2. Sheet 1 of 2
3. Name of Project: **Newington-Dover, NHS-027-1(37), 11238**	4. Federal Agency Involved: **Federal Highway Administration**	
5. Proposed Land Use **Spaulding Turnpike Widening and Interchange Improvements**	6. County and State: **Rockingham County, NH**	7. Type of Project: Corridor ☒ Other ☐
PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS 2. 5/31/06	3. Person Completing the NRCS parts of this form: Katherine Swain
3. Does the site or corridor contain prime, unique, statewide or local important farmland? Yes ☒ No ☐ (If no, the FPPA does not apply - Do not complete additional parts of this form)	4. Acres Irrigated -0-	5. Average Farm Size acres 125 Ac.
6. Major Crop(s) Corn Silage, grass legume hay	7. Farmable Land in Government Jurisdiction Acres: 349,686 % 75	8. Amount of Farmland As Defined in FPPA Acres: 126,772 % 27
9. Name of Land Evaluation System Used Rockingham Co.	10. Name of Local Site Assessment System NA	11. Date Land Evaluation Returned by NRCS 6/9/06

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A (Alt 10A)	**Site B (Alt 12A)**	**Site C (Alt 13)**	**Site D**
A. Total Acres To Be Converted Directly (i.e., for additional right-of-way acquisition)	3.60	9.23	2.69	
B. Total Acres To Be Converted Indirectly, Or To Receive Services	0	0	0	
C. Total Acres in Site (i.e., within corridor, 3.5 miles X approx. 1000 ft. wide)	424.2	424.2	424.2	
PART IV *(To be completed by NRCS) Land Evaluation Information)*				
A. Total Acres Prime and Unique Farmland (all prime)	3.59	7.77	2.68	
B. Total Acres Statewide and Local Important Farmland	0.01	1.46	0.01	
C. Percentage of Farmland in County or Local Govt. Unit to be Converted	<0.0003	<0.0003	<0.0003	
D. Percentage of Farmland in Govt. Jurisdiction with Same or Higher Relative Value	% 77	% 77	77	
PART V *(To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland to be Serviced or Converted (Scale of 0 - 100 Points)*	1	2	1	

PART VI *(To be completed by Federal Agency) Corridor or Site Assessment Criteria (These criteria are explained in 7 CFR 658.5(b & c))*	**Max. Points Corridor**	**Max. Points Other**				
1. Area in Nonurban Use	15	15	10	10	10	
2. Perimeter in Nonurban Use	10	10	5	5	5	
3. Percent of Site Being Farmed	20	20	5	5	5	
4. Protection Provided by State and Local Government	20	20	0	0	0	
5. Distance from Urban Built-up area	0	15	0	0	0	
6. Distance to Urban Support Services	0	15	0	0	0	
7. Size of Present Farm Unit Compared to Average	10	10	0	0	0	
8. Creation of Non-Farmable Farmland	25	10	0	0	0	
9. Availability of Farm Support Services	5	5	5	5	5	
10. On-Farm Investments	20	20	3	3	3	
11. Effects of Conversion on Farm Support Services	25	10	0	0	0	
12. Compatibility with Existing Agricultural Use	10	10	5	5	5	
TOTAL CORRIDOR OR SITE ASSESSMENT POINTS	160		33	33	33	
PART VII *(To be completed by Federal Agency)*						
Relative Value of Farmland (from Part V above)	100		1	2	1	
Total Corridor or Site Assessment (From Part VI above or a local site assessment)	160		33	33	33	
TOTAL POINTS *(Total of above 2 lines)*	260		34	35	34	

PART VIII *(To be completed by Federal Agency after final alternative is chosen)*

1. Corridor or Site Selected: Site A (Alt. 13, the Preferred Alternative). See page 2 for description.	2. Date of Selection:	3. Was A Local Site Assessment Used? Yes ☐ No ☒

4. Reason For Selection:

Site A – Alternative 13 provided the best compromise relative to avoidance of impacts to private property, while also minimizing any impacts to natural resources including important farmland soils.

Signature of person completing the Federal Agency parts of this form:	DATE
(William J. Barry, Vanasse Hangen Brustlin, Inc.)	05/31/06 6/13/06

Definition of alternatives used in Part III:

For Newington roadway segment:

Site A = Alternative 10A
Site B = Alternative 12A.
Site C = Alternative 13 or the Preferred Alternative (i.e., compact interchange at Woodbury Ave. and no improvement along Patterson Lane to Shattuck Way)

Note: There are no important farmland soils affected in the two other roadway segments (i.e., the "Bridge" and "Dover" segments).

Appendix D – NEWILD Data

NEWILD COMPUTER PROGRAM SEARCH RESULTS

The NEWILD computer program (Thomasma et al. 1998) was used to compile lists of vertebrate species potentially utilizing habitats in the Newington-Dover Project corridor. The following habitats were searched:

1. Grass/Forb/Pasture
2. Shrub/Old Field
3. Orchard
4. Stream
5. Shallow Marsh
6. Sedge Meadow
7. Shrub Swamp
8. Riparian
9. Red Maple
10. White Pine/Red Oak/Red Maple
11. Northern Hardwoods
12. Structure, Building (Urban)

Seasonal Use Symbols:

B = Breeding season (amphibians and reptiles)
B = Breeding season (birds and mammals)
BF = Breeding and feeding (birds and mammals only)
N = Winter (amphibians and reptiles)
N = Winter (birds and mammals)
NF = Winter feeding (birds and mammals only)
On species list header, * = search restricted to preferred only

Utilized/Preferred symbols:

x = utilized habitat
+ = preferred habitat

Forest size class symbols:

S = Regeneration through seedlings
Sp = Saplings through poletimber
St = Sawtimber
L = Large sawtimber
U = Uneven-aged (Northern hardwoods only)
On habitat list, x =size class selections

New England Wildlife - search results

Search Summary

The search was done using 3 nonforested habitats

Number of amphibians:	0
Number of reptiles:	5
Number of birds:	31
Number of mammals:	8
TOTAL:	44

Number of species included in search: 338
Total number of species in NEWILD: 338

All seasons selected (preferred only)

Seasonal use symbols:

B = Breeding season (amphibians and reptiles)
B = Breeding season (birds and mammals)
BF = Breeding and feeding (birds and mammals only)
N = Winter (amphibians and reptiles)
N = Winter (birds and mammals)
NF = Winter feeding (birds and mammals only)
on species list header, * = search restricted to preferred only

Utilized/Preferred symbols:

x = utilized habitat
+ = preferred habitat

New England Wildlife - search results

A search was done using the following habitat components:

Nonforested habitats:

- Grass
- Forb
- Pasture

The following wildlife species were found:

	B*	BF*	N*	NF*
Spotted Turtle	+			
Red-eared Slider	+			
Eastern Hognose Snake	+			
Northern Black Racer	+			
Eastern Smooth Green Snake	+			
Turkey Vulture		+		
Broad-winged Hawk		+		
Red-tailed Hawk		+		
Rough-legged Hawk			+	+
American Kestrel	+	+	+	+
Gray Partridge	+	+	+	+
Ring-necked Pheasant	+	+		
Northern Bobwhite	+	+	+	+
Upland Sandpiper	+	+		
American Woodcock		+		
Horned Lark	+	+		
Northern Rough-winged Swallow		+		
Cliff Swallow		+		
Barn Swallow		+		
Brown Thrasher	+	+		
Northern Shrike			+	+
Common Yellowthroat	+	+		
Yellow-breasted Chat	+	+		
Indigo Bunting		+		
Field Sparrow	+	+	+	+
Vesper Sparrow	+	+		
Savannah Sparrow	+	+	+	+
Grasshopper Sparrow	+	+		
Henslow's Sparrow	+	+		
Song Sparrow	+	+	+	+
Bobolink	+	+		
Eastern Meadowlark	+	+	+	+
Common Redpoll			+	+

	B	BF	N	NF
Hoary Redpoll			+	+
Pine Siskin				+
American Goldfinch	+	+		
Least Shrew	+	+	+	+
Eastern Mole	+	+	+	+
Eastern Cottontail	+	+		
Woodchuck	+	+	+	
Meadow Vole	+	+	+	+
Woodland Vole	+	+	+	+
Meadow Jumping Mouse	+	+	+	
Red Fox		+		+

New England Wildlife - search results

Search Summary

The search was done using 1 nonforested habitat

Number of amphibians:	0
Number of reptiles:	1
Number of birds:	7
Number of mammals:	7
TOTAL:	15

Number of species included in search: 338
Total number of species in NEWILD: 338

All seasons selected (preferred only)

Seasonal use symbols:

B = Breeding season (amphibians and reptiles)
B = Breeding season (birds and mammals)
BF = Breeding and feeding (birds and mammals only)
N = Winter (amphibians and reptiles)
N = Winter (birds and mammals)
NF = Winter feeding (birds and mammals only)
on species list header, * = search restricted to preferred only

Utilized/Preferred symbols:

x = utilized habitat
+ = preferred habitat

New England Wildlife - search results

A search was done using the following habitat components:

Nonforested habitats:

Shrub / old field

The following wildlife species were found:

	B*	BF*	N*	NF*
Black Rat Snake	+			
Ring-necked Pheasant			+	+
Willow Flycatcher	+	+		
Northern Mockingbird	+			
Blue-winged Warbler	+	+		
Golden-winged Warbler	+	+		
Fox Sparrow			+	+
White-throated Sparrow			+	+
Eastern Cottontail	+	+	+	+
New England Cottontail	+	+		
Snowshoe Hare	+	+		
White-footed Mouse	+	+	+	+
Woodland Jumping Mouse	+	+	+	
Ermine	+	+	+	+
Striped Skunk			+	

New England Wildlife - search results

Search Summary

The search was done using 1 nonforested habitat

Number of amphibians:	0
Number of reptiles:	0
Number of birds:	5
Number of mammals:	5
TOTAL:	10

Number of species included in search: 338
Total number of species in NEWILD: 338

All seasons selected (preferred only)

Seasonal use symbols:

B = Breeding season (amphibians and reptiles)
B = Breeding season (birds and mammals)
BF = Breeding and feeding (birds and mammals only)
N = Winter (amphibians and reptiles)
N = Winter (birds and mammals)
NF = Winter feeding (birds and mammals only)
on species list header, * = search restricted to preferred only

Utilized/Preferred symbols:

x = utilized habitat
+ = preferred habitat

New England Wildlife - search results

A search was done using the following habitat components:

Nonforested habitats:

Orchard

The following wildlife species were found:

	B*	BF*	N*	NF*
Yellow-bellied Sapsucker			+	+
Eastern Kingbird	+	+		
White-breasted Nuthatch			+	+
Eastern Bluebird	+	+		
Orchard Oriole	+	+		
Eastern Cottontail	+	+		
Woodchuck	+	+	+	
Meadow Vole	+	+	+	+
Woodland Vole	+	+	+	+
Black Bear		+		

New England Wildlife - search results

Search Summary

The search was done using 1 nonforested habitat

Number of amphibians:	6
Number of reptiles:	2
Number of birds:	1
Number of mammals:	10
TOTAL:	19

Number of species included in search: 338
Total number of species in NEWILD: 338

All seasons selected (preferred only)

Seasonal use symbols:

B = Breeding season (amphibians and reptiles)
B = Breeding season (birds and mammals)
BF = Breeding and feeding (birds and mammals only)
N = Winter (amphibians and reptiles)
N = Winter (birds and mammals)
NF = Winter feeding (birds and mammals only)
on species list header, * = search restricted to preferred only

Utilized/Preferred symbols:

x = utilized habitat
+ = preferred habitat

New England Wildlife - search results

A search was done using the following habitat components:

Nonforested habitats:

Stream

The following wildlife species were found:

	B*	BF*	N*	NF*
Mudpuppy	+		+	
Northern Dusky Salamander	+			
Mountain Dusky Salamander	+			
Northern Spring Salamander	+			
Northern Two-lined Salamander	+			
Mink Frog	+			
Wood Turtle			+	
Eastern Ribbon Snake	+			
Spotted Sandpiper	+	+		
Water Shrew	+	+	+	+
Little Brown Myotis		+		
Keen's Myotis		+		
Silver-haired Bat		+		
Eastern Pipistrelle		+		
Big Brown Bat		+		
Beaver	+	+	+	+
Mink	+	+	+	+
River Otter	+	+	+	+
Moose		+		

New England Wildlife - search results

Search Summary

The search was done using 1 nonforested habitat

Number of amphibians:	2
Number of reptiles:	1
Number of birds:	21
Number of mammals:	13
TOTAL:	37

Number of species included in search: 338
Total number of species in NEWILD: 338

All seasons selected (preferred only)

Seasonal use symbols:

B = Breeding season (amphibians and reptiles)
B = Breeding season (birds and mammals)
BF = Breeding and feeding (birds and mammals only)
N = Winter (amphibians and reptiles)
N = Winter (birds and mammals)
NF = Winter feeding (birds and mammals only)
on species list header, * = search restricted to preferred only

Utilized/Preferred symbols:

x = utilized habitat
+ = preferred habitat

New England Wildlife - search results

A search was done using the following habitat components:

Nonforested habitats:

Shallow marsh

The following wildlife species were found:

	B*	BF*	N*	NF*
Northern Spring Peeper	+			
Northern Leopard Frog			+	
Spotted Turtle			+	
Pied-billed Grebe	+	+		
American Bittern	+	+		
Least Bittern	+	+		
Great Blue Heron	+	+		
Green-backed Heron	+	+		
Canada Goose	+	+		
Green-winged Teal	+	+		
American Black Duck	+	+	+	+
Mallard	+	+		
Blue-winged Teal	+	+		
Northern Shoveler	+	+		
Northern Harrier	+	+		
King Rail	+	+		
Virginia Rail	+	+	+	+
Sora	+	+		
Common Moorhen	+	+		
Black Tern	+	+		
Eastern Screech-Owl				+
Tree Swallow		+		
Red-winged Blackbird	+	+		
American Goldfinch	+	+		
Virginia Opossum		+		
Water Shrew	+	+	+	+
Little Brown Myotis		+		
Keen's Myotis		+		
Silver-haired Bat		+		
Eastern Pipistrelle		+		
Big Brown Bat		+		
Eastern Cottontail	+	+		
Muskrat	+	+	+	+
Southern Bog Lemming	+	+	+	+
Meadow Jumping Mouse	+	+		

	B	BF	N	NF
Raccoon		+		
Mink	+	+	+	+

New England Wildlife - search results

Search Summary

The search was done using 1 nonforested habitat

Number of amphibians:	1
Number of reptiles:	3
Number of birds:	2
Number of mammals:	8
TOTAL:	14

Number of species included in search: 338
Total number of species in NEWILD: 338

All seasons selected (preferred only)

Seasonal use symbols:

B = Breeding season (amphibians and reptiles)
B = Breeding season (birds and mammals)
BF = Breeding and feeding (birds and mammals only)
N = Winter (amphibians and reptiles)
N = Winter (birds and mammals)
NF = Winter feeding (birds and mammals only)
on species list header, * = search restricted to preferred only

Utilized/Preferred symbols:

x = utilized habitat
+ = preferred habitat

New England Wildlife - search results

A search was done using the following habitat components:

Nonforested habitats:

Sedge meadow

The following wildlife species were found:

	B*	BF*	N*	NF*
Northern Leopard Frog	+			
Spotted Turtle	+			
Bog Turtle	+			
Eastern Ribbon Snake	+			
Sedge Wren	+	+		
Henslow's Sparrow	+	+		
Virginia Opossum		+		
Water Shrew	+	+	+	+
Northern Short-tailed Shrew	+	+	+	+
Star-nosed Mole	+	+	+	+
Eastern Cottontail	+	+		
Southern Bog Lemming	+	+	+	+
Northern Bog Lemming	+	+	+	+
Meadow Jumping Mouse	+	+		

New England Wildlife - search results

Search Summary

The search was done using 1 nonforested habitat

Number of amphibians:	0
Number of reptiles:	0
Number of birds:	14
Number of mammals:	12
TOTAL:	26

Number of species included in search: 338
Total number of species in NEWILD: 338

All seasons selected (preferred only)

Seasonal use symbols:

B = Breeding season (amphibians and reptiles)
B = Breeding season (birds and mammals)
BF = Breeding and feeding (birds and mammals only)
N = Winter (amphibians and reptiles)
N = Winter (birds and mammals)
NF = Winter feeding (birds and mammals only)
on species list header, * = search restricted to preferred only

Utilized/Preferred symbols:

x = utilized habitat
\+ = preferred habitat

New England Wildlife - search results

A search was done using the following habitat components:

Nonforested habitats:

Shrub swamp

The following wildlife species were found:

	B*	BF*	N*	NF*
Black-crowned Night-Heron	+			
Yellow-crowned Night-Heron	+			
Glossy Ibis	+			
Red-shouldered Hawk		+		
Common Snipe	+	+	+	+
Yellow-bellied Flycatcher	+	+		
Alder Flycatcher	+	+		
White-eyed Vireo	+	+		
Common Yellowthroat	+	+		
Hooded Warbler	+	+		
Song Sparrow	+	+		
Swamp Sparrow	+	+		
Common Grackle	+	+		
American Goldfinch	+	+		
Virginia Opossum		+		
Water Shrew	+	+	+	+
Little Brown Myotis		+		
Keen's Myotis		+		
Silver-haired Bat		+		
Eastern Pipistrelle		+		
Big Brown Bat		+		
Eastern Cottontail	+	+		
New England Cottontail	+	+	+	+
Snowshoe Hare	+	+		
Raccoon		+		
Lynx		+	+	+

New England Wildlife - search results

Search Summary

The search was done using 1 nonforested habitat

Number of amphibians:	4
Number of reptiles:	5
Number of birds:	21
Number of mammals:	13
TOTAL:	43

Number of species included in search: 338
Total number of species in NEWILD: 338

All seasons selected (preferred only)

Seasonal use symbols:

B = Breeding season (amphibians and reptiles)
B = Breeding season (birds and mammals)
BF = Breeding and feeding (birds and mammals only)
N = Winter (amphibians and reptiles)
N = Winter (birds and mammals)
NF = Winter feeding (birds and mammals only)
on species list header, * = search restricted to preferred only

Utilized/Preferred symbols:

x = utilized habitat
+ = preferred habitat

New England Wildlife - search results

A search was done using the following habitat components:

Nonforested habitats:

Riparian

The following wildlife species were found:

	B*	BF*	N*	NF*
Jefferson Salamander			+	
Mountain Dusky Salamander	+			
Northern Two-lined Salamander	+		+	
Green Frog	+			
Midland Painted Turtle	+			
Blanding's Turtle	+			
Eastern Spiny Softshell	+			
Eastern Ribbon Snake	+			
Eastern Worm Snake	+			
Wood Duck	+	+		
Red-shouldered Hawk	+	+	+	+
Eastern Screech-Owl	+	+	+	+
Barred Owl	+	+	+	+
Belted Kingfisher		+	+	+
Red-bellied Woodpecker	+	+	+	+
Eastern Wood-Pewee	+	+		
Alder Flycatcher	+	+		
Northern Rough-winged Swallow	+	+		
Tufted Titmouse	+	+	+	+
Veery	+	+		
Gray Catbird	+	+		
Yellow Warbler	+	+		
Cerulean Warbler	+	+		
Prothonotary Warbler	+	+		
Northern Waterthrush	+	+		
Louisiana Waterthrush	+	+		
Common Yellowthroat	+	+		
Yellow-breasted Chat	+	+		
Song Sparrow	+	+		
American Goldfinch			+	+
Virginia Opossum	+	+		
Northern Short-tailed Shrew	+	+	+	+
Little Brown Myotis		+		
Keen's Myotis		+		
Silver-haired Bat		+		

	B	BF	N	NF
Eastern Pipistrelle		+		
Big Brown Bat		+		
Beaver	+	+	+	+
Raccoon		+		
Long-tailed Weasel	+	+	+	+
Mink	+	+	+	+
River Otter	+	+	+	+
Moose		+		

New England Wildlife - search results

Search Summary

The search was done using 4 forested habitats

Number of amphibians:	7
Number of reptiles:	3
Number of birds:	49
Number of mammals:	11
TOTAL:	70

Number of species included in search: 338
Total number of species in NEWILD: 338

All seasons selected (preferred only)

Seasonal use symbols:

B = Breeding season (amphibians and reptiles)
B = Breeding season (birds and mammals)
BF = Breeding and feeding (birds and mammals only)
N = Winter (amphibians and reptiles)
N = Winter (birds and mammals)
NF = Winter feeding (birds and mammals only)
on species list header, * = search restricted to preferred only

Utilized/Preferred symbols:

x = utilized habitat
+ = preferred habitat

Forest size class symbols:

S = Regeneration through seedlings
Sp = Saplings through poletimber
St = Sawtimber
L = Large sawtimber
U = Uneven-aged (Northern hardwoods only)
on habitat list, x = size class selections

New England Wildlife - search results

A search was done using the following habitat components:

Forested habitats (all seasons selected - preferred only)	S	Sp	St	L	U
Red maple	x	x	x	x	

The following wildlife species were found:

	B*	BF*	N*	NF*
Marbled Salamander	+			
Jefferson Salamander	+			
Spotted Salamander	+			
Mountain Dusky Salamander	+			
Slimy Salamander	+			
Four-toed Salamander	+			
Northern Spring Salamander	+			
Five-lined Skink	+			
Eastern Ribbon Snake	+			
Northern Ringneck Snake	+			
Great Blue Heron	+			
Green-backed Heron	+			
Wood Duck	+			
Common Goldeneye	+			
Hooded Merganser	+			
Common Merganser	+			
Red-shouldered Hawk	+	+		
Broad-winged Hawk	+			
Red-tailed Hawk		+		+
American Woodcock	+			
Eastern Screech-Owl	+	+	+	+
Great Horned Owl	+			
Barred Owl	+	+	+	+
Great Gray Owl			+	+
Northern Saw-whet Owl	+	+	+	+
Ruby-throated Hummingbird	+	+		
Red-headed Woodpecker	+	+	+	+
Red-bellied Woodpecker	+	+	+	+
Downy Woodpecker	+	+	+	+
Hairy Woodpecker	+	+	+	+
Pileated Woodpecker	+	+	+	+
Alder Flycatcher	+	+		
Least Flycatcher	+	+		
Tree Swallow	+	+		
Blue Jay	+			

	B	BF	N	NF
Black-capped Chickadee	+	+	+	+
Carolina Wren	+	+	+	+
Winter Wren	+	+		
Blue-gray Gnatcatcher	+	+		
Veery	+	+		
Gray Catbird	+	+		
Northern Mockingbird	+	+	+	+
Cedar Waxwing	+	+	+	+
White-eyed Vireo	+	+		
Yellow-throated Vireo	+	+		
Warbling Vireo	+	+		
Yellow Warbler	+	+		
Chestnut-sided Warbler	+	+		
Yellow-rumped Warbler	+	+		
Prothonotary Warbler	+	+		
Northern Waterthrush	+	+		
Louisiana Waterthrush	+	+		
Mourning Warbler	+	+		
Common Yellowthroat	+	+		
Hooded Warbler	+	+		
Northern Cardinal	+	+	+	+
Song Sparrow	+	+	+	+
Common Grackle	+	+		
American Goldfinch	+	+	+	+
Virginia Opossum	+	+	+	+
New England Cottontail			+	+
Beaver		+		+
Woodland Jumping Mouse	+	+	+	
Red Fox	+	+	+	+
Gray Fox	+	+	+	+
Black Bear	+	+		
Raccoon	+	+	+	+
Mink	+	+	+	+
Lynx		+	+	+
Moose		+	+	+

New England Wildlife - search results

Search Summary

The search was done using 3 forested habitats

Number of amphibians:	0
Number of reptiles:	7
Number of birds:	35
Number of mammals:	8
TOTAL:	50

Number of species included in search: 338
Total number of species in NEWILD: 338

All seasons selected (preferred only)

Seasonal use symbols:

B = Breeding season (amphibians and reptiles)
B = Breeding season (birds and mammals)
BF = Breeding and feeding (birds and mammals only)
N = Winter (amphibians and reptiles)
N = Winter (birds and mammals)
NF = Winter feeding (birds and mammals only)
on species list header, * = search restricted to preferred only

Utilized/Preferred symbols:

x = utilized habitat
+ = preferred habitat

Forest size class symbols:

S = Regeneration through seedlings
Sp = Saplings through poletimber
St = Sawtimber
L = Large sawtimber
U = Uneven-aged (Northern hardwoods only)
on habitat list, x = size class selections

New England Wildlife - search results

A search was done using the following habitat components:

Forested habitats (all seasons selected - preferred only)	Sp	St	L	U
White pine / Red oak / Red maple	x	x	x	

The following wildlife species were found:

	B*	BF*	N*	NF*
Eastern Box Turtle	+			
Northern Redbelly Snake	+			
Eastern Hognose Snake	+			
Eastern Worm Snake	+			
Northern Black Racer	+			
Black Rat Snake	+			
Northern Copperhead	+			
Turkey Vulture	+			
Sharp-shinned Hawk	+	+	+	+
Cooper's Hawk	+	+	+	+
Broad-winged Hawk	+			
Red-tailed Hawk	+			
Wild Turkey	+		+	+
Northern Bobwhite			+	+
Mourning Dove	+			
Black-billed Cuckoo	+	+		
Yellow-billed Cuckoo	+	+		
Barred Owl	+	+	+	+
Northern Saw-whet Owl			+	
Whip-poor-will	+	+		
Red-headed Woodpecker	+	+	+	+
Red-bellied Woodpecker	+	+	+	+
Downy Woodpecker	+	+	+	+
Northern Flicker	+			
Pileated Woodpecker	+	+	+	+
Least Flycatcher	+	+		
Blue Jay	+	+	+	+
American Crow	+			
Tufted Titmouse	+	+	+	+
White-breasted Nuthatch	+	+	+	+
Blue-gray Gnatcatcher	+	+		
Hermit Thrush			+	+
Wood Thrush	+	+		
Yellow-throated Vireo	+	+		
Cerulean Warbler	+	+		

	B	BF	N	NF
Black-and-white Warbler	+	+		
Worm-eating Warbler	+	+		
Ovenbird	+	+		
Common Yellowthroat	+	+		
Scarlet Tanager	+	+		
Rose-breasted Grosbeak	+	+		
Rufous-sided Towhee	+	+		
Virginia Opossum			+	
Gray Squirrel	+	+	+	+
Southern Flying Squirrel	+	+	+	+
Northern Flying Squirrel	+	+	+	+
White-footed Mouse	+	+	+	+
Southern Red-backed Vole	+	+	+	+
Gray Fox	+	+	+	+
Black Bear	+	+		

New England Wildlife - search results

Search Summary

The search was done using 3 forested habitats

Number of amphibians:	0
Number of reptiles:	1
Number of birds:	30
Number of mammals:	10
TOTAL:	41

Number of species included in search: 338
Total number of species in NEWILD: 338

All seasons selected (preferred only)

Seasonal use symbols:

B = Breeding season (amphibians and reptiles)
B = Breeding season (birds and mammals)
BF = Breeding and feeding (birds and mammals only)
N = Winter (amphibians and reptiles)
N = Winter (birds and mammals)
NF = Winter feeding (birds and mammals only)
on species list header, * = search restricted to preferred only

Utilized/Preferred symbols:

x = utilized habitat
+ = preferred habitat

Forest size class symbols:

S = Regeneration through seedlings
Sp = Saplings through poletimber
St = Sawtimber
L = Large sawtimber
U = Uneven-aged (Northern hardwoods only)
on habitat list, x = size class selections

New England Wildlife - search results

A search was done using the following habitat components:

Forested habitats (all seasons selected - preferred only)	Sp	St	L	U
Northern hardwoods	x	x	x	

The following wildlife species were found:

	B*	BF*	N*	NF*
Northern Redbelly Snake	+			
Common Goldeneye	+			
Hooded Merganser	+			
Common Merganser	+			
Sharp-shinned Hawk	+	+	+	+
Northern Goshawk	+	+		
Broad-winged Hawk	+			
Wild Turkey			+	+
American Woodcock	+			
Barred Owl	+	+	+	+
Northern Saw-whet Owl	+		+	
Whip-poor-will	+	+		
Ruby-throated Hummingbird	+	+		
Downy Woodpecker	+	+	+	+
Hairy Woodpecker	+	+	+	+
Pileated Woodpecker	+	+	+	+
Least Flycatcher	+	+		
Blue Jay	+			
Black-capped Chickadee	+	+	+	+
White-breasted Nuthatch	+	+	+	+
Veery	+	+		
Wood Thrush	+	+		
Red-eyed Vireo	+	+		
Northern Parula	+	+		
Black-throated Blue Warbler	+	+		
Black-throated Green Warbler	+	+		
Black-and-white Warbler	+	+		
American Redstart	+	+		
Ovenbird	+	+		
Scarlet Tanager	+	+		
Rose-breasted Grosbeak	+	+		
Smoky Shrew	+	+	+	+
Southern Flying Squirrel	+	+	+	+
Northern Flying Squirrel	+	+	+	+
White-footed Mouse	+	+	+	+

	B	BF	N	NF
Southern Red-backed Vole	+	+	+	+
Woodland Jumping Mouse	+	+	+	
Porcupine	+	+	+	+
Gray Fox	+	+	+	+
Black Bear	+	+		
Fisher	+	+	+	+

New England Wildlife - search results

Search Summary

The search was done using 1 nonforested habitat

Number of amphibians:	0
Number of reptiles:	1
Number of birds:	5
Number of mammals:	8
TOTAL:	14

Number of species included in search: 338
Total number of species in NEWILD: 338

All seasons selected (preferred only)

Seasonal use symbols:

B = Breeding season (amphibians and reptiles)
B = Breeding season (birds and mammals)
BF = Breeding and feeding (birds and mammals only)
N = Winter (amphibians and reptiles)
N = Winter (birds and mammals)
NF = Winter feeding (birds and mammals only)
on species list header, * = search restricted to preferred only

Utilized/Preferred symbols:

x = utilized habitat
+ = preferred habitat

New England Wildlife - search results

A search was done using the following habitat components:

Nonforested habitats:

Structure, building

The following wildlife species were found:

	B*	BF*	N*	NF*
Eastern Milk Snake	+		+	
Rock Dove	+		+	
Chimney Swift	+			
Eastern Phoebe	+			
Cliff Swallow	+			
Barn Swallow	+			
Little Brown Myotis	+			
Keen's Myotis	+			
Silver-haired Bat	+			
Eastern Pipistrelle	+			
Big Brown Bat	+			
Deer Mouse	+	+	+	+
Norway Rat	+	+	+	+
House Mouse	+	+	+	+

Appendix E – Rare Species Coordination

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Field Office
70 Commercial Street, Suite 300
Concord, New Hampshire 03301-5087

RE: Spaulding Turnpike Improvements
Newington - Dover, New Hampshire

July 23, 2003

Peter J. Walker
Director, Environmental Services
Vanasse Hangen Brustlin, Inc.
Kilton Road
Six Bedford Farms, Suite 607
Bedford, NH 03110-6532

Dear Mr. Walker:

I have reviewed your request for information on endangered and threatened species and their habitats for the above-referenced project. My comments are provided in accordance with Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543).

I have searched our database and found that the federally-threatened bald eagle (*Haliaeetus leucocephalus*) is the only species of state and federal concern at the site proposed for the Spaulding Turnpike improvements. The bald eagle currently uses the Great Bay area as a wintering habitat. Annual reports on bald eagles wintering in New Hampshire are prepared by the NH Audubon Society for the Nongame, Threatened and Endangered Species Program of the NH Department of Fish and Game. Contact the Audubon Society or the NH Department of Fish and Game for a copy of the most recent report.

The New England cottontail (*Sylvilagus transitionalis*) was once widespread in New England and occurred throughout New Hampshire south of the White Mountains. For habitat, it requires the dense cover of regenerating forests, beaver flowages or shrub thickets, where both food and dense cover are found in close proximity. The New England cottontail is presently known to occur in several towns in Strafford County (J. Litvaitis et al. 2002, Interim Progress Report for a Regional Inventory of New England Cottontails, UNH Durham). The U.S. Fish and Wildlife Service is presently preparing a 90-day petition finding for this species and anticipates that a 12-month status review will be required to fully evaluate its candidacy for the endangered species list.

We have currently contracted with the University of New Hampshire to conduct range-wide occurrence surveys for this mammal. However, it is not possible for this survey effort to detect every habitat patch occupied by the species. In light of the above, we strongly recommend that the presence of potentially suitable habitat at the site be evaluated to determine the advisability of conducting presence/absence surveys for the New England cottontail.

Thank you for your cooperation and please contact me at 603-223-2541 if we can be of further assistance.

Sincerely yours,

Michael Amaral
Endangered Species Specialist
New England Field Office

NH NATURAL HERITAGE BUREAU

Basic information about NH Natural Heritage Bureau environmental reviews*:

What is in our database: Locations where rare species (plants and animals) or examplary natural communities have been observed. We keep records on: federally listed species; species state-listed as Threatened or Endangered; species judged by experts to be at risk of becoming Threatened in New Hampshire, and natural communities that are of a rare type and/or are sufficiently large and undisturbed to be considered exemplary.

We do not attempt to map the full habitat required to support a rare species. Therefore, areas around a mapped point may be equally or more important than the point itself.

What we report in a review: For all plants and natural communities in our database, we report any recently observed record (seen in the last 20-30 years) that in our judgement, based primarily on proximity and local hydrology, *could* be affected by the project. We may also include older records so that if a field survey is done, the surveyor could be alert for all species once documented in the area. For animals, we simply report all recent records within one mile of the project and cc the report to NH Fish & Game, which has legal responsibility for animals in New Hampshire.

What to do when a review reports rare species or exemplary natural communities near a project:

- For animals, the applicant should request an evaluation from the NH Fish & Game Department.
- For plants and natural communities, the applicant and/or the the agency that required the review should evaluate the project for possible impacts, using the specific location and other information provided by NH Natural Heritage.

We are not a regulatory agency and our staff have ecological, not engineering, expertise. We provide information on known occurrences of rare species or exemplary natural communities near a project, but it is not our role to say whether the project will or will not impact those occurrences, or to require changes to a proposed project.

An expert who is familiar with the details of the project can usually quickly determine that most "hits" that we report are not at risk, e.g., if there will be no construction nearby and no water flows from the project in their direction.

When expert review indicates that there *are* concerns with a plant or natural community occurrence, we encourage you to call us at (603) 261-3623 to see if more information about the species or natural community is available. We have no funding for field visits or for extensive consultation with our ecologists, but we may have more site-specific information in our hard-copy files, and we can usually provide some ecological advice.

*This document is being sent *once* to each person who gets a positive response for an environmental review.

Memo

NH Natural Heritage Bureau

To: Peter Walker, Vanasse Hangen Brustlin Inc
Kilton Rd
Six Bedford Farms Ste 607
Bedford NH 03110-6532

From: Sara Cairns, NH Natural Heritage Bureau

Date: 7/10/2003

Re: Review by NH Natural Heritage Bureau of request dated 7/1/2003
NHB File ID: 2669
Project type: Road improvement
Town: Newington, Dover
Location: Spaulding Turnpike, north of Exit 1 to north of Exit 6.

cc: John Kanter

I have searched our database for records of rare species and exemplary natural communities near the area identified in your request, with the following results. A species not listed by the state or the federal govenment as Threatened (T) or Endangered (E) has either been identified as a species of special concern in NH (W), or is rare enough in the state to be tracked by NH Heritage even though it has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

Natural Community	State	Federal	Notes
SNE Acidic Seepage Swamp	-	-	These swamps are influenced by groundwater seepage and springs which moderate water fluctuations and maintain conditions favorable for the accumulation of organic matter. The primary threats are changes to the hydrology of the wetland complex, particularly raising or lowering the water levels, and increased nutrient and pollutant input carried in by stormwater runoff.
SNE Calcareous Seepage Swamp	-	-	The primary threats to this natural community are changes to the hydrology of the wetland and increased nutrient and pollutant input from stormwater runoff. Construction activity in and repeated traffic through the wetland could also deleteriously affect its sensitive vegetation.

Plant species	State	Federal	Notes
Bulbous Bitter-Cress (*Cardamine bulbosa*)	E	-	This species occurs in forested swamps, low floodplain forest, and moist thickets.. Threats to the plants include canopy removal and destruction (draining) of its habitat.
Prolific Knotweed (*Polygonum prolificum*)*	T	-	Threats to estuarine plants are primarily alterations to the hydrology of the wetland, such as ditching or tidal restrictions that might affect the sheet flow of tidal waters across the intertidal flat, activities that eliminate plants, and increased input of nutrients and pollutants in storm runoff.

Department of Resources and Economic Development
Division of Forests and Lands
(603) 271-3623 fax: 271-6488

DRED/NHB
PO Box 1856
Concord NH 03302-1856

Memo

NH Natural Heritage Bureau

Plant species (cont.)	State	Federal	Notes
Small Spike-Rush (*Eleocharis parvula*)	T	-	Threats are primarily alterations to the hydrology of the wetland, such as ditching or tidal restrictions that might affect the sheet flow of tidal waters across the intertidal flat, activities that eliminate plants, and increased input of nutrients and pollutants in storm runoff.

Vertebrate species	State	Federal	Notes
Common Tern (*Sterna hirundo*)	E	-	Contact John Kanter, NH Fish & Game Dept, at (603) 271-2462. NH F&G has legal authority over animals in New Hampshire.
Grasshopper Sparrow (*Ammodramus savannarum*)	T	-	
Henslow's Sparrow (*Ammodramus henslowii*)	W	-	

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. For some purposes, including legal requirements for state wetland permits, the fact that no species of concern are known to be present is sufficient. However, an on-site survey would provide better information on what species and communities are indeed present.

Department of Resources and Economic Development
Division of Forests and Lands
(603) 271-3623 fax: 271-6488

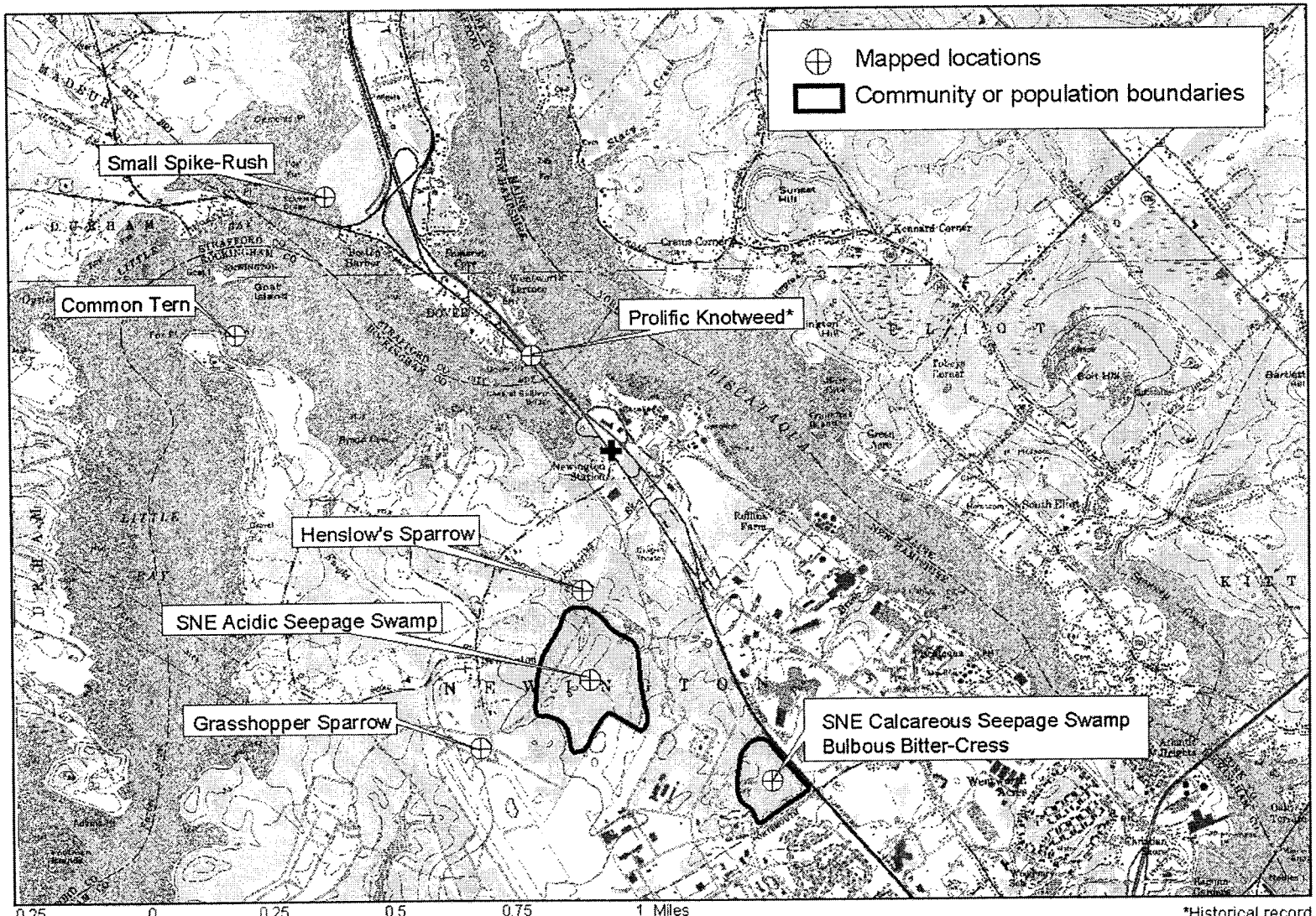
DRED/NHB
PO Box 1856
Concord NH 03302-1856

NH Natural Heritage Bureau

NHB: 2669

Known locations of rare species and exemplary natural communities

Note: Mapped locations are not always exact. Occurrences that are not in the vicinity of the project are not shown.



New Hampshire Natural Heritage Inventory - Community Record

SNE Acidic Seepage Swamp

Legal Status

Federal: Not listed
State: Not listed

Conservation Status

Global: Not ranked (need more information)
State: Rare or uncommon

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 1990: SOME CORDWOOD THINNING IN UPLAND PORTIONS OF TOWN FOREST.

General Area: HEADWATERS TO PICKERING BROOK. SEVERAL KNOLLS SUPPORT HEMLOCK, WHITE PINE, CHESTNUT.

Comments: ACCORDING TO C. STRAUS, PRESERVED AS TOWN FOREST SINCE 1710!

Location

Survey Site Name: NEWINGTON TOWN FOREST
Conservation Land:

County: Rockingham
Town(s): Newington
Size: 120 acres

USGS quad(s): Portsmouth (4307017)
Lat, Long: 430553N, 0704921W
Elevation: 80'

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: NEWINGTON. NEWINGTON TOWN FOREST. SOUTH OF MERRIMACK ROAD.

Dates documented

First observation: 1990 Last observation: 1990-05-22

New Hampshire Natural Heritage Inventory - Community Record

SNE Calcareous Seepage Swamp

Legal Status

Federal: Not listed
State: Not listed

Conservation Status

Global: Not ranked (need more information)
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Excellent quality, condition and lanscape context ('A' on a scale of A-D).
Comments on Rank:

Detailed Description:

General Area: HEADWATERS OF PAUL BROOK. SHALLOW WATER UNDERLAIN BY RICH MUCK, ALTERNATING WITH ROCKY OR SANDY RIDGES WITH MATURE HARDWOOD AND HEMLOCK FOREST.

Location

Survey Site Name: PAUL BROOK SWAMP
Conservation Land:

County: Rockingham
Town(s): Newington
Size: 50 acres

USGS quad(s): Portsmouth (4307017)
Lat, Long: 430529N, 0704823W
Elevation: 60'

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: NEWINGTON. PAUL BROOK SWAMP. SOUTHWEST OF SPAULDING TURNPIKE, NORTHWEST OF PORTSMOUTH/NEWINGTON TOWN LINE.

Dates documented

First observation: 1990
Last observation: 1990-06-05

Straus, Clotilde. 1990. Field survey to Paul Brook Swamp on May 22, May 25, and June 6.

Mineral-enriched Swamps (including Seepage Swamps)

Mineral-enriched (minerotrophic) swamps are forested wetlands where minerals in the bedrock or soil have leached into the water and resulted in relatively high mineral levels. The most common source of mineral enrichment is groundwater seepage, but enrichment can also occur when near-surface groundwater flows through certain soils or bedrock types before entering the swamp. The plants that help identify these areas include some species that are indicative of seepage conditions, and some that are indicative of mineral-enriched, but not necessarily seepage, conditions (see below).

Red maple (*Acer rubrum*) is the predominant tree species in mineral-enriched swamps in central and southern New Hampshire. Northern white cedar (*Thuja occidentalis*), balsam fir (*Abies balsamea*), and red spruce (*Picea rubens*) are found further north. Other plants commonly found in mineral-enriched swamps include yellow birch (*Betula alleghaniensis*), highbush blueberry (*Vaccinium corymbosum*), and winterberry (*Ilex* spp.). Swamps with the greatest degree of mineral enrichment occur in calcium-rich areas and support additional rare species such as bulbous bitter-cress (*Cardamine bulbosa*), Loesel's twayblade (*Liparis loeselii*), and tufted loosestrife (*Lysimachia thyrsiflora*).

In some swamps, groundwater seepage emerges as pronounced springs actively welling up out of the ground and draining into brooks. In other swamps, seepage may only be present underground in the root zone. If the groundwater source is perennial, seasonal water level fluctuations tend to be reduced and conditions remain saturated all year long. The mineral-enriched swamps described here do not include those that occur next to rivers and streams and thus are strongly influenced by seasonal floods (e.g., floodplain forests and streamside swamps).

Mineral-enriched (minerotrophic) indicator species:
foamflower (*Tiarella cordifolia*)
jack in the pulpit (*Arisaema triphyllum*)
jewelweed (*Impatiens capensis*)
sensitive fern (*Onoclea sensibilis*)
skunk cabbage (*Symplocarpus foetidus*)
speckled alder (*Alnus incana var. americana*)
tussock sedge, non-tussock form of (*Carex stricta*)
violets (*Viola* spp.)
white turtlehead (*Chelone glabra*)

Seepage indicator species:
black ash (*Fraxinus nigra*)
common water pennywort (*Hydrocotyle americana*)
golden saxifrage (*Chrysosplenium americanum*)
lily-leaved twayblade (*Listera convallarioides*)*
marsh marigold (*Caltha palustris*)
northern spicebush (*Lindera benzoin*)
purple avens (*Geum rivale*)
swamp saxifrage (*Saxifraga pensylvanica*)
* rare species

Where Are They Found?

Mineral-enriched swamps are usually found in headwater portions of drainages and along the borders of larger swamp systems. They can be on sloping or level ground and occur where water below the surface is forced upward by an impervious bedrock or soil layer, such as hardpan or a layer of clay or silt.

New Hampshire Natural Heritage Inventory - Plant Record

Bulbous Bitter-Cress

Cardamine bulbosa

Legal Status

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Excellent quality, condition and lanscape context ('A' on a scale of A-D).
Comments on Rank: LARGEST PRISTINE POPULATION IN NEW HAMPSHIRE.

Detailed Description: 1990: 1001 TO 10,000 PLANTS, IN BUD AND FLOWER.

General Area: LARGE AREA OF PERMANENTLY WET, SEEPY OR SUMBERGED SOIL. WITH ONECLEA SENSIBILIS.

Location

Survey Site Name: PAUL BROOK SWAMP
Conservation Land:

County: Rockingham
Town(s): Newington
Size: 2 acres

USGS quad(s): Portsmouth (4307017)
Lat, Long: 430529N, 0704823W
Elevation: 60'

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: NEWINGTON. PAUL BROOK SWAMP. VICINITY OF BASE ENTRANCE GATE A ALONG NEWINGTON ROAD (BASE) AND SPAULDING TURNPIKE.

Dates documented

First observation: 1990 Last observation: 1990-06-05

Straus, Clotilde. 1990. Field survey to Paul Brook Swamp on May 22, May 25, and June 6.

New Hampshire Natural Heritage Inventory - Plant Record

Small Spike-Rush

Eleocharis parvula

Legal Status	Conservation Status
Federal: Not listed	Global: Demonstrably widespread, abundant, and secure
State: Listed Threatened	State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Fair quality, condition and/or lanscape context ('C' on a scale of A-D).
Comments on Rank:

Detailed Description: 1996: Northern (western river bank) site had between 51-100 marginally vigorous stems. Southern (eastern river bank) site had 101-1000 mature, fairly vigorous stems.

General Area: 1996: At northern site, associated species included Scirpus maritimus (saltmarsh bulrush) in low pannes, Spartina alterniflora (smooth cord-grass), and Juncus gerardii (salt marsh rush) (nearby). At southern site, associated species included S. alterniflora (smooth cord-grass), Scirpus robustus (stout bulrush), and Salicornia europaea (common glasswort). General area: vernal pools, fresh and brackish marsh, and high and low salt marsh communities nearby.

Comments: Minimal trail use.

Location

Survey Site Name: CLEMENTS POINT, BELLAMY RIVER WILDLIFE SANCTUARY
Conservation Land: Bellamy River Wildlife Sanctuary

County: Strafford
Town(s): Dover
Size:

USGS quad(s): Dover East (4307027)
Lat, Long: 430749N, 0705044W
Elevation: 20'

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: From Rte. 4 in Dover, go 2.5 miles east of junction with Rte. 108. Turn onto Back River Road. After 0.8 miles, turn right onto Bay View Road. At end of road, just past mature pine stand, bear left onto gravel road and continue past field to parking area.

Dates documented

First observation: 1996-08-01 Last observation: 1996-08-06

Nichols, Bill. 1996. Field survey to Bellamy River WMA & Access, Dover on August 1.

Nichols, B. & D. Sperduto. 1997. Ecological Assessment of Selected Towns in the Great Bay Area. New Hampshire Natural Heritage Program, Concord NH. 141 pp.

New Hampshire Natural Heritage Inventory - Plant Record

Prolific Knotweed

Polygonum prolificum

Legal Status

Federal: Not listed
State: Listed Threatened

Conservation Status

Global: Apparently secure but with cause for concern
State: Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Historical records only - current condition unknown.
Comments on Rank:

Detailed Description: 1955.

General Area:

Location

Survey Site Name: HILTON STATE PARK
Conservation Land:

County: Strafford
Town(s): Dover
Size:

USGS quad(s): Portsmouth (4307017)
Lat, Long: 430710N, 0704938W
Elevation: 5'

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: DOVER.

Dates documented

First observation:

Last observation: 1955

New Hampshire Natural Heritage Inventory - Animal Record

Grasshopper Sparrow

Ammodramus savannarum

Legal Status

Federal: Not listed
State: Listed Threatened

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 2002: 2 adult males heard singing briefly in the evening and at least one bird also seen (Obs_id 250). 1995: One male seen and heard singing (Obs_id 256). 1990: Several birds heard near airfield; nesting not observed but "likely" according to Audubon Society of NH. 1986: One bird heard singing on far side of airfield.

General Area: 1995: Weedy grassland.

Location

Survey Site Name: PEASE INTERNATIONAL TRADEPORT
Conservation Land:

County: Rockingham
Town(s): Newington
Size:

USGS quad(s): Portsmouth (4307017)
Lat, Long: 430448N, 0704927W
Elevation: 60'

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: Throughout mowed areas at Pease. At north end of Pease runway, off Short Road (Obs_id 250). At southernmost grassy island at Pease runway (Obs_id 256).

Dates documented

First observation: 1986 Last observation: 2002-06-09

Interactive Wildlife Web Page. 2002. Grasshopper Sparrow observed by Mark and Rebecca Suomala on 6/9/02 at Pease Air Force Base Site, as reported by Pamela Hunt (obs_id=250).

New Hampshire Natural Heritage Inventory - Animal Record

Henslow's Sparrow

Ammodramus henslowii

Legal Status

Federal: Not listed
State: W

Conservation Status

Global: Apparently secure but with cause for concern
State: Not ranked (need more information)

Description at this Location

Conservation Rank: Extirpated - no longer present at this site.
Comments on Rank: Destroyed.

Detailed Description: 1983: Singing male observed on suitable habitat beginning in May by Tom Butler. Recorded and photographed (on 1 June 1983) by L. Master, Tom Butler, Connie Casas and others. BIRD PRESENT 5/24 TO 6/5.

General Area: 1983: Old field, wet along edges, with timothy, orchard grass, curly dock, asters, goldenrods, dandelions, cow vetch, common buttercup, yarrow, ragged-robin, bluegrass, Daucus.

Location

Survey Site Name: FOX POINT ROAD
Conservation Land:

County: Rockingham
Town(s): Newington
Size: 4 acres

USGS quad(s): Portsmouth (4307017)
Lat, Long: 430614N, 0704923W
Elevation: 50'

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: From Rte. 4/16 at Newington Station, take Nimble Hill Road ca. 0.75 miles south to Fox Point Road. Field just east northeast of cul-de-sac at east end of Fox Point Road, 0.4 mile east of blinking light.

Dates documented

First observation: 1983 Last observation: 1983-06-01

Audubon Society of New Hampshire. 1986. Species report slips.

New Hampshire Natural Heritage Inventory - Animal Record

Common Tern

Sterna hirundo

Legal Status

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 1995: 9 nests; 20 adults observed. 1992: 6 nests; 9 fledglings. Highest number of adults observed was 10 on 6/25. 1991: 7+ nests; no fledglings. Nest failure presumed to be due to rat predation. 1990: 7 nests; 13 fledged chicks (1.9 fledglings / nest).

General Area: An island <0.8 ha. in area which supports small patches of sparse grasses, substantial shrub growth, and several small trees.

Comments: 1992: Town residents launch and moor private boats in the small cove east of Fox Point and south of Hen Island. The presence of terns is well-known by those who utilize this site, and they are careful not to land on or venture too close to the island during the breeding season. (Management comments): 1992: Contact with the town of Newington and the local residents is the most effective technique for eliminating human disturbance at this site. Traps were set for rats in the spring. 1991: All nests were lost to rats this season. Traps were set in the fall.

Location

Survey Site Name: HEN ISLAND
Conservation Land: Fox Point

County: Rockingham
Town(s): Newington
Size:

USGS quad(s): Portsmouth (4307017)
Lat, Long: 430716N, 0705114W
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

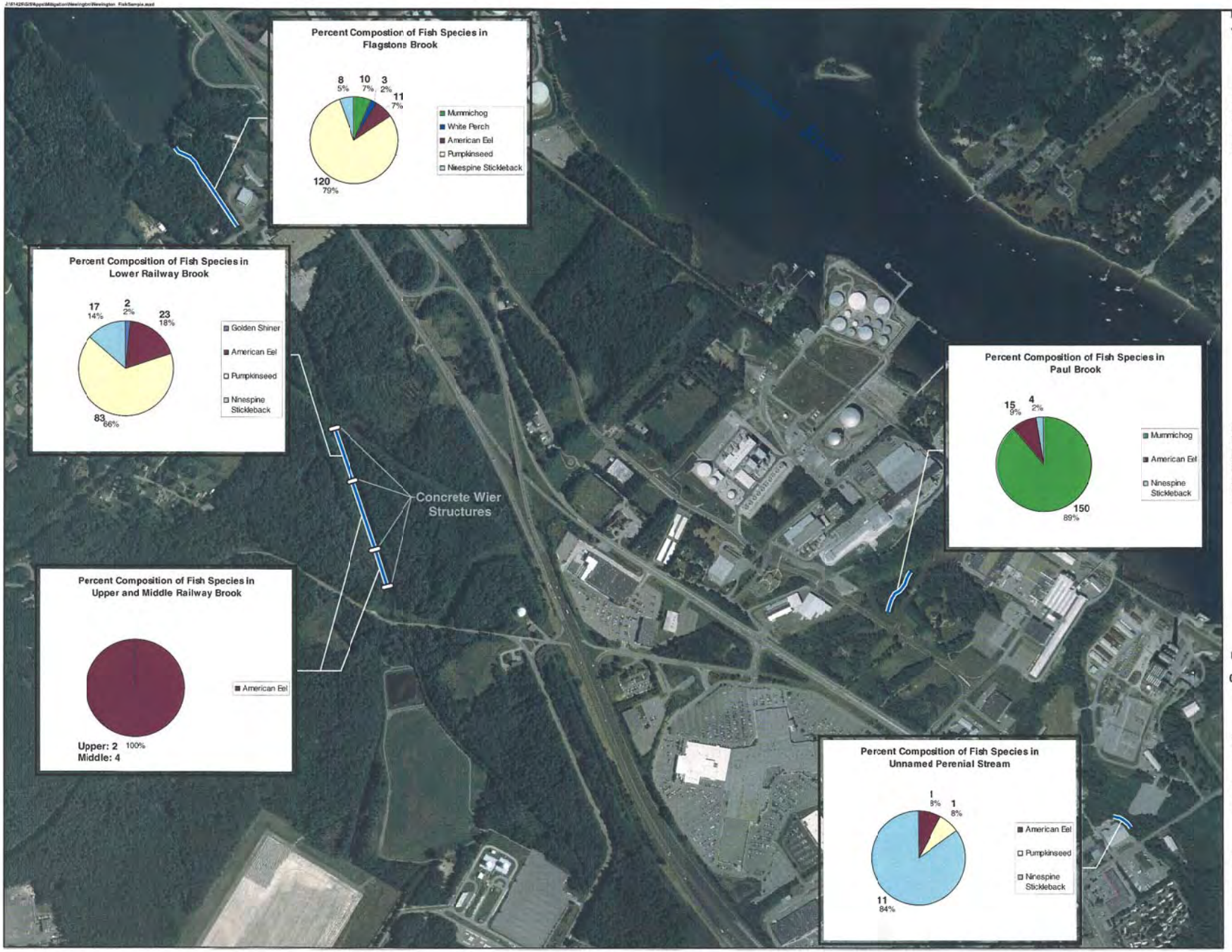
Directions: [Hen Island lies approximately 70 meters east of Fox Point on Little Bay in Newington.]

Dates documented

First observation: 1990 Last observation: 1995-06-28

U.S. Fish & Wildlife Service. 1995. 1995 New Hampshire Coastal Colonial Water Bird Inventory. Digital database printout.

Appendix F – Surface Water Biomonitoring Data



VHB
Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
Six Bedford Farms, Suite 607
Bedford, New Hampshire 03110
603-644-0888 • FAX 603-644-2185

LEGEND

Fish Sampling Stations

Reach Lengths (feet)

Railway Brook (Upper):	320
Railway Brook (Middle):	600
Railway Brook (Lower):	480
Flagstone Brook:	910
Paul Brook:	420
Unnamed Perenial Stream:	200

0 450 900 Feet

1 inch = 900 feet

Spaulding Turnpike Improvements
NHS-027-1(37), 17238
Newington to Dover, New Hampshire

Newington Fish Assessment

Notes:
Aerial photography is from NAIP 2003, distributed by NH GRANIT.
Fish composition data were collected by VHB, Inc. on October 4, 2005 using electro-fishing equipment.

Newington-Dover
Stream Assessment

Fish Population Inventory

Railway Bk.
Total Sample Reach: 1,330 ft.

Species	Common Name	Total
Notemigonus crysoleucas	Golden Shiner	2
Anguilla rostrata	American Eel	29
Lepomis gibbosus	Pumpkinseed	83
Pungitius pungitius	Ninespine Stickleback	17
		131

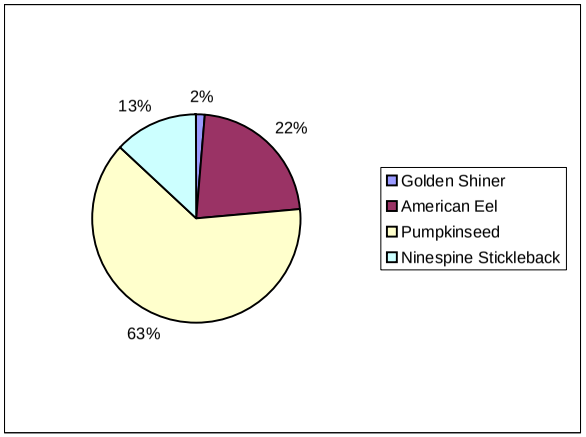


Figure 1. Percent composition of fish species in Railway Brook. The sampling technique was electro-fishing and covered an area between the furthest downstream and furthest upstream weir structures.

Flagstone Bk.
Total Sample Reach: 730 ft.

Species	Common Name	Total
Fundulus heteroclitus	Mummichog	10
Morone americana	White Perch	3
Anguilla rostrata	American Eel	11
Lepomis gibbosus	Pumpkinseed	120
Pungitius pungitius	Ninespine Stickleback	8
		152

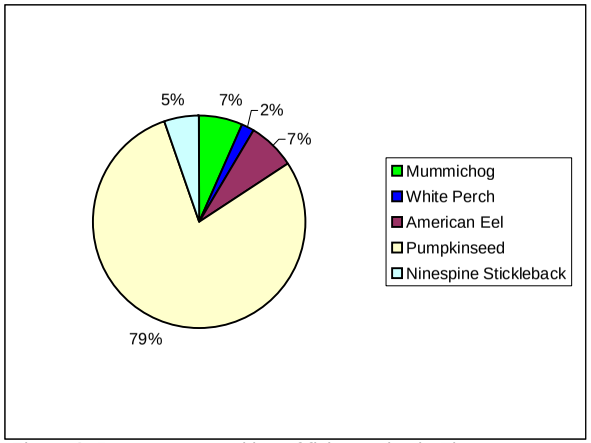


Figure 2. Percent composition of fish species in Flagstone Brook. The sampling technique was electro-fishing and covered an area moving upstream from the edge of tidal influence to the stream's origin at Nimble Hill Rd.

Newington-Dover
Stream Assessment

Fish Population Inventory

Paul Bk.
Total Sample Reach: 510 ft.

Species	Common Name	Total
Fundulus heteroclitus	Mummichog	150
Anguilla rostrata	American Eel	15
Pungitius pungitius	Ninespine Stickleback	4
		169

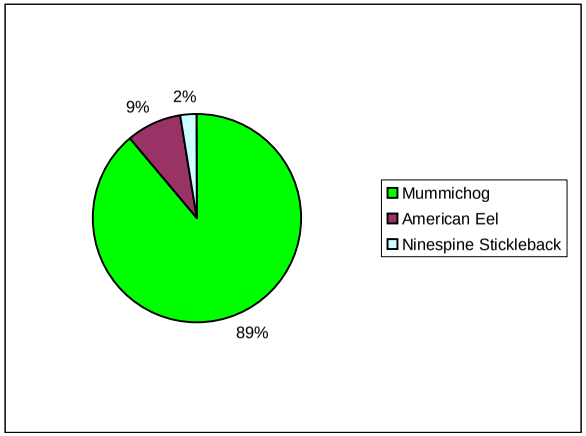


Figure 3. Percent composition of fish species in Paul Brook. The sampling technique was electro-fishing and covered an area from the road crossing of Shattuck Way downstream 510 ft.

Unnamed Perenial Str.
Total Sample Reach: 103 ft.

Species	Common Name	Total
Anguilla rostrata	American Eel	1
Lepomis gibbosus	Pumpkinseed	1
Pungitius pungitius	Ninespine Stickleback	11
		13

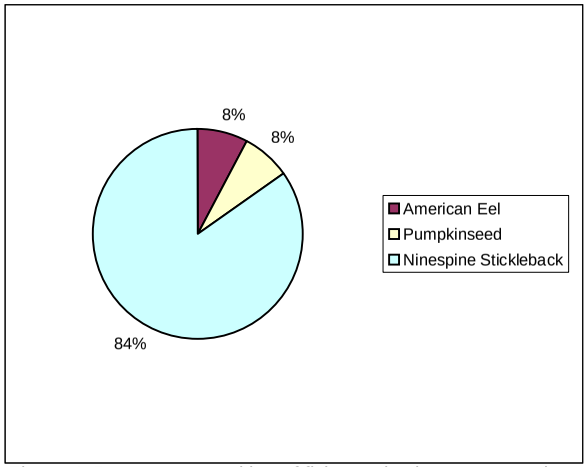


Figure 4. Percent composition of fish species in an unnamed tributary to the Piscataqua River. The sampling technique was electro-fishing and covered an area extending 103 ft. downstream of a point 150 ft. from the road crossing.

Newington-Dover
Stream Assessment

Macroinvertebrate Raw Data and Metric Calculations

Railway Brook

Order	Family	Tol. Val.	Number	Biotic Score = (Tol. Val.)*(Number)			
Coleoptera	Dytiscidae	8	1	8	0.009615385	-4.644390899	-0.044657605
Phylum: Mollusca	Class: Gastropoda	7	1	7	0.009615385	-4.644390899	-0.044657605
Himiptera	Notonectidae	8	1	8	0.009615385	-4.644390899	-0.044657605
Trichoptera	Polycentropodidae	6	2	12	0.019230769	-3.951243719	-0.075985456
Coleoptera	Haliplidae	8	1	8	0.009615385	-4.644390899	-0.044657605
Trichoptera	Limnephilidae	4	3	12	0.028846154	-3.54577861	-0.102282075
Coleoptera	Elmidae	4	1	4	0.009615385	-4.644390899	-0.044657605
Diptera	Chironomidae	6	13	78	0.125	-2.079441542	-0.259930193
Phylum: Annelida	Class: Oligochaeta	8	26	208	0.25	-1.386294361	-0.34657359
Ephemeroptera	Caenidae	7	3	21	0.028846154	-3.54577861	-0.102282075
Phylum: Mollusca	Class: Pelecypoda	8	4	32	0.038461538	-3.258096538	-0.125311405
Amphipoda	Gammaridae	6	37	222	0.355769231	-1.033472986	-0.367677889
Isopoda	Asellidae	8	2	16	0.019230769	-3.951243719	-0.075985456
Diptera	Tabanidae	6	1	6	0.009615385	-4.644390899	-0.044657605
Odonata	Petaluridae	6	1	6	0.009615385	-4.644390899	-0.044657605
Phylum: Annelida	Class: Hirundinea	7.5	7	52.5	0.067307692	-2.69848075	-0.181628512
			104	**Total Biotic Score: 700.5**			-1.950259886
				Final Biotic Score: 6.74		**Diversity Index:**	**1.95026**
				Water Quality Score: Poor			
				Total Family Richness: 16			
				EPT Richness: 3			
				% Contrib. of Dom. Fam: 35.6			

Newington-Dover
Stream Assessment

Macroinvertebrate Raw Data and Metric Calculations

Flagstone Brook

Order	Family	Tol. Val.	Number	Biotic Score = (Tol. Val.)*(Number)			
Coleoptera	Haliplidae	8	6	48	0.03	-3.506557897	-0.105196737
Phylum: Annelida	Class: Hirudinea	7.5	8	60	0.04	-3.218875825	-0.128755033
Isopoda	Asellidae	8	143	1144	0.715	-0.335472736	-0.239863006
Amphipoda	Gammaridae	6	8	48	0.04	-3.218875825	-0.128755033
Trichoptera	Philopotamidae	3	4	12	0.02	-3.912023005	-0.07824046
Coleoptera	Elmidae	4	17	68	0.085	-2.465104022	-0.209533842
Coleoptera	Psephenidae	4	4	16	0.02	-3.912023005	-0.07824046
Phylum: Mollusca	Class: Gastropoda	7	1	7	0.005	-5.298317367	-0.026491587
Trichoptera	Hydropsychidae	4	6	24	0.03	-3.506557897	-0.105196737
Diptera	Ceratopogonidae	6	1	6	0.005	-5.298317367	-0.026491587
Phylum: Mollusca	Class: Pelecypoda	8	2	16	0.01	-4.605170186	-0.046051702
			200	**Total Biotic Score: 1449**			-1.172816184
				Final Biotic Score: 7.25		**Diversity Index:**	**1.17282**
				Water Quality Score: Poor			
				Total Family Richness: 11			
				EPT Richness: 2			
				% Contrib. of Dom. Fam: 71.5			

Newington-Dover
Stream Assessment

Macroinvertebrate Raw Data and Metric Calculations

Unnamed Perennial Stream

Order	Family	Tol. Val.	Number	Biotic Score = (Tol. Val.)*(Number)			
Diptera	Tipulidae	5	1	5	0.012987013	-4.343805422	-0.056413057
Diptera	Ceratopogonidae	6	2	12	0.025974026	-3.650658241	-0.094822292
Phylum: Annelida	Class: Hirundinea	7.5	1	7.5	0.012987013	-4.343805422	-0.056413057
Coleoptera	Elmidae	4	1	4	0.012987013	-4.343805422	-0.056413057
Isopoda	Asellidae	8	4	32	0.051948052	-2.957511061	-0.153636938
Phylum: Annelida	Class: Oligochaeta	8	3	24	0.038961039	-3.245193133	-0.126436096
Coleoptera	Haliplidae	8	2	16	0.025974026	-3.650658241	-0.094822292
Diptera	Chironomidae	6	1	6	0.012987013	-4.343805422	-0.056413057
Phylum: Mollusca	Class: Gastropoda	7	62	434	0.805194805	-0.216671037	-0.174462393
			77	**Total Biotic Score: 540.5**			-0.869832241
				Final Biotic Score: 7.02		**Diversity Index:**	**0.86983**
				Water Quality Score: Poor			
				Total Family Richness: 9			
				EPT Richness: 0			
				% Contrib. of Dom. Fam: 80.5			

Newington-Dover
Stream Assessment

Macroinvertebrate Raw Data and Metric Calculations

Paul Brook

Order	Family	Tol. Val.	Number	Biotic Score = (Tol. Val.)*(Number)			
Coleoptera	Elmidae	4	211	844	0.496470588	-0.700231035	-0.347644114
Phylum: Annelida	Class: Hirudinea	7.5	7	52.5	0.016470588	-4.10617902	-0.067631184
Coleoptera	Hydraenidae	8	1	8	0.002352941	-6.052089169	-0.01424021
Diptera	Tipulidae	5	3	15	0.007058824	-4.95347688	-0.034965719
Odonata	Aeshnidae	3	1	3	0.002352941	-6.052089169	-0.01424021
Isopoda	Asellidae	8	172	1376	0.404705882	-0.904594692	-0.366094793
Trichoptera	Hydropsychidae	4	11	44	0.025882353	-3.654193896	-0.094579136
Cleoptera	Psephenidae	4	3	12	0.007058824	-4.95347688	-0.034965719
Trichoptera	Philopotamidae	3	4	12	0.009411765	-4.665794808	-0.043913363
Phylum: Mollusca	Class: Gastropoda	7	2	14	0.004705882	-5.358941988	-0.025218551
Diptera	Chironomidae	6	4	24	0.009411765	-4.665794808	-0.043913363
Phylum: Nematomorpha		8.5	3	25.5	0.007058824	-4.95347688	-0.034965719
Lepidoptera	Pyralidae	5	3	15	0.007058824	-4.95347688	-0.034965719
			425	**Total Biotic Score: 2445**			-1.1573378
				Final Biotic Score: 5.75		**Diversity Index:**	**1.15734**
				Water Quality Score: Fair			
				Total Family Richness: 13			
				EPT Richness: 2			
				% Contrib. of Dom. Fam: 49.6			

Water Quality Score Ranges
0-3.75 = Excellent
3.76-4.25 = Very Good
4.26-5.00 = Good
5.01-5.75 = Fair
5.76-6.50 = Fairly Poor
6.51-7.25 = Poor
>7.26 = Very Poor

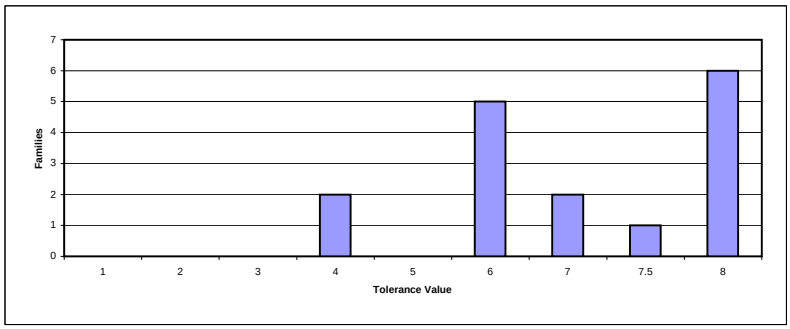


Figure 1. Invertebrate tolerance distribution at Railway Brook.

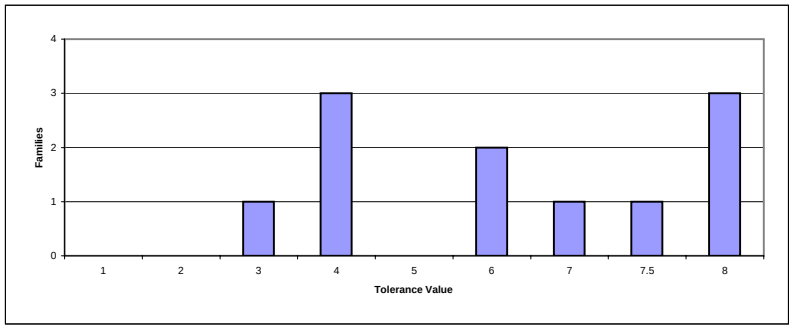


Figure 2. Invertebrate tolerance distribution at Flagstone Brook.

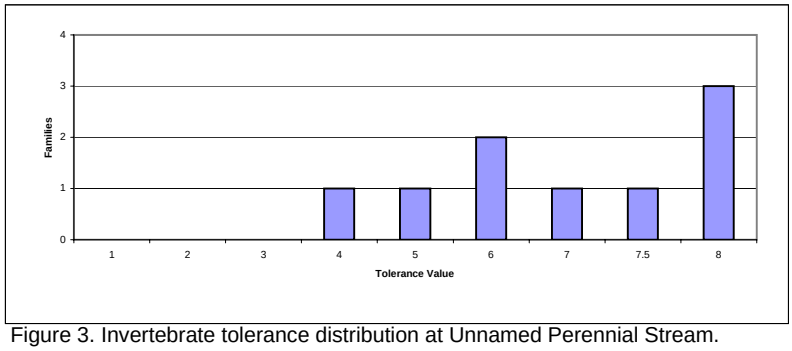


Figure 3. Invertebrate tolerance distribution at Unnamed Perennial Stream.

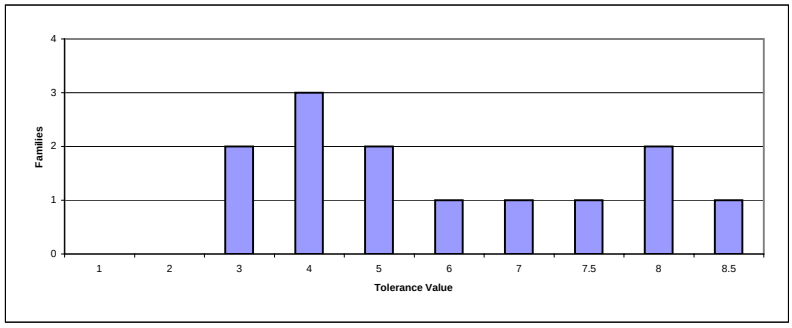


Figure 4. Invertebrate tolerance distribution at Paul Brook.

Newington-Dover
Stream Assessment

Water Chemistry Raw Data

Railway Brook	Sample 1	Sample 2	Sample 1	Sample 2	Sample 1	Sample 2
Date:	9/16/2005	9/16/2005	9/27/2005	9/27/2005	10/4/2005	10/4/2005
Turbidity (NTU)	12.5	4.82	14.4	6.03	3.59	4.73
pH	6.75	7.36	7.08	7.64	7.34	7.99
Conductivity (µS)	206.1	104.7	186.9	81.9	151.2	201.3
Sp. Cond. (µS)	221.3	113.4	221.1	91.5	188.2	237.6
Salinity (ppt)	0.1	0.1	0.1	0	0.1	0.1
Temperature (C)	21.4	21	16.9	19.5	14.7	17

Upper Pickering Bk.	
Date:	9/16/2005
Turbidity (NTU)	5.92
pH	6.93
Conductivity (µS)	193.3
Sp. Cond. (µS)	211.6
Salinity (ppt)	0.1
Temperature (C)	20.4

Flagstone Brook			
Date:	9/16/2005	9/27/2005	10/4/2005
Turbidity (NTU)	9.73	7.64	14.8
pH	7.11	7.4	7.07
Conductivity (µS)	159.9	157.2	196.5
Sp. Cond. (µS)	174.6	184.2	243.1
Salinity (ppt)	0.1	0.1	0.1
Temperature (C)	20.6	17.3	14.9

Paul Brook			
Date:	9/16/2005	9/27/2005	10/4/2005
Turbidity (NTU)	0.83	4.92	1.7
pH	6.9	7.17	7.15
Conductivity (µS)	780	836	1497
Sp. Cond. (µS)	854	957	1758
Salinity (ppt)	0.4	0.5	0.9
Temperature (C)	20.5	18.4	17.3

Unnamed Perennial Stream			
Date:	9/16/2005	9/27/2005	10/4/2005
Turbidity (NTU)	4.66	4.06	
pH	6.54	6.78	6.5
Conductivity (µS)	572	750	946
Sp. Cond. (µS)	638	863	1166
Salinity (ppt)	0.3	0.4	0.6
Temperature (C)	19.6	18.2	15.2

Appendix G – Historic Resource Documentation

NEW HAMPSHIRE DIVISION OF HISTORICAL RESOURCES
State of New Hampshire, Department of Cultural Resources
19 Pillsbury Street, Concord, NH 03301-3570
TDD Access: Relay NH 1-800-735-2964
www.nh.gov/nhdhr

603-271-3483
603-271-3558
FAX 603-271-3433
preservation@nhdhr.state.nh.us

3 February 2006

Mr. Harry S. Kinter
Federal Highway Administration
19 Chenell Drive, Suite One
Concord, New Hampshire, 03301

Re: Newington-Dover NHS-02719(037), 11238

Dear Mr. Kinter:

Based on a review pursuant to 36 CFR 800.4, it has been agreed that the General Sullivan Bridge (DOV0158), spanning Little Bay, is eligible for the National Register of Historic Places. The above-cited project will entail the removal of the roadway and north embankment approach to the Sullivan Bridge and the limited reconfiguration of the north abutment and wing wall to accommodate the widening of the connector road under Little Bay Bridges. Applying the criteria of effect at 36 CFR 800.5, we have determined that these undertakings will have an adverse effect on the General Sullivan Bridge.

Mitigation for this adverse effect will include rehabilitation of the General Sullivan Bridge for use by pedestrians and bicycles and its continued use for fishing.

The New Hampshire Division of Historical Resources affirms that rehabilitation of the General Sullivan Bridge greatly outweighs the technical finding of "adverse effect," and renders the adverse effect insignificant in comparison to the public benefit that will result from rehabilitation of the bridge. The Division strongly supports the proposed treatment of the General Sullivan Bridge, one of New Hampshire's most significant and historic engineering and transportation resources. We are grateful for the detailed and prudent planning and analysis that culminated in a determination to preserve the structure.

Sincerely,

James McConaha

James McConaha
Director and State Historic
Preservation Officer

Cc: Commissioner Carol A. Murray, P.E.
Assistant Commissioner Jeff Brillhart, P.E.

New Hampshire DOT
Department of Transportation

CAROL A. MURRAY, P.E.
Commissioner

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

JEFF BRILLHART, P.E.
Assistant Commissioner

Newington-Dover
NHS-02719(037)
11238
Page 1

Adverse Effect Memo

Pursuant to meetings and discussions on June 1, August 3, and September 7, 2000; February 10 and August 2, 2001; November 14, 2002; September 11, 2003; April 1, June 10, July 16, and August 5, 2004; January 6, February 22, April 7, August 7, and December 8, 2005; and January 5, 2006 and for the purpose of compliance with regulations of the National Historic Preservation Act, as amended, and the Advisory Council on Historic Preservation's *Procedures for the Protection of Historic Properties* (36 CFR 800), the NH Division of Historical Resources (NHDHR) and the NH Division of the Federal Highway Administration (FHWA) have coordinated the identification and evaluation of historic and archaeological properties with plans to reconstruct and widen turnpike locations including the Little Bay Bridges between Gosling Road in Newington and the Dover Tolls in the towns of Dover and Newington, New Hampshire.

Based on a review pursuant to 36 CFR 800.4 of the historical and architectural significance of identified resources and the potential significance for archaeological remains in the project area, we agree that the following individual properties are eligible for listing in the National Register of Historic Places:

Individually Eligible Properties and Districts:

Benjamin Hoyt House, 97-105 Nimble Hill Road (NWN0148)
Newington Depot, End of Bloody Point Road (NWN0168)
John Downing Farm, 48 Patterson Lane (NWN0201)
Beane Farm, 2299 Woodbury Ave. (NWN0204)
Isaac Dow House, Woodbury Ave. (NWN0205)
Portsmouth Water Booster Station, Arboretum Dr. (NWN0228)

Ira F. Pinkham House, 430 Dover Point Rd. (DOV0093)
Charles Morang House, 419 Dover Point Rd. (DOV0098)
Card-Coleman-Cousens House, 416 Dover Point Rd. (DOV0099)
Crocker-Fleming House, 405 Dover Point Rd. (DOV0104)
Wiggins-Miksenas House, 7 Boston Harbor Rd. (DOV0125)
Henderson House, 284 Dover Point Rd. (DOV0134)
Lower Neck School, 294 Dover Point Rd. (DOV0136)
Dover Point Chemical Co. #1, 292 Dover Point Rd. (DOV0151)
General Sullivan Bridge, spanning Little Bay (DOV0158)
Chapman Cabins Historic District, NW end of Boston Harbor Rd. (DOV-CH)
Cullen-Bruyere Camps, 39 Boston Harbor Rd. (DOV-CB)

NHDHR requested more information for the following properties that were examined for the project: Varney Cabin Complex (DOV0113), Sprague District Area (NWN-SP), Patterson Point District Area (NWN-CPL), and the Hilton Park Picnic Shelter in the Hilton Park Safety Rest Area (part of DOV0150). The park as a whole (DOV0150) was not found to be eligible for the National Register. These properties are currently not affected by the project. If the project design should change, then the more information request will be completed. Areas of archaeological sensitivity have been identified for the project corridor.

Applying the criteria of effect at 800.5, we have determined that the project will have an adverse effect on the following properties: General Sullivan Bridge (DOV0158), Ira Pinkham House (DOV0093), Beane Farm (NWN0204), Isaac Dow House (NWN0205), and the Portsmouth Water Booster Station (NWN0208).

Adverse effects to the Beane Farm (NWN0204) include minor filling on the property, loss of mature trees, loss of view of existing hillcrest, and loss of hilltop setting caused by the elimination of the crest resulting from the extension of Woodbury Avenue over the Spaulding Turnpike. Mitigation will include planting of new silver maples and lilacs on the property in consultation with the owner and their placement in relation to the power lines that avoids the need for trimming. Adverse effects to the Dow House (NWN0205) include removal of the stone retaining wall, minor slope impacts, and loss of shrubs. Mitigation for this loss will include replacement of the granite slab wall in-kind and appropriate landscaping with shrubs in consultation with the owner. Note that the NHDOT also minimized right-of-way takes to reduce its impacts.

Adverse effects to the Portsmouth Water Booster Station (NWN0228) occur through acquisition of a portion of the property. Mitigation is accomplished though leaving a tree buffer between the Turnpike and the historic building and its documentation by completion of a Determination of Eligibility.

Adverse effects to the Ira Pinkham House (DOV0093) include strip acquisition and the need to take the whole property including the house and barn. Mitigation will involve producing a state-level Historic American Building Survey for the dwelling, documentation of the barn's structure in the same document, preparation of preservation covenants for the house and barn, marketing the barn for relocation if structurally feasible, and marketing the dwelling.

Adverse effects to the General Sullivan Bridge (DOV0158) include the removal of the roadway and north embankment approach to the bridge and limited reconfiguration of the north abutment and wing wall to accommodate the widening of the connector road under the Little Bay Bridges. Mitigation for these impacts will include rehabilitation of the bridge for use by pedestrians and bicycles and its continued use for fishing. Work on the bridges will not impact the adjacent Hilton Park Picnic Shelter. Overall, the impact of the project on the General Sullivan Bridge will be beneficial.

The NHDOT will complete all phased archaeological investigations prior to construction.

In accordance with the Advisory Council's regulations, consultation will continue, as appropriate, as this project proceeds.

Linda Wilson, Deputy
State Historic Preservation Officer

for Kathleen O. Laffey, Administrator
Federal Highway Administration

Concurred with by the New Hampshire Department of Transportation:

Date: 2/9/06 By:

Joyce McKay, Cultural Resources Manager

c.c. Harry Kinter Chris Waszczuk
Linda Wilson Marc Laurin

S:\PROJECTS\DESIGN\11238\Cultural\memo.doc

(June 2006)

NHDHR Determination of Eligibility / Effect (36 CFR Part 800)

Project:	Newington-Dover, NHS-027-1(37), 11238	**Inventory #:**	DOV0093
Date of group review:	December 8, 2005	**Area:**	Newington-Dover Project Area (ND)
Participants:	FHWA, NHDOT, NHDHR	**Town / City:**	Dover
Property name:	Ira F. Pinkham House	**County:**	Strafford
Address:	430 Dover Point Road		
Agency:	NH DOT	**Reviewed for:**	R&C

Individual Properties

NR SR
[x] [x] Eligible (district N/A)
[ ] [ ] Eligible, also in district
[ ] [ ] Eligible, only in district
[ ] [ ] Not evaluated for individual eligibility
[ ] [ ] Listed in the National or NH Registers of Historic Places

Districts

NR SR
[ ] [ ] Eligible
[ ] [ ] Not eligible

[x] [x] Not evaluated as a district
[ ] [ ] Listed in the National Register of Historic Places

Integrity: [x] Location [x] Design [x] Setting [x] Materials [x] Workmanship [x] Feeling [x] Association

Criteria: [x] A (Event) [ ] B (Person) [x] C (Architecture/Engineering) [ ] D (Archaeology) [ ] E (Exception)

Level: [x] Local [ ] State [ ] National

Significance: The Ira F. Pinkham House is significant for its historical associations with several important historical contexts on Dover Point -- brickmaking, agriculture and summer home tourism -- as well as its architectural significance as a nid-19th century farm complex, altered to serve the needs of early 20th century summer residents.

Eligible Acreage: 00.80acres

36 CFR 800.5 Criteria of Effect & Adverse Effect

☒ **36 CFR 800.5(a): Apply criteria of adverse effect**. In consultation with the SHPO/THPO and any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to identified historic properties, the agency official shall apply the criteria of adverse effect to historic properties within the area of potential effects. The agency official shall consider any views concerning such effects which have been provided by consulting parties and the public.

☒ **Effect:** The undertaking may alter National Register-qualifying characteristics and features of
Section 106: [x] location [x] design [x] setting [x] materials [x] workmanship [x] feeling [x] association
Section 4(f): [x] use

☒ **36 CFR 800.5(a)(1): Criteria of adverse effect:** an adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling and association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative. Adverse effects on historic properties include, but are not limited to:

(i) Physical destruction of or damage to all or part of the property;
(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;
(iii) Removal of the property from its historic location;
(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
(v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;
(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

☐ **36 CFR 800.5(b): Finding of no adverse effect:** [*Otherwise adverse effects may be considered not adverse when*] the agency official, in consultation with the SHPO/THPO, may propose a finding of no adverse effect when the undertaking's effects do not meet the criteria of paragraph (a)(1) of this section or the undertaking is modified or conditions are imposed, such as the subsequent review of plans for rehabilitation by the SHPO/THPO to ensure consistency with the *Secretary's Standards for the Treatment of Historic Propertie*s (36 CFR Part 68) and applicable guidelines, to avoid adverse effects.

☐ **No historic properties affected:** there are no historic properties present ***OR*** historic properties are present, but the undertaking will not alter any characteristics that would qualify the property for the National Register.

36 CFR 800.5(c): Consulting party review. If the agency official proposes a finding of no adverse effect, the agency official shall notify all consulting parties of the finding and provide them with the documentation specified in § 800.11(e). The SHPO/THPO shall have 30 days from receipt to review the finding.

(June 2006)

NHDHR Determination of Eligibility / Effect (36 CFR Part 800)

Project:	Newington-Dover, NHS-027-1(37), 11238	**Inventory #:**	DOV0093
Date of group review:	December 8, 2005	**Area:**	Newington-Dover Project Area (ND)
Participants:	FHWA, NHDOT, NHDHR	**Town / City:**	Dover
Property name:	Ira F. Pinkham House	**County:**	Strafford
Address:	430 Dover Point Road		
Agency:	NH DOT	**Reviewed for:**	R&C

Comments: (All Dover alternatives) Section 106 and 4(f) adverse effects. As proposed, the barn will be impacted by slope work, and strip acquisition will be required.

Mitigation: Documentation of the barn through a state-level Historic American Building Survey; and investigation of the barn to determine its suitability for relocation. If suitable, NHDOT will market the barn for relocation. If the NHDOT purchases the associated dwelling, then it will be documented through a state-level Historic American Building Survey and marketed at its current site.

(June 2006)

NHDHR Determination of Eligibility / Effect (36 CFR Part 800)

Project:	Newington-Dover, NHS-027-1(37), 11238	**Inventory #:**	DOV0158
Date of group review:	December 8, 2005	**Area:**	Newington-Dover Project Area
Participants:	FHWA, NHDOT, NHDHR	**Town / City:**	Dover
Property name:	General John Sullivan Bridge	**County:**	Strafford
Address:	Over Little Bay, parallel to the Spaulding Turnpike		
Agency:	NH DOT	**Reviewed for:**	R&C

Individual Properties

NR SR
[x] [x] Eligible (district N/A)
[ ] [ ] Eligible, also in district
[ ] [ ] Eligible, only in district
[ ] [ ] Not evaluated for individual eligibility
[ ] [ ] Listed in the National or NH Registers of Historic Places

Districts

NR SR
[ ] [ ] Eligible
[ ] [ ] Not eligible
[x] [x] Not evaluated as a district
[ ] [ ] Listed in the National Register of Historic Places

Integrity: [x] Location [x] Design [x] Setting [x] Materials [x] Workmanship [x] Feeling [x] Association

Criteria: [x] A (Event) [ ] B (Person) [x] C (Architecture/Engineering) [ ] D (Archaeology) [ ] E (Exception)

Level: [ ] Local [x] State [ ] National

Significance: Built in 1934 under difficult weather and tidal conditions, the General Sullivan Bridge was the keystone of a project that was then regarded as "the most unique and outstanding along the line of bridge and highway construction that has ever been proposed in the history of the State." Design and construction of the bridge were noteworthy achievements, described in articles in engineering journals of the time.

The General Sullivan Bridge was the first span in New Hampshire to be designed as a continuous arched truss, without structural breaks at its supporting piers. This design employed newly developed sophistication in analyzing stresses in continuous structures. The General Sullivan Bridge was designed by Fay, Spofford and Thorndike, bridge design specialists from Boston. Founded in 1914, this partnership was one of the most prolific American bridge engineering firms of the 1920s and 1930s. Charles M. Spofford was an authority in structural analysis who had authored a textbook, *The Theory of Structures* (1911, 1915, 1928*),* which outlined some of the methods of analysis for statically indeterminate structures that were employed in the design of the bridge, specifically the 'Method of Least Work." In 1929, Fay, Spofford and Thorndike had designed a direct prototype for the Sullivan Bridge--the Lake Champlain Bridge, between Chimney Point in Addison, Vermont, and Fort Frederick at Crown Point, New York.

The Sullivan Bridge restored a long-disused travel route in southern New Hampshire. Until the bridge opened, all traffic from Portsmouth to Concord traveled first to Dover, then proceeded west through Barrington on Route 9 to join the New Hampshire Turnpike Road (Route 4) in Northwood. The Sullivan Bridge and a companion structure, the Scammell Bridge, provided a new connection with the eastern end of the old turnpike at Cedar Point in Durham. Conducting traffic along the old route through Durham, Lee, and Nottingham, the bridge thus restored usefulness to the full length of the turnpike, and re-established an important transportation network. When New Hampshire's bridges were evaluated for historical and engineering significance in 1982, the General Sullivan Bridge attained a numerical score of 28 points, one of the highest rankings achieved by any New Hampshire bridge.

Eligible Acreage: Approximately 2.5 acres, which includes the bridge itself, its abutments and approach roads.

36 CFR 800.5 Criteria of Effect & Adverse Effect

☒ **36 CFR 800.5(a): Apply criteria of adverse effect**. In consultation with the SHPO/THPO and any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to identified historic properties, the agency official shall apply the criteria of adverse effect to historic properties within the area of potential effects. The agency official shall consider any views concerning such effects which have been provided by consulting parties and the public.

☒ **Effect:** The undertaking may alter National Register-qualifying characteristics and features of
Section 106: [ ] location [x] design [x] setting [ ] materials [ ] workmanship [ ] feeling [x] association
Section 4(f): [x] use

☒ **36 CFR 800.5(a)(1): Criteria of adverse effect:** an adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling and association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative. Adverse effects on historic properties include, but are not limited to:

(i) Physical destruction of or damage to all or part of the property;
(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;
(iii) Removal of the property from its historic location;
(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;

(June 2006)

NHDHR Determination of Eligibility / Effect (36 CFR Part 800)

Project:	Newington-Dover, NHS-027-1(37), 11238	**Inventory #:**	DOV0158
Date of group review:	December 8, 2005	**Area:**	Newington-Dover Project Area
Participants:	FHWA, NHDOT, NHDHR	**Town / City:**	Dover
Property name:	General John Sullivan Bridge	**County:**	Strafford
Address:	Over Little Bay, parallel to the Spaulding Turnpike		
Agency:	NH DOT	**Reviewed for:**	R&C

36 CFR 800.5(a)(1): Criteria of adverse effect, continued:

(v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;
(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

☐ **36 CFR 800.5(b): Finding of no adverse effect:** [*Otherwise adverse effects may be considered not adverse when*] the agency official, in consultation with the SHPO/THPO, may propose a finding of no adverse effect when the undertaking's effects do not meet the criteria of paragraph (a)(1) of this section or the undertaking is modified or conditions are imposed, such as the subsequent review of plans for rehabilitation by the SHPO/THPO to ensure consistency with the *Secretary's Standards for the Treatment of Historic Properties* (36 CFR Part 68) and applicable guidelines, to avoid adverse effects.

☐ **No historic properties affected:** there are no historic properties present ***OR*** historic properties are present, but the undertaking will not alter any characteristics that would qualify the property for the National Register.

36 CFR 800.5(c): Consulting party review. If the agency official proposes a finding of no adverse effect, the agency official shall notify all consulting parties of the finding and provide them with the documentation specified in § 800.11(e). The SHPO/THPO shall have 30 days from receipt to review the finding.

Comments: (All alternatives) The General Sullivan Bridge will be preserved for public use (see Mitigation section, below). Most of the construction work will be within the NH DOT right-of-way. Because Hilton Park has been determined not to be eligible for the National Register, construction easements and staging within the west side of the park will not constitute adverse effects.

Mitigation: Any adverse effects resulting from reconfiguration of the abutment and wingwall to accommodate the widening of the connector road under the Little Bay Bridges, and removal of the roadway and the approach embankment on the Dover side, will be greatly ameliorated by the rehabilitation of the General Sullivan Bridge for public recreational use, pedestrians, and bicyclists, resulting in an overall beneficial effect.

(June 2006)

NHDHR Determination of Eligibility / Effect (36 CFR Part 800)

Project:	Newington-Dover, NHS-027-1(37), 11238	**Inventory #:**	NWN0204
Date of group review:	December 8, 2005	**Area:**	Newington-Dover Project Area (ND)
Participants:	FHWA, NHDOT, NHDHR	**Town / City:**	Newington
Property name:	Beane Farm	**County:**	Rockingham
Address:	2299 Woodbury Avenue		
Agency:	NH DOT	**Reviewed for:**	R&C

Individual Properties

NR	SR	
[x]	[x]	Eligible (district N/A)
[ ]	[ ]	Eligible, also in district
[ ]	[ ]	Eligible, only in district
[ ]	[ ]	Not evaluated for individual eligibility
[ ]	[ ]	Listed in the National or NH Registers of Historic Places

Districts

NR	SR	
[ ]	[ ]	Eligible
[ ]	[ ]	Not eligible
[x]	[x]	Not evaluated as a district
[ ]	[ ]	Listed in the National Register of Historic Places

Integrity: [x] Location [x] Design [x] Setting [x] Materials [x] Workmanship [x] Feeling [x] Association

Criteria: [ ] A (Event) [ ] B (Person) [x] C (Architecture/Engineering) [ ] D (Archaeology) [ ] E (Exception)

Level: [x] Local [ ] State [ ] National

Significance: The Beane Farm is architecturally significant as a connected farm complex constructed in response to expanding dairy farming in Newington. Additionally, the Beane Farm, with the Dow House (#NWN0204) across the street, "form a strong visual anchor at the top of Beane's Hill, conveying the last remnant of the area's nineteenth and early twentieth century associations."

Eligible Acreage: 4.0+/- acres, approximately half of map/parcel 19/9 (8.22 acres)

36 CFR 800.5 Criteria of Effect & Adverse Effect

☒ **36 CFR 800.5(a): Apply criteria of adverse effect**. In consultation with the SHPO/THPO and any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to identified historic properties, the agency official shall apply the criteria of adverse effect to historic properties within the area of potential effects. The agency official shall consider any views concerning such effects which have been provided by consulting parties and the public.

☒ **Effect:** The undertaking may alter National Register-qualifying characteristics and features of
Section 106: [ ] location [ ] design [x] setting [ ] materials [ ] workmanship [x] feeling [x] association
Section 4(f): [x] use

☒ **36 CFR 800.5(a)(1): Criteria of adverse effect:** an adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling and association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative. Adverse effects on historic properties include, but are not limited to:

(i) Physical destruction of or damage to all or part of the property;
(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;
(iii) Removal of the property from its historic location;
(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
(v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;
(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

☐ **36 CFR 800.5(b): Finding of no adverse effect:** [*Otherwise adverse effects may be considered not adverse when*] the agency official, in consultation with the SHPO/THPO, may propose a finding of no adverse effect when the undertaking's effects do not meet the criteria of paragraph (a)(1) of this section or the undertaking is modified or conditions are imposed, such as the subsequent review of plans for rehabilitation by the SHPO/THPO to ensure consistency with the *Secretary's Standards for the Treatment of Historic Propertie*s (36 CFR Part 68) and applicable guidelines, to avoid adverse effects.

☐ **No historic properties affected:** there are no historic properties present ***OR*** historic properties are present, but the undertaking will not alter any characteristics that would qualify the property for the National Register.

36 CFR 800.5(c): Consulting party review. If the agency official proposes a finding of no adverse effect, the agency official shall notify all consulting parties of the finding and provide them with the documentation specified in § 800.11(e). The SHPO/THPO shall have 30 days from receipt to review the finding.

(June 2006)

NHDHR Determination of Eligibility / Effect (36 CFR Part 800)

Project:	Newington-Dover, NHS-027-1(37), 11238	**Inventory #:**	NWN0204
Date of group review:	December 8, 2005	**Area:**	Newington-Dover Project Area (ND)
Participants:	FHWA, NHDOT, NHDHR	**Town / City:**	Newington
Property name:	Beane Farm	**County:**	Rockingham
Address:	2299 Woodbury Avenue		
Agency:	NH DOT	**Reviewed for:**	R&C

Comments: (All Newington alternatives) Section 106 and 4(f) adverse effects. Impacts will include minor fill on the property, loss of view of the existing crest of the hill and loss of hilltop setting, due to extending Woodbury Avenue over the Turnpike, and loss of mature trees. It is agreed that the boundary of the National Register-eligible property within the 8.22 acre parcel extends northerly from the edge of the parking lot and follows along the property lines, and consists of approximately 4.0 acres, as indicated on page B-1 of the inventory form..

Mitigation: In consultation with the property owner, mitigation will include planting replacement silver maples (large-caliper) and lilacs on the property, far enough away from the power lines to avoid future tree-trimming by the power company as the trees mature. Plant replacement lilacs and "door trees" flanking the entrance.

(June 2006)

NHDHR Determination of Eligibility / Effect (36 CFR Part 800)

Project:	Newington-Dover, NHS-027-1(37), 11238	**Inventory #:**	NWN0205
Date of group review:	December 8, 2005	**Area:**	Newington-Dover Project Area (ND)
Participants:	FHWA, NHDOT, NHDHR	**Town / City:**	Newington
Property name:	Isaac Dow House	**County:**	Rockingham
Address:	Woodbury Avenue		
Agency:	NH DOT	**Reviewed for:**	R&C

Individual Properties

NR SR
[x] [x] Eligible (district N/A)
[ ] [ ] Eligible, also in district
[ ] [ ] Eligible, only in district
[ ] [ ] Not evaluated for individual eligibility
[ ] [ ] Listed in the National or NH Registers of Historic Places

Districts

NR SR
[ ] [ ] Eligible
[ ] [ ] Not eligible

[x] [x] Not evaluated as a district
[ ] [ ] Listed in the National Register of Historic Places

Integrity: [x] Location [x] Design [x] Setting [x] Materials [x] Workmanship [x] Feeling [x] Association

Criteria: [ ] A (Event) [ ] B (Person) [x] C (Architecture/Engineering) [ ] D (Archaeology) [ ] E (Exception)

Level: [x] Local [ ] State [ ] National

Significance: The Isaac Dow House is architecturally significant as an example of the Federal style and form, updated in the later 19th century as tastes and technologies changed. Together, the Dow House and the Beane Farm (#NWN0204)across the road "form a strong visual anchor at the top of Beane's Hill, conveying the last remnant of the area's 19th and early 20th century associations."

Eligible Acreage: 0.285 acres, a portion of map/parcel 19/01A

36 CFR 800.5 Criteria of Effect & Adverse Effect

☒ **36 CFR 800.5(a): Apply criteria of adverse effect**. In consultation with the SHPO/THPO and any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to identified historic properties, the agency official shall apply the criteria of adverse effect to historic properties within the area of potential effects. The agency official shall consider any views concerning such effects which have been provided by consulting parties and the public.

☒ **Effect:** The undertaking may alter National Register-qualifying characteristics and features of
Section 106: [ ] location [ ] design [x] setting [ ] materials [ ] workmanship [x] feeling [x] association
Section 4(f): [x] use

☒ **36 CFR 800.5(a)(1): Criteria of adverse effect:** an adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling and association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative. Adverse effects on historic properties include, but are not limited to:

(i) Physical destruction of or damage to all or part of the property;
(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;
(iii) Removal of the property from its historic location;
(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
(v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;
(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

☐ **36 CFR 800.5(b): Finding of no adverse effect:** [*Otherwise adverse effects may be considered not adverse when*] the agency official, in consultation with the SHPO/THPO, may propose a finding of no adverse effect when the undertaking's effects do not meet the criteria of paragraph (a)(1) of this section or the undertaking is modified or conditions are imposed, such as the subsequent review of plans for rehabilitation by the SHPO/THPO to ensure consistency with the *Secretary's Standards for the Treatment of Historic Propertie*s (36 CFR Part 68) and applicable guidelines, to avoid adverse effects.

☐ **No historic properties affected:** there are no historic properties present ***OR*** historic properties are present, but the undertaking will not alter any characteristics that would qualify the property for the National Register.

36 CFR 800.5(c): Consulting party review. If the agency official proposes a finding of no adverse effect, the agency official shall notify all consulting parties of the finding and provide them with the documentation specified in § 800.11(e). The SHPO/THPO shall have 30 days from receipt to review the finding.

(June 2006)

NHDHR Determination of Eligibility / Effect (36 CFR Part 800)

Project:	Newington-Dover, NHS-027-1(37), 11238	**Inventory #:**	NWN0205
Date of group review:	December 8, 2005	**Area:**	Newington-Dover Project Area (ND)
Participants:	FHWA, NHDOT, NHDHR	**Town / City:**	Newington
Property name:	Isaac Dow House	**County:**	Rockingham
Address:	Woodbury Avenue		
Agency:	NH DOT	**Reviewed for:**	R&C

Comments: (All Newington alternatives): Section 106 and 4(f) adverse effects. Impacts will include removal of the stone retaining wall, minor slope impacts, and loss of shrubs. Impacts will also include loss of view of the property and its hilltop setting, due to extending Woodbury Avenue over the Turnpike. It is agreed that the National Register-eligible boundary consists of the parcel without the parking lot, consisting of approximately 0.285 acres.

Mitigation: In consultation with the property owner, mitigation will include rebuilding/restoring the granite slab wall in-kind, reusing as many existing slabs as possible. Leave as much of existing landscaping as feasible; plant replacement shrubs as appropriate. Plant blight-resistant elms down-slope of the house along Woodbury Avenue, in the NH DOT right-of-way.

(June 2006)

NHDHR Determination of Eligibility / Effect (36 CFR Part 800)

Project:	Newington-Dover, NHS-027-1(37), 11238	**Inventory #:**	NWN0228
Date of group review:	December 8, 2005	**Area:**	Newington-Dover Project Area (ND)
Participants:	FHWA, NHDOT, NHDHR	**Town / City:**	Newington
Property name:	Portsmouth Water Booster Station	**County:**	Rockingham
Address:	Off Spaulding Turnpike & Arboretum Drive		
Agency:	NH DOT	**Reviewed for:**	R&C

Individual Properties

NR	SR	
[x]	[x]	Eligible (district N/A)
[ ]	[ ]	Eligible, also in district
[ ]	[ ]	Eligible, only in district
[ ]	[ ]	Not evaluated for individual eligibility
[ ]	[ ]	Listed in the National or NH Registers of Historic Places

Districts

NR	SR	
[ ]	[ ]	Eligible
[ ]	[ ]	Not eligible
[x]	[x]	Not evaluated as a district
[ ]	[ ]	Listed in the National Register of Historic Places

Integrity: [x] Location [x] Design [x] Setting [x] Materials [x] Workmanship [x] Feeling [x] Association

Criteria: [x] A (Event) [ ] B (Person) [x] C (Architecture/Engineering) [ ] D (Archaeology) [ ] E (Exception)

Level: [x] Local [ ] State [ ] National

Significance: The Portsmouth Water Booster Station is significant for its historic associations with two locally important historic contexts -- the construction and effects of Pease Air Force Base, and 20th century improvements to municipal water distribution -- as well as for its architectural and engineering significance as an unaltered example of a Modern water works structure. The National Register-eligible boundary considers only the water booster station and the water storage tank; future consideration could also be given to other aspects and structures of the system, which stretched between Portsmouth and Madbury.

Eligible Acreage: 2.82 acres

36 CFR 800.5 Criteria of Effect & Adverse Effect

☒ **36 CFR 800.5(a): Apply criteria of adverse effect**. In consultation with the SHPO/THPO and any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to identified historic properties, the agency official shall apply the criteria of adverse effect to historic properties within the area of potential effects. The agency official shall consider any views concerning such effects which have been provided by consulting parties and the public.

☒ **Effect:** The undertaking may alter National Register-qualifying characteristics and features of
Section 106: [ ] location [ ] design [x] setting [ ] materials [ ] workmanship [ ] feeling [ ] association
Section 4(f): [x] use

☒ **36 CFR 800.5(a)(1): Criteria of adverse effect:** an adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling and association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative. Adverse effects on historic properties include, but are not limited to:

(i) Physical destruction of or damage to all or part of the property;
(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;
(iii) Removal of the property from its historic location;
(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
(v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;
(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

☐ **36 CFR 800.5(b): Finding of no adverse effect:** [*Otherwise adverse effects may be considered not adverse when*] the agency official, in consultation with the SHPO/THPO, may propose a finding of no adverse effect when the undertaking's effects do not meet the criteria of paragraph (a)(1) of this section or the undertaking is modified or conditions are imposed, such as the subsequent review of plans for rehabilitation by the SHPO/THPO to ensure consistency with the *Secretary's Standards for the Treatment of Historic Propertie*s (36 CFR Part 68) and applicable guidelines, to avoid adverse effects.

☐ **No historic properties affected:** there are no historic properties present ***OR*** historic properties are present, but the undertaking will not alter any characteristics that would qualify the property for the National Register.

(June 2006)

NHDHR Determination of Eligibility / Effect (36 CFR Part 800)

Project:	Newington-Dover, NHS-027-1(37), 11238	**Inventory #:**	NWN0228
Date of group review:	December 8, 2005	**Area:**	Newington-Dover Project Area (ND)
Participants:	FHWA, NHDOT, NHDHR	**Town / City:**	Newington
Property name:	Portsmouth Water Booster Station	**County:**	Rockingham
Address:	Off Spaulding Turnpike & Arboretum Drive		
Agency:	NH DOT	**Reviewed for:**	R&C

36 CFR 800.5(c): Consulting party review. If the agency official proposes a finding of no adverse effect, the agency official shall notify all consulting parties of the finding and provide them with the documentation specified in § 800.11(e). The SHPO/THPO shall have 30 days from receipt to review the finding.

Comments: (All Newington alternatives) Section 106 and 4(f) adverse effects. Impacts result from acquisition of a portion of the property; however, the effect will be superficial on the property as a whole because the buildings will not be affected, and will continue to be masked by the remaining tree screen. Therefore, additional research on the entire system will not be necessary unless other impacts occur.

Mitigation: Mitigation has already been accomplished, consisting of historical documentation and maintaining the tree screen.

Appendix H – Air Quality Technical Information

- MOBILE6.2 Input Files
- MOBILE6.2 Output Summary
- Peak Hour Traffic Summary
  - Newington
  - Dover
- Microscale Intersection Maps
  - Newington
  - Dover
- CAL3QHC Input Files
  - Newington
  - Dover
- Microscale Results Summary
  - Newington
  - Dover

MOBILE6.2 Input Files

NH03CO.in

```
MOBILE6 INPUT FILE :
> FILE NAME: NH03CO.in
> DATE: 7/8/03
> CREATED BY: DHS
> BASIC NEW HAMPSHIRE INPUT FILE FOR MOBILE6
> NON-ATTAINMENT AREA
> WINTER SEASON
> 2003 MOBILE SOURCE EMISSIONS (FOR PROJECTION OF EMISSIONS IN 2003)
> RFG, NLEV, ESI(ATP), TIER 2
* Make sure that Report File matches the Input File
REPORT FILE        : NH03CO.txt
POLLUTANTS         : HC CO NOx
RUN DATA
NO REFUELING       :
> NEW HAMPSHIRE DATA FOR MIN/MAX TEMP, FUEL RVP, VMT FRACTIONS, ESI/ATP, FUEL, SEASON
MIN/MAX TEMP       : 30. 30.
FUEL RVP           : 6.8
EXPRESS HC AS VOC  :

*New Hampshire Vehicle Registration Distribution Input (External File) If * then default values used
REG DIST           : NHallage.d
*New Hampshire specific VMT mix based on 1999 HPMS adjusted from M5 to M6 shown below If * then
default values used
VMT FRACTIONS      :
0.470  0.081  0.269  0.068  0.031  0.025  0.003  0.002
0.001  0.005  0.006  0.007  0.026  0.001  0.001  0.004

*New Hampshire ESI Program is ATP
ANTI-TAMP PROG     :
99 80 50 22222 11111111 1 11 096. 22211122
*New Hampshire specific fuel program shown below (2 N for RFG, 1 for Conventional East)
FUEL PROGRAM       : 2 N
*NEW Hampshire Season of interest (1 for summer, 2 for winter)
SEASON             : 2
> Scenario(s) being modeled includes area, road class, type, speed, year, month

SCENARIO RECORD    : Scenario Title : NH speed 2.5
> 2003 Speed 2.5 mph (Arterial)
* This text is for annotating this file and is otherwise ignored.
CALENDAR YEAR      : 2003
EVALUATION MONTH   : 1
ALTITUDE           : 1
AVERAGE SPEED      : 2.5 Arterial 0.0 100.0 0.0 0.0

….through….

 SCENARIO RECORD    : Scenario Title : NH speed 60.73
> 2003 Speed 60.73 mph (Freeway)
* This text is for annotating this file and is otherwise ignored.
CALENDAR YEAR      : 2003
EVALUATION MONTH   : 1
ALTITUDE           : 1
AVERAGE SPEED      : 60.73 Freeway 92.0 0.0 0.0 8.0
```

NH13CO.in

```
MOBILE6 INPUT FILE :
> FILE NAME: NH13CO.in
> DATE: 7/8/03
> CREATED BY: DHS
> BASIC NEW HAMPSHIRE INPUT FILE FOR MOBILE6
> NON-ATTAINMENT AREA
> WINTER SEASON
> 2013 MOBILE SOURCE EMISSIONS (FOR PROJECTION OF EMISSIONS IN 2013)
> RFG, NLEV, ESI(ATP), TIER 2
* Make sure that Report File matches the Input File
REPORT FILE        : NH13CO.txt
POLLUTANTS         : HC CO NOx
RUN DATA
NO REFUELING       :
> NEW HAMPSHIRE DATA FOR MIN/MAX TEMP, FUEL RVP, VMT FRACTIONS, ESI/ATP, FUEL, SEASON
MIN/MAX TEMP       : 30. 30.
FUEL RVP           : 6.8
EXPRESS HC AS VOC  :

*New Hampshire Vehicle Registration Distribution Input (External File) If * then default values used
REG DIST           : NHallage.d
*New Hampshire specific VMT mix based on 1999 HPMS adjusted from M5 to M6 shown below If * then
default values used
VMT FRACTIONS      :
0.470  0.081  0.269  0.068  0.031  0.025  0.003  0.002
0.001  0.005  0.006  0.007  0.026  0.001  0.001  0.004

*New Hampshire ESI Program is ATP
ANTI-TAMP PROG     :
99 80 50 22222 11111111 1 11 096. 22211122
*New Hampshire specific fuel program shown below (2 N for RFG, 1 for Conventional East)
FUEL PROGRAM       : 2 N
*NEW Hampshire Season of interest (1 for summer, 2 for winter)
SEASON             : 2
> Scenario(s) being modeled includes area, road class, type, speed, year, month

SCENARIO RECORD    : Scenario Title : NH speed 2.5
> 2013 Speed 2.5 mph (Arterial)
* This text is for annotating this file and is otherwise ignored.
CALENDAR YEAR      : 2013
EVALUATION MONTH   : 1
ALTITUDE           : 1
AVERAGE SPEED      : 2.5 Arterial 0.0 100.0 0.0 0.0

….through….

SCENARIO RECORD    : Scenario Title : NH speed 60.73
> 2013 Speed 60.73 mph (Freeway)
* This text is for annotating this file and is otherwise ignored.
CALENDAR YEAR      : 2013
EVALUATION MONTH   : 1
ALTITUDE           : 1
AVERAGE SPEED      : 60.73 Freeway 92.0 0.0 0.0 8.0
```

NH25CO.in

```
MOBILE6 INPUT FILE :
> FILE NAME: NH25CO.in
> DATE: 7/8/03
> CREATED BY: DHS
> BASIC NEW HAMPSHIRE INPUT FILE FOR MOBILE6
> NON-ATTAINMENT AREA
> WINTER SEASON
> 2025 MOBILE SOURCE EMISSIONS (FOR PROJECTION OF EMISSIONS IN 2025)
> RFG, NLEV, ESI(ATP), TIER 2

* Make sure that Report File matches the Input File
REPORT FILE        : NH25CO.txt
POLLUTANTS         : HC CO NOx
RUN DATA
NO REFUELING       :
> NEW HAMPSHIRE DATA FOR MIN/MAX TEMP, FUEL RVP, VMT FRACTIONS, ESI/ATP, FUEL, SEASON
MIN/MAX TEMP       : 30. 30.
FUEL RVP           : 6.8
EXPRESS HC AS VOC  :
*New Hampshire Vehicle Registration Distribution Input (External File) If * then default values used
REG DIST           : NHallage.d

*New Hampshire specific VMT mix based on 1999 HPMS adjusted from M5 to M6 shown below If * then
default values used
VMT FRACTIONS      :
0.470  0.081  0.269  0.068  0.031  0.025  0.003  0.002
0.001  0.005  0.006  0.007  0.026  0.001  0.001  0.004
*New Hampshire ESI Program is ATP
ANTI-TAMP PROG     :
99 80 50 22222 11111111 1 11 096. 22211122
*New Hampshire specific fuel program shown below (2 N for RFG, 1 for Conventional East)
FUEL PROGRAM       : 2 N
*NEW Hampshire Season of interest (1 for summer, 2 for winter)
SEASON             : 2
> Scenario(s) being modeled includes area, road class, type, speed, year, month

SCENARIO RECORD    : Scenario Title : NH speed 2.5
> 2025 Speed 2.5 mph (Arterial)
* This text is for annotating this file and is otherwise ignored.
CALENDAR YEAR      : 2025
EVALUATION MONTH   : 1
ALTITUDE           : 1
AVERAGE SPEED      : 2.5 Arterial 0.0 100.0 0.0 0.0

….through….

SCENARIO RECORD    : Scenario Title : NH speed 60.73
> 2025 Speed 60.73 mph (Freeway)
* This text is for annotating this file and is otherwise ignored.
CALENDAR YEAR      : 2025
EVALUATION MONTH   : 1
ALTITUDE           : 1
AVERAGE SPEED      : 60.73 Freeway 92.0 0.0 0.0 8.0
```

MOBILE6.2 Output Summary

New Hampshire 2003 Winter
Mobile 6.2 Emission Factors

Arterial		Freeway	
Vehicle Speed (mph)	Carbon Monoxide Emission Factor (g/veh-mile)	Vehicle Speed (mph)	Carbon Monoxide Emission Factor (g/veh-mile)
2.5	64.93	2.7	62.57
3	57.32	3	58.35
4	47.82	4	48.84
5	42.11	5	43.14
6	38.48	6	39.20
7	35.89	7	36.31
8	33.95	8	34.14
9	32.43	9	32.46
10	31.22	10	31.11
11	30.32	11	30.06
12	29.56	12	29.26
13	28.92	13	28.58
14	28.37	14	28.00
15	27.89	15	27.49
16	27.46	16	27.12
17	27.09	17	26.93
18	26.75	18	26.77
19	26.45	19	26.62
20	26.18	20	26.49
21	25.95	21	26.37
22	25.75	22	26.27
23	25.56	23	26.17
24	25.39	24	26.07
25	25.24	25	25.99
26	25.14	26	25.91
27	25.05	27	25.84
28	24.96	28	25.78
29	24.88	29	25.71
30	24.81	30	25.66
31	24.82	31	25.65
32	24.83	32	25.67
33	24.84	33	25.68
34	24.85	34	25.70
35	24.86	35	25.72
36	25.03	36	25.88
37	25.18	37	26.03
38	25.33	38	26.18
39	25.47	39	26.32
40	25.60	40	26.47
41	25.77	41	26.64
42	25.93	42	26.80
43	26.08	43	26.95
44	26.22	44	27.10
45	26.36	45	27.28
46	26.53	46	27.45
47	26.69	47	27.61
48	26.85	48	27.77
49	27.00	49	27.94
50	27.14	50	28.13
51	27.32	51	28.30
52	27.49	52	28.47
53	27.65	53	28.65
54	27.80	54	28.85
55	27.95	55	29.04
56	28.14	56	29.23
57	28.32	57	29.42
58	28.49	58	29.63
59	28.66	59	29.84
60	28.82	60	30.04
61	29.01	60.7	30.18
62	29.20		
63	29.38		
64	29.55		
65	29.72		

NOTE: Emission factors were calculated by MOBILE6.2 and represent a composite vehicle type during winter conditions.

New Hampshire 2013 Winter
Mobile 6.2 Emission Factors

Arterial		Freeway	
Vehicle Speed (mph)	Carbon Monoxide Emission Factor (g/veh-mile)	Vehicle Speed (mph)	Carbon Monoxide Emission Factor (g/veh-mile)
2.5	40.05	2.7	38.38
3	35.48	3	35.85
4	29.77	4	30.13
5	26.34	5	26.70
6	24.10	6	24.28
7	22.50	7	22.48
8	21.30	8	21.13
9	20.37	9	20.08
10	19.63	10	19.24
11	19.04	11	18.58
12	18.56	12	18.06
13	18.15	13	17.62
14	17.79	14	17.24
15	17.49	15	16.92
16	17.22	16	16.68
17	16.97	17	16.57
18	16.76	18	16.47
19	16.57	19	16.39
20	16.40	20	16.31
21	16.26	21	16.24
22	16.13	22	16.18
23	16.01	23	16.12
24	15.90	24	16.06
25	15.80	25	16.01
26	15.74	26	15.97
27	15.68	27	15.93
28	15.63	28	15.89
29	15.58	29	15.85
30	15.53	30	15.82
31	15.54	31	15.82
32	15.55	32	15.83
33	15.56	33	15.84
34	15.56	34	15.85
35	15.57	35	15.86
36	15.68	36	15.97
37	15.78	37	16.07
38	15.88	38	16.17
39	15.97	39	16.26
40	16.05	40	16.36
41	16.16	41	16.47
42	16.27	42	16.57
43	16.37	43	16.67
44	16.46	44	16.76
45	16.55	45	16.88
46	16.66	46	16.99
47	16.77	47	17.10
48	16.87	48	17.20
49	16.96	49	17.31
50	17.06	50	17.43
51	17.17	51	17.54
52	17.27	52	17.64
53	17.38	53	17.76
54	17.48	54	17.89
55	17.57	55	18.01
56	17.69	56	18.13
57	17.81	57	18.26
58	17.92	58	18.39
59	18.02	59	18.52
60	18.13	60	18.65
61	18.25	60.7	18.74
62	18.37		
63	18.48		
64	18.59		
65	18.70		

NOTE: Emission factors were calculated by MOBILE6.2 and represent a composite vehicle type during winter conditions.

New Hampshire 2025 Winter
Mobile 6.2 Emission Factors

Arterial		Freeway	
Vehicle Speed (mph)	Carbon Monoxide Emission Factor (g/veh-mile)	Vehicle Speed (mph)	Carbon Monoxide Emission Factor (g/veh-mile)
2.5	32.02	2.7	30.70
3	28.45	3	28.72
4	24.00	4	24.27
5	21.33	5	21.60
6	19.57	6	19.70
7	18.32	7	18.28
8	17.37	8	17.22
9	16.64	9	16.39
10	16.06	10	15.73
11	15.59	11	15.20
12	15.21	12	14.79
13	14.88	13	14.44
14	14.60	14	14.14
15	14.36	15	13.88
16	14.14	16	13.69
17	13.95	17	13.61
18	13.78	18	13.53
19	13.63	19	13.46
20	13.49	20	13.40
21	13.38	21	13.35
22	13.27	22	13.29
23	13.18	23	13.25
24	13.09	24	13.21
25	13.01	25	13.17
26	12.96	26	13.13
27	12.92	27	13.10
28	12.88	28	13.07
29	12.84	29	13.04
30	12.80	30	13.01
31	12.80	31	13.01
32	12.81	32	13.02
33	12.81	33	13.02
34	12.82	34	13.03
35	12.82	35	13.04
36	12.90	36	13.12
37	12.98	37	13.20
38	13.06	38	13.28
39	13.13	39	13.35
40	13.20	40	13.43
41	13.28	41	13.51
42	13.36	42	13.59
43	13.44	43	13.67
44	13.51	44	13.74
45	13.58	45	13.83
46	13.67	46	13.92
47	13.75	47	14.00
48	13.83	48	14.08
49	13.91	49	14.17
50	13.98	50	14.26
51	14.06	51	14.35
52	14.15	52	14.43
53	14.23	53	14.52
54	14.31	54	14.63
55	14.38	55	14.72
56	14.48	56	14.82
57	14.57	57	14.92
58	14.66	58	15.02
59	14.74	59	15.13
60	14.82	60	15.23
61	14.92	60.7	15.30
62	15.02		
63	15.11		
64	15.19		
65	15.28		

NOTE: Emission factors were calculated by MOBILE6.2 and represent a composite vehicle type during winter conditions.

Peak Hour Traffic Summary

Newington

'Newington ' 60
'2003 Existing' Using 2.1% growth rate from traffic section of report

Free Flow Links	2003 Existing	2013 No Build	2025 No Build
WdbryAve1'	1525	1877	2409
'Rt16SBoffRamp1'	715	880	1129
'Rt16SBOffRamp2'	715	880	1129
'Rte16SBOffRamp3'	715	880	1129
'Rte16SBOffRamp4'	715	880	1129
'Rte16NBOnRamp'	760	936	1201
'Rte16NBOnRamp2'	760	936	1201
'Rte16NBOnRamp3'	760	936	1201
'Rte16NBOnRamp4'	760	936	1201
WdbryAve2'	810	997	1280
'PattersonLne1'	135	166	213
'PattersonLne2'	135	166	213
'PattersonLne3'	135	166	213
'PattersonLne4'	110	135	174
'PattersonLne5'	15	18	24
'PattersonLne6'	10	12	16
'ShattuckWay1'	10	12	16
'ShattuckWay2'	10	12	16
'ShattuckWay3'	10	12	16
'ShattuckWay4'	10	12	16
Driveway'	115	142	182
RiverRd'	205	252	324
RteNB1'	3155	3884	4984
RteNB2'	3155	3884	4984
RteNB3'	3155	3884	4984
RteNB4'	3155	3884	4984
Rte16NB5'	3155	3884	4984
Rte16SB1'	1590	1957	2512
Rte16SB2'	1590	1957	2512
Rte16SB3'	1590	1957	2512
FoxRunRd'	10	12	16
FoxRunRd2'	10	12	16
FoxRunRd3'	10	12	16
FoxRunRd4'	10	12	16
FoxRunRd5'	10	12	16

NewingtonAlt12A' Using 2.1% growth rate from traffic section of report

#	Queue Links	2025 Build PM Peak	2013 Build PM Peak
1	'WdbryWBthruatNBRamps'	210	164
2	'WdbryEBthruatNBRamps'	555	432
3	'WdbryEBlftatNBRamps'	740	577
4	'NBOffRampatWdbryAve'	165	129
5	WdbryWBatSBRamps'	235	183
6	'WdbryEBlftatSBRamps'	75	58
7	'WdbryEBthruatSBRamps'	625	487
8	SBOffRampLeft'	670	522
9	SBOffRampRight'	250	195
10	WdbryWBatRvrRd'	445	347
11	RvrRdSBatWdbry'	270	210
12	RvrRdNBatWdbry'	580	452
	Free Flow		
1	WoodburyAveExt1'	2185	1703
2	WoodburyAveExt2'	2185	1703
3	WoodburyAveExt3'	1090	849
4	WoodburyAveExt4'	1530	1192
5	WoodburyAveExt5'	1530	1192
6	WoodburyAveExt6'	1530	1192
7	WoodburyAveExt7'	1530	1192
8	WoodburyAveExt8'	1145	892
9	Rte16NB1'	3850	3000
10	Rte16NB2'	3850	3000
11	Rte16SB1'	1640	1278
12	Rte16SB2'	1755	1368
13	NBOffRamp1'	165	129
14	NBoffRamp2'	165	129
15	NBOffRamp3'	165	129
16	NBOffRamp4'	165	129
17	NBOnRamp1'	555	432
18	NBOnRamp2'	555	432
19	NBOnRamp3'	555	432
20	NBOnRamp4'	1095	853
21	NBOnRamp5'	1095	853
22	NBOnRamp6'	1650	1286
23	SBOnRamp1'	115	90
24	SBOnRamp2'	115	90
25	SBOnRamp3'	115	90
26	SBOnRamp4'	115	90
27	SBOnRamp5'	115	90
28	SBOnRamp6'	115	90
29	SBOnRamp7'	115	90
30	SBOnRamp8'	115	90
31	SBOnRamp9'	115	90
32	SBOffRamp1'	920	717
33	SBOffRamp2'	920	717
34	SBOffRamp3'	920	717
35	SBOffRamp4'	920	717
36	SBOffRamp5'	920	717
37	RiverRdCon1'	950	740
38	RiverRdCon2'	950	740
39	RiverRdCon3'	955	744
40	RiverRdCon4'	955	744
41	RiverRdCon5'	955	744
42	RiverRdCon6'	490	382
43	RiverRdCon7'	490	382
44	RiverRdCon8'	490	382
45	RiverRdCon9'	490	382
46	RiverRdCon10'	375	292
47	ConRd1'	117	91
48	ConRd2'	117	91
49	ConRd3'	117	91
50	ConRd4'	117	91
51	ConRd5'	117	91
52	ConRd6'	117	91
53	ArbDrve1'	20	16
54	ArbDrve2'	20	16
55	ArbDrve3'	20	16
56	ArbDrve4'	20	16
57	ArbDrve5'	20	16
58	ArbDrve6'	20	16

'2025 Newington Alt 13 Using 2.1% growth rate from traffic section of report

#	Queue Links	2025 Build PM Peak	2013 Build PM Peak
1	NBOffRamplftrt'	165	129
2	WdbryAveEB'	20	16
3	WdbryWBthru'	700	545
4	WdbryWBLft'	555	432
5	ArborSB'	25	19
6	SBOffRampNB'	1070	834
7	ArborEBLft'	20	16
8	ArborEBthrght'	580	452
9	WdbryWBLft'	20	16
10	Wdbrythrght'	25	19
	Free Flow		
1	Rte16NB1'	3850	3000
2	Rte16NB2'	3850	3000
3	Rte16SB1'	1710	1333
4	Rte16SB2'	1710	1333
5	WdbryAve1'	2035	1586
6	WdbryAve2'	860	670
7	WdbryAveExt1'	1300	1013
8	WdbryAveExt2'	1300	1013
9	WdbryAveExt3'	1300	1013
10	WdbryAveExt4'	1300	1013
11	WdbryAveExt5'	1300	1013
12	WdbryAveExt6'	1300	1013
13	WdbryAveExt7'	1300	1013
14	WdbryAveExt8'	1300	1013
15	WdbryAveExt9'	1300	1013
16	WdbryAveExt10'	1300	1013
17	WdbryAveExt11'	1300	1013
18	WdbryAveExt12'	1300	1013
19	WdbryAveExt13'	1300	1013
20	Arbor1'	995	775
21	Arbor2'	995	775
22	Arbor3'	995	775
23	Arbor4'	995	775
24	Arbor5'	995	775
25	arbor6'	70	55
26	arbor7'	70	55
27	arbor8'	70	55
28	arbor9'	70	55
29	arbor10'	70	55
30	arbor11'	70	55
31	arbor12'	70	55
32	arbor13'	70	55
33	'SBOffRamptoWdbryExt1'	695	542
34	'SBOffRamptoWdbryExt2'	695	542
35	'SBOffRamptoWdbryExt3'	695	542
36	SBOnRamp1'	45	35
37	SBOnRamp2'	45	35
38	SBOnRamp3'	45	35
39	SBOnRamp4'	45	35
40	SBOnRamp5'	45	35
41	SBOnRamp6'	45	35
42	SBOnRamp7'	45	35
43	SBOffRamp1'	1070	834
44	SBOffRamp2'	1070	834
45	SBOffRamp3'	1070	834
46	SBOffRamp4'	1070	834
47	SBOffRamp5'	1070	834
48	SBOffRamp6'	1070	834
49	NBOffRamp1'	165	129
50	NBOffRamp2'	165	129
51	NBOffRamp3'	165	129
52	NBOffRamp4'	165	129
53	NBOnRamp1'	1730	1348
54	NBOnRamp2'	1730	1348
55	NBOnRamp3'	1730	1348
56	NBOnRamp4'	1730	1348
57	WdbrytoNBOnRamp1'	555	432
58	WdbrytoNBOnRamp2'	555	432

Dover

'Newington Dover Route
Dover Existing'

Using 2.1% growth rate from traffic section of report

Free Flow Links	2003 Existing	2013 No Build	2025 No Build
'Route 16 Southbound1'	1200	1477	1896
'Route 16 Northbound1'	4110	5059	6492
DoverPointRd1'	1185	1459	1872
DoverPointRd2'	1185	1459	1872
DoverPointRd3'	1185	1459	1872
DoverPointRd4'	1185	1459	1872
DoverPointRd5'	10	12	16
DoverPointRd6'	10	12	16
DoverPointRd7'	15	18	24
Rte4RamptoDPRd1'	5	6	8
Rte4RamptoDPRd2'	5	6	8
Rte4RamptpDPRd3'	5	6	8
Route4 1'	470	579	742
Route 4 2'	470	579	742
Route4 3'	1475	1816	2330
Route4 4'	1210	1490	1911
Route 4 5'	1210	1490	1911
Route4 6'	1210	1490	1911
Route4 7'	2055	2530	3246
'Rt16NBOffRmptoRt4Ea1'	705	868	1114
'Rt16NBoffRmptoRt4Ea2'	710	874	1122
'Rt16NBOffRmptoRt4Ea3'	710	874	1122
'Rt16NBOffRmptoRt4Ea4'	710	874	1122
'Rt16NBOffRmptoRt4Ea5'	710	874	1122
'Rt16NBOffRmptoRt4Ea6'	710	874	1122
'Rt16NBOffRmptoRt4Ea7'	710	874	1122
'Rt16NBOffRmptoRt4Ea8'	710	874	1122
'Rt16NBOffRmptoRt4We1'	1025	1262	1619
'Rt16NBOffRmptoRt4We2'	1025	1262	1619
'Rt16NBOffRmptoRt4We3'	1025	1262	1619
'Rt16NBOffRmptoRt4We4'	1025	1262	1619
'Rt16NBOffRmptoRt4We5'	1025	1262	1619
'Rt16NBOffRmptoRt4We6'	1025	1262	1619
'Rt16NBOffRmptoRt4We7'	1025	1262	1619
'Rt16NBOffRmptoRt4We8'	1025	1262	1619
'Rt16NBOffRmptoRt4We9'	1025	1262	1619
'R16NBOffRmptoRt4We10'	1025	1262	1619
'R16NBOffRmptoRt4We11'	1025	1262	1619
'R16NBOffRmptoRt4We12'	1025	1262	1619
'R16NBOffRmptoRt4We13'	1025	1262	1619
'R16SBOffRmptoSpurRd1'	40	49	63
'R16SBOffRmptoSpurRd2'	40	49	63
'R16SBOffRmptoSpurRd3'	40	49	63
'R16SBOffRmptoSpurRd4'	40	49	63
'R16SBOffRmptoSpurRd5'	40	49	63
'R16SBOffRmptoSprRdNB'	20	25	32
'R16SBOffRmptoSprRdSB'	20	25	32
SpurRd1'	30	37	47
SpurRd2'	30	37	47
SpurRd3'	30	37	47
SpurRd4'	30	37	47
SpurRd5'	50	62	79
SpurRd6'	50	62	79
SpurRd7'	50	62	79
SpurRd8'	50	62	79
SpurRd9'	50	62	79
SpurRd10'	50	62	79
SpurRd11'	50	62	79
BHRd1'	15	18	24
BHRd2'	15	18	24
BHRd3'	20	25	32
BHRd4'	20	25	32
BHRd5'	20	25	32
BHRd6'	20	25	32
BHRdtoRt4East'	5	6	8
'Rt4OnRmptoRt16SB1'	845	1040	1335
'Rt4OnRamptoRt16SB2'	845	1040	1335
'Rt4OnRamptoRt16SB3'	845	1040	1335
'Rt4OnRamptoRt16SB4'	845	1040	1335
'Rt16SOffRamptoRt4Ea1'	265	326	419
'Rt16SOffRamptoRt4Ea2'	265	326	419
'Rt16SOffRamptoRt4Ea3'	265	326	419
'Rt16SOffRmptoRt4Ea4'	265	326	419
'Rt16SOffRmptoRt4Ea5'	265	326	419
'Rte16SBOnOffRamp1'	1110	1366	1753
'Rte16SBOnOffRamps2'	1110	1366	1753

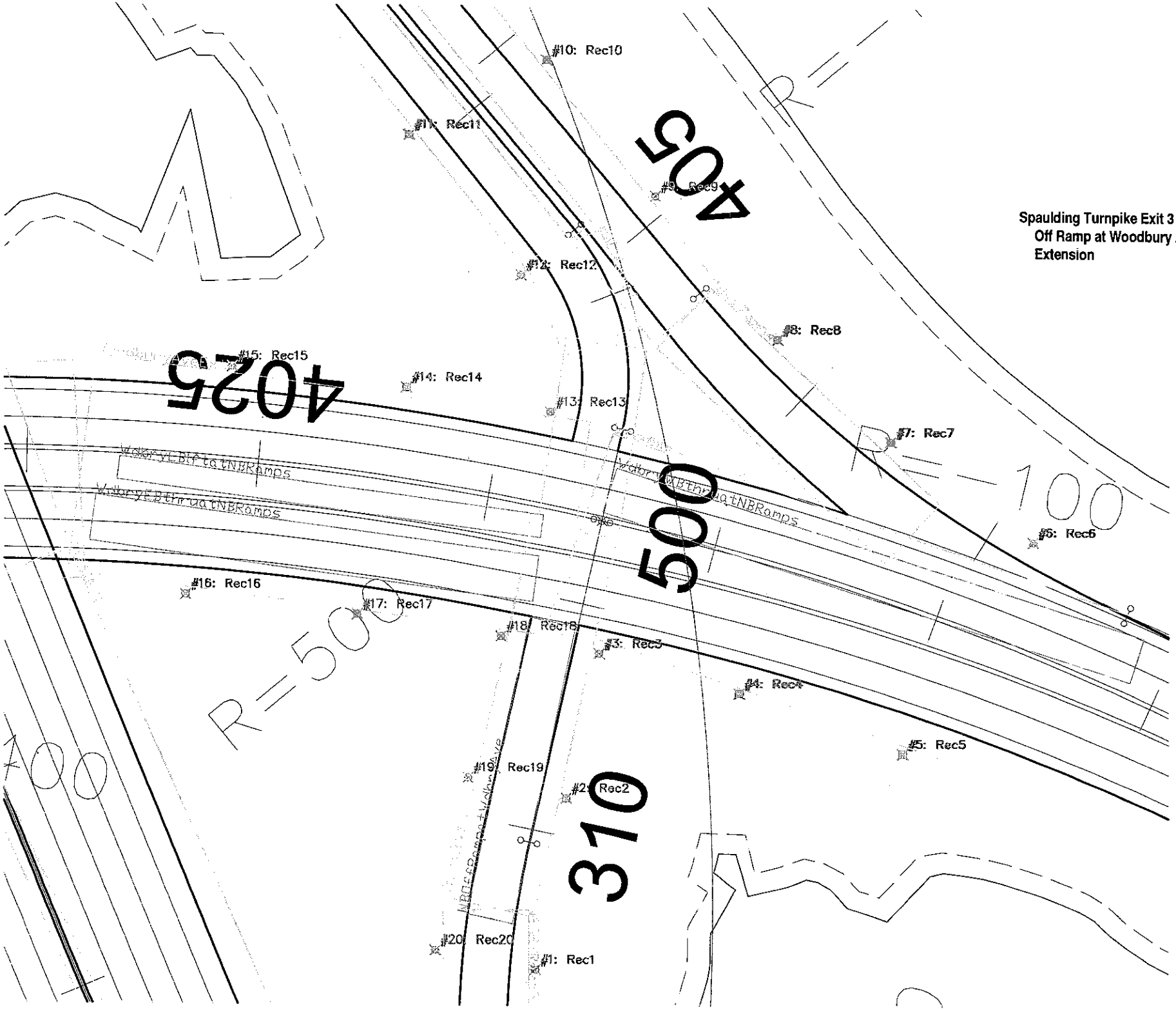
Newington Dover Route 16 'Alternative2 2025 Dover

Using 2.1% growth rate from traffic section of report

#	**Queue Links**	2025 Build PM Peak	2013 Build PM Peak
1	DP WB thru at Rte4'	695	542
2	DP WB left at Rte4'	5	4
3	'DP NB lft rght Rte4'	15	12
4	Rte 4 EB at DP Rd'	1370	1068
5	'Rte4WBthruatNBoffrmp'	680	530
6	'Rte4EBthruatNBoffrmp'	300	234
7	'Rte4EBlftatNBofframp'	25	19
8	'NBoffRampLeft at Rt4'	1500	1169
9	NBoffRmpRghtatRte4'	1070	834
10	'Rte4WBlftatSBonRamp'	505	394
11	'Rte4WBthruatSBOnRamp'	1675	1305
12	'Rte4SBthruatSBOnRamp'	325	253
	Free Flow Links		
1	'Route 16 Southbound1'	1610	1255
2	'Route 16 Northbound1'	3280	2556
3	DoverpointRd1'	2065	1609
4	DoverpointRd2'	30	23
5	'Rte4 btwn DPRd NBoff'	2075	1617
6	'Rte4 btwn NBoff SBon'	2505	1952
7	'Rte4 btwn SBon BHRd'	2000	1559
8	Rte16NBoffRamp1'	2570	2003
9	Rte16NBoffRamp2'	2570	2003
10	Rte16SBOnRamp'	505	394
11	Rte16NBOnRamp'	50	39
12	Doverpoint Rd1b'	2065	1609
13	Doverpoint Rd 1c'	2065	1609
14	Doverpoint Rd2b'	30	23
15	Doverpoint Rd2c'	30	23
16	Doverpoint Rd1d'	2065	1609
17	Rte16NBoffRamp3'	2570	2003
18	Rte16NBoffRamp4'	2570	2003
19	'Rte4btwn SBon BHRd2'	2810	2190
20	'Rte4 btwn SBon BHRd3'	2810	2190
21	Rte16SBOnRamp2'	810	631
22	Rte16SBOnRamp3'	810	631
23	Rte16SBOnRamp4'	810	631
24	Rte16SBOnRamp5'	810	631
25	Spur Rd 1'	180	140
26	Spur Rd 2'	180	140
27	Spur Rd 3'	180	140
28	Spur Rd 4'	180	140
29	Spur Rd 5'	180	140
30	Spur Rd 6'	180	140
31	BostonHarborRd1'	210	164
32	BostonHarborRd2'	210	164
33	BostonHarborRd3'	210	164
34	'Rte4 btwn SBOn BHRd4'	2670	2081

Microscale Intersection Maps

Newington


Spaulding Turnpike Exit 3 Northbound
Off Ramp at Woodbury Avenue
Extension
#10: Rec10
#11: Rec11
#9: Rec9
#12: Rec12
#8: Rec8
#15: Rec15
#14: Rec14
#13: Rec13
#7: Rec7
#6: Rec6
#16: Rec16
#17: Rec17
#18: Rec18
#3: Rec3
#4: Rec4
#5: Rec5
#19: Rec19
#2: Rec2
#20: Rec20
#1: Rec1
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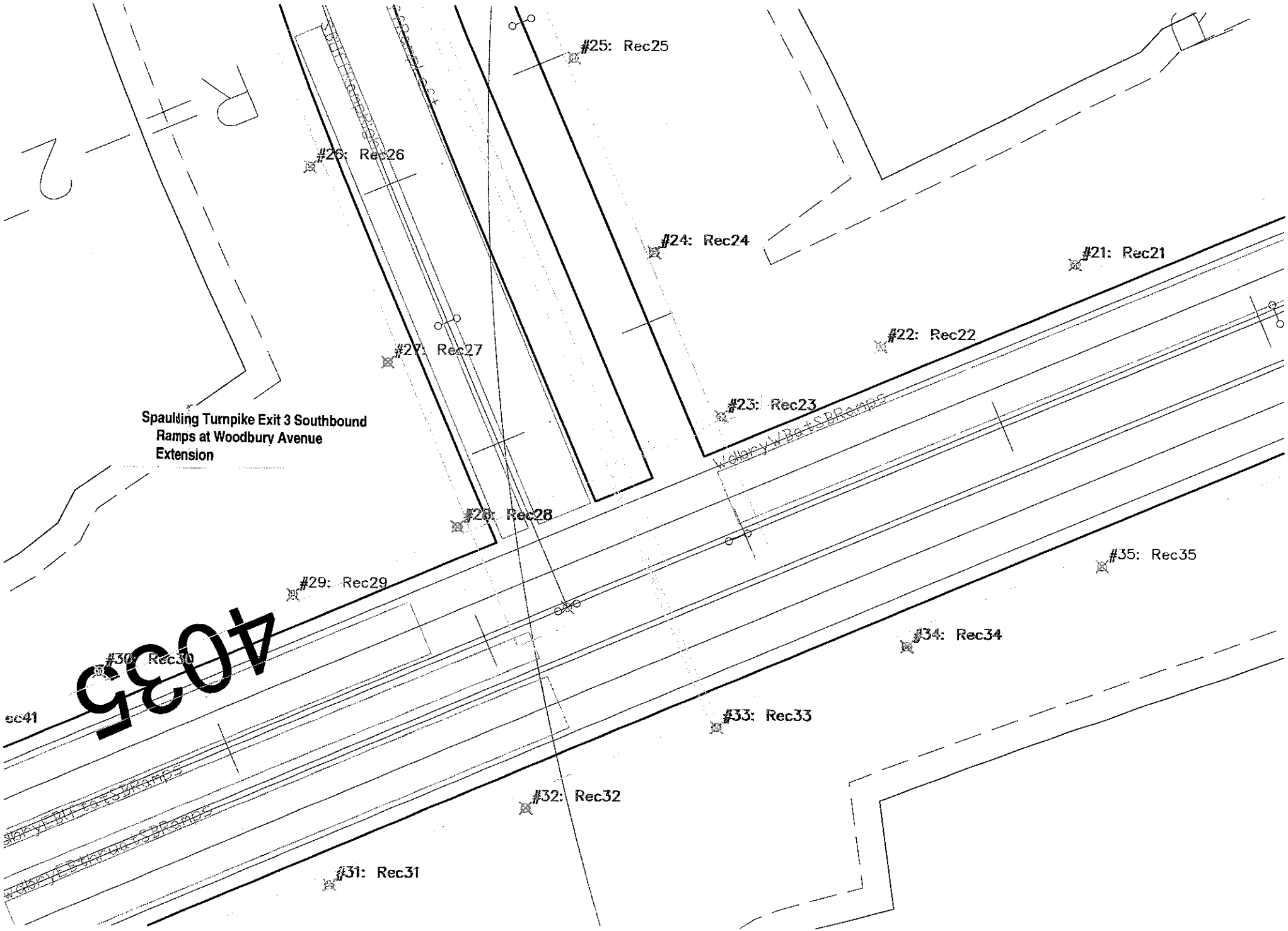
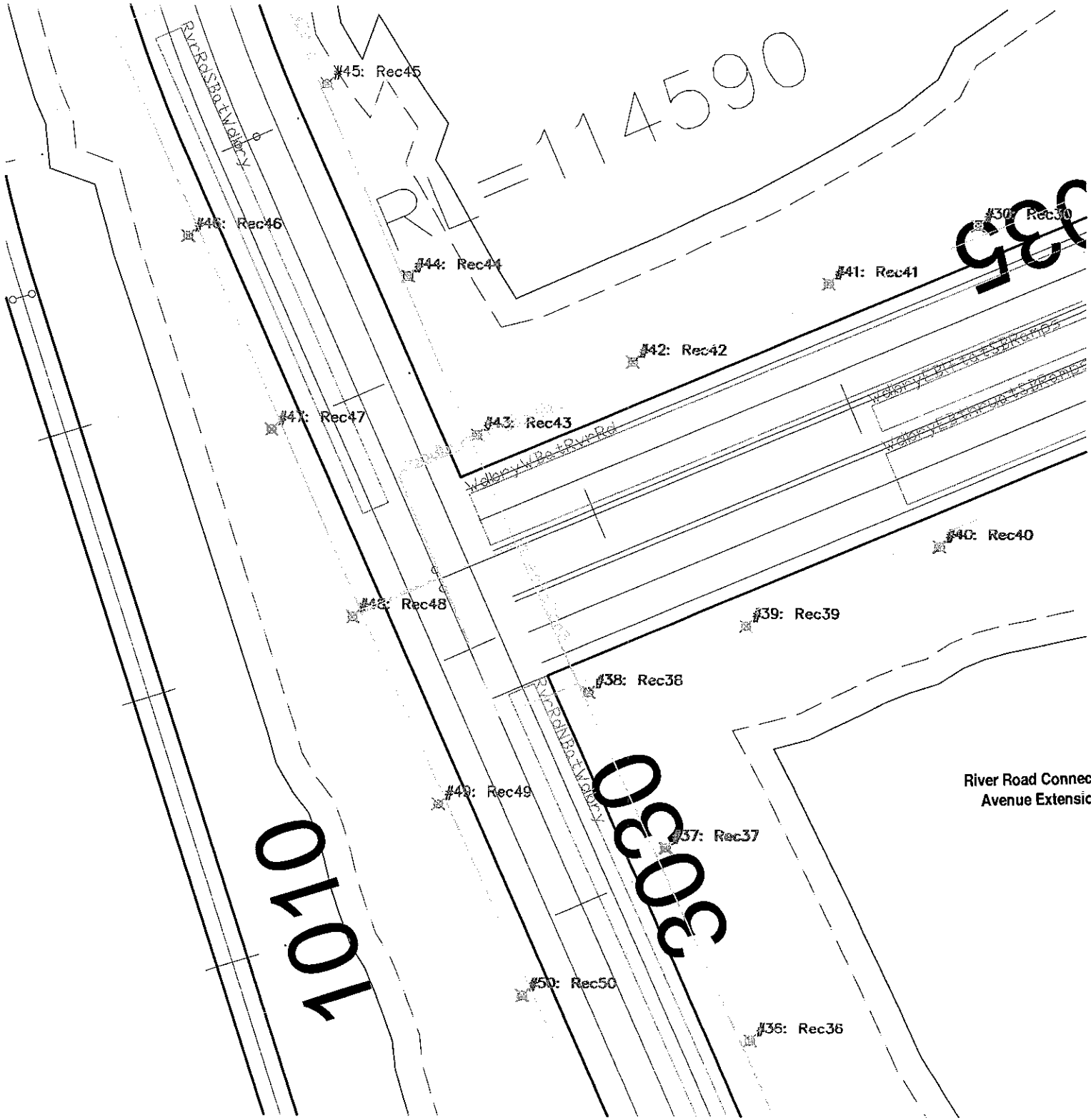
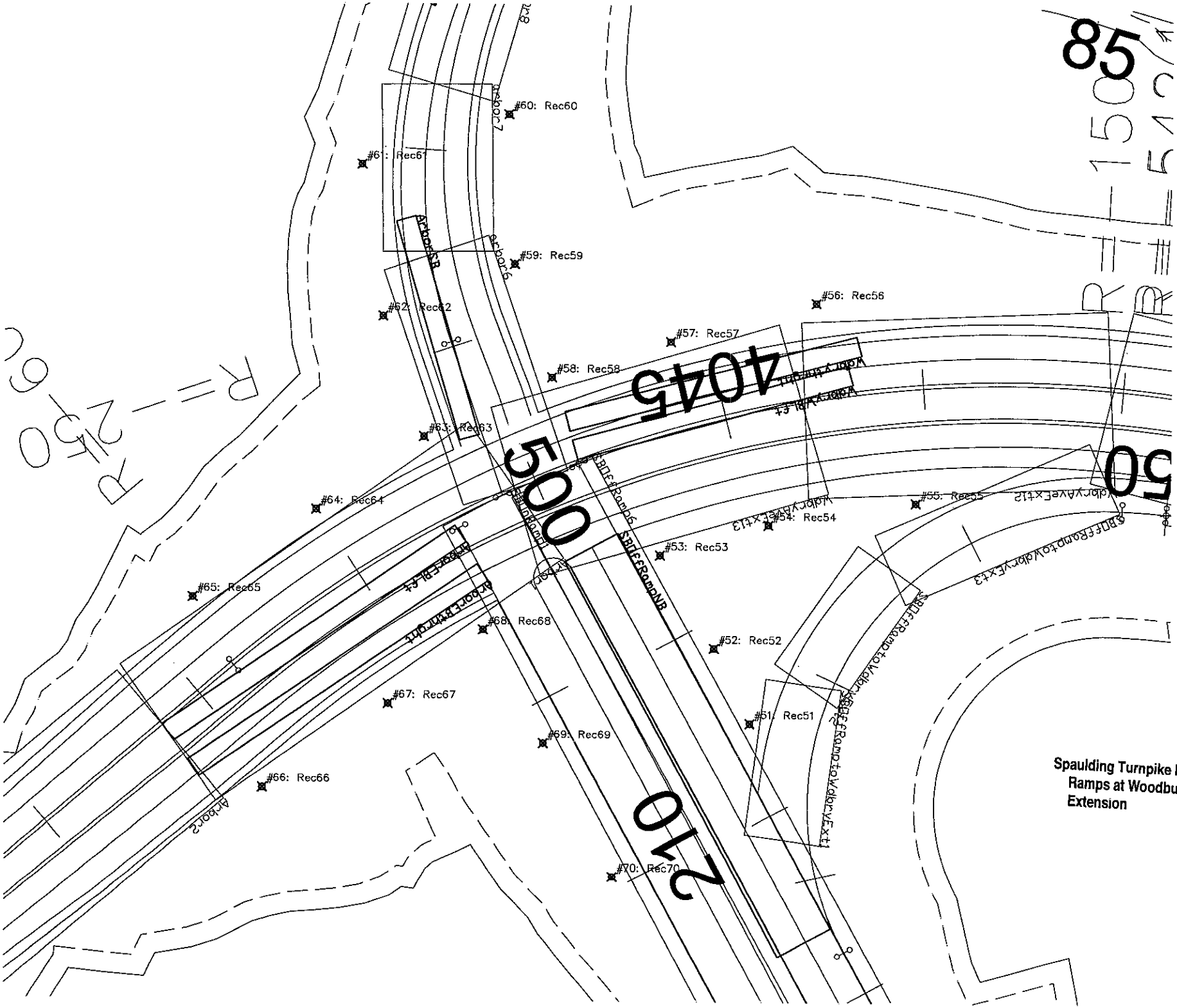
4025
500
310
R=500
R=100
700


#25: Rec25
#26: Rec26
#24: Rec24
#21: Rec21
#27: Rec27
#22: Rec22
#23: Rec23
Spaulding Turnpike Exit 3 Southbound
Ramps at Woodbury Avenue
Extension
#28: Rec28
#35: Rec35
#29: Rec29
#34: Rec34
#30: Rec30
4035
ec41
#33: Rec33
#32: Rec32
#31: Rec31

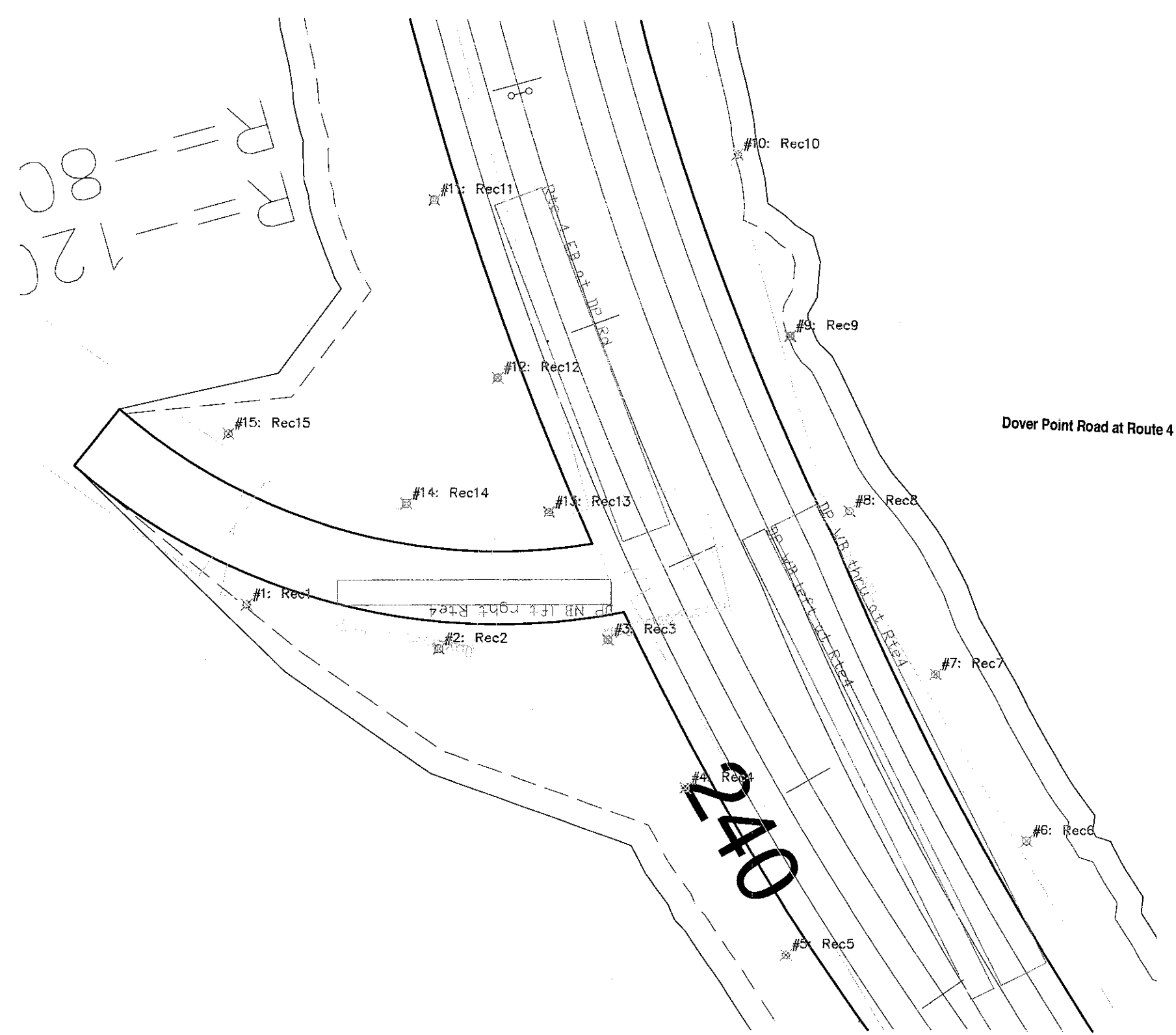


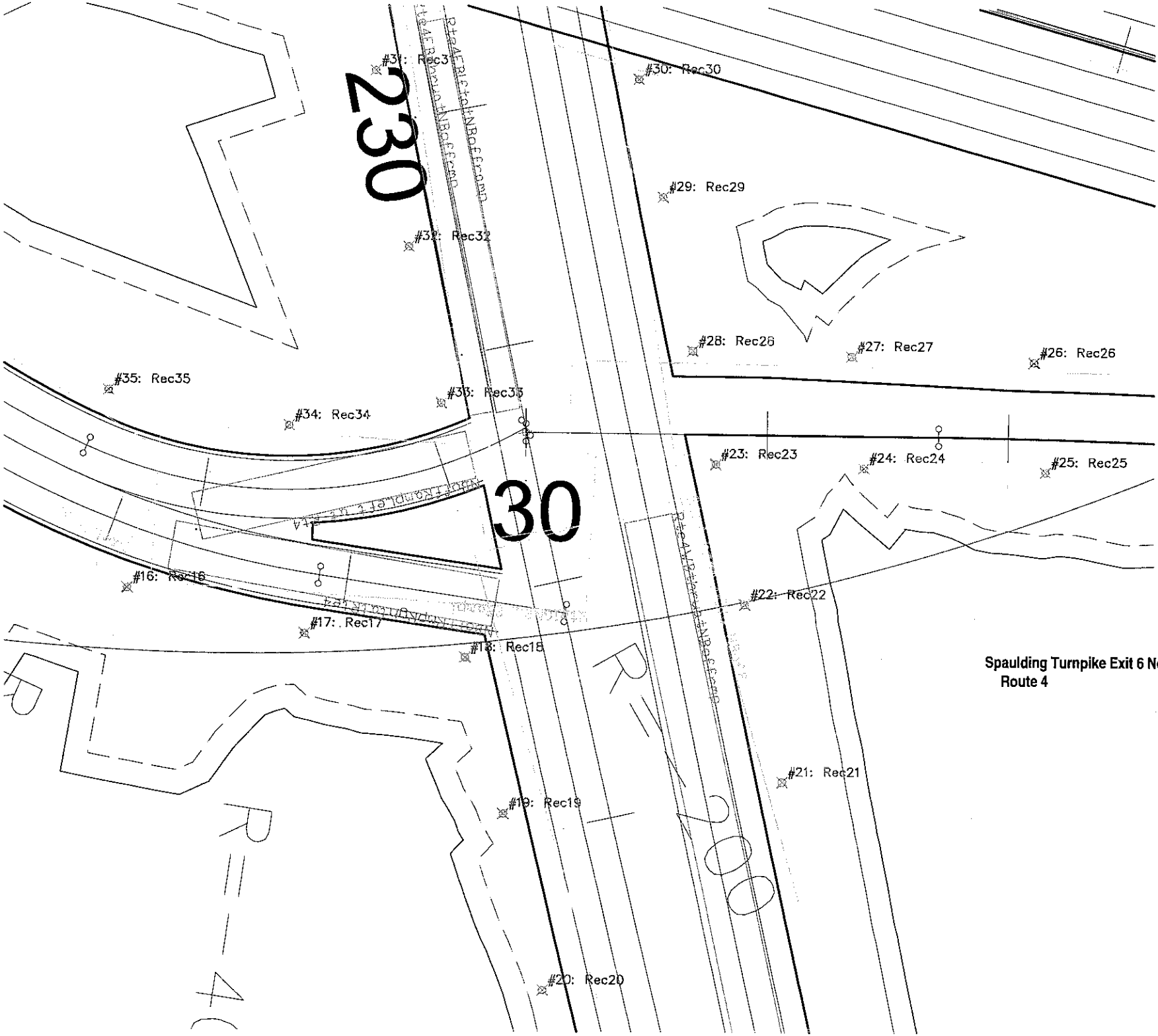
River Road Connector at Woodbury Avenue Extension



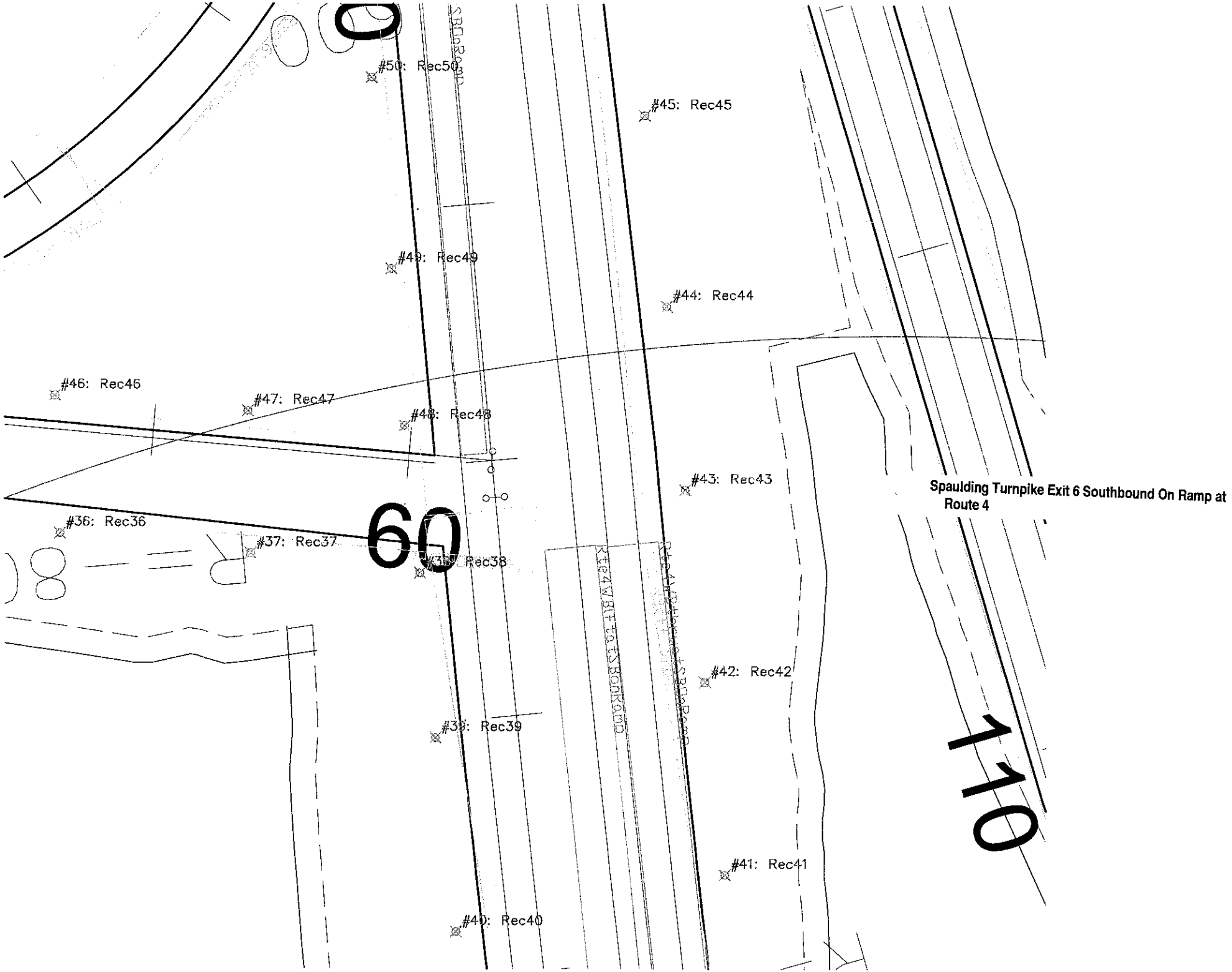
Spaulding Turnpike Exit 3 Southbound Ramps at Woodbury Avenue Extension

Dover


#10: Rec10
#11: Rec11
#9: Rec9
#12: Rec12
#15: Rec15
#14: Rec14
#13: Rec13
#8: Rec8
#1: Rec1
#2: Rec2
#3: Rec3
#7: Rec7
#4: Rec4
#6: Rec6
#5: Rec5
240
Dover Point Road at Route 4



Spaulding Turnpike Exit 6 Northbound Off Ramp at Route 4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#45: Rec45
#49: Rec49
#44: Rec44
#46: Rec46
#47: Rec47
#48: Rec48
#43: Rec43
#36: Rec36
#37: Rec37
#38: Rec38
60
#42: Rec42
#39: Rec39
#41: Rec41
#40: Rec40
110
Spaulding Turnpike Exit 6 Southbound On Ramp at Route 4

CAL3QHC Input Files

Input files for all the 2013 Build Alternatives are presented here as an example. The remaining files are available upon request.

Newington

2013 Build (Alternatives 10A, 12A)

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'NewingtonAlt12A'   60   175   0   0   50   0.3048   1   0
'Rec1'   1212517   220989.1   6
'Rec2'   1212530   221063   6
'Rec3'   1212544   221125.5   6
'Rec4'   1212605   221108.5   6
'Rec5'   1212675   221082.9   6
'Rec6'   1212731   221174.8   6
'Rec7'   1212670   221217.7   6
'Rec8'   1212621   221261.7   6
'Rec9'   1212568   221323.2   6
'Rec10'   1212521   221381.7   6
'Rec11'   1212462   221349.2   6
'Rec12'   1212510   221289   6
'Rec13'   1212523   221229.9   6
'Rec14'   1212461   221240.1   6
'Rec15'   1212386   221248.8   6
'Rec16'   1212366   221150.2   6
'Rec17'   1212440   221142   6
'Rec18'   1212502   221132.9   6
'Rec19'   1212488   221071.8   6
'Rec20'   1212474   220997.4   6
'Rec21'   1211744   221134.9   6
'Rec22'   1211675   221105   6
'Rec23'   1211618   221079.6   6
'Rec24'   1211594   221138   6
'Rec25'   1211565   221207.4   6
'Rec26'   1211471   221167.8   6
'Rec27'   1211499   221098.2   6
'Rec28'   1211524   221039.6   6
'Rec29'   1211465   221014.9   6
'Rec30'   1211396   220987.3   6
'Rec31'   1211478   220911.7   6
'Rec32'   1211548   220939.2   6
'Rec33'   1211616   220968.4   6
'Rec34'   1211684   220997.7   6
'Rec35'   1211754   221026.8   6
'Rec36'   1211313   220692.8   6
'Rec37'   1211283   220762.1   6
'Rec38'   1211255   220818.1   6
'Rec39'   1211312   220842.2   6
'Rec40'   1211382   220871.3   6
'Rec41'   1211342   220966   6
'Rec42'   1211271   220937.5   6
'Rec43'   1211215   220910.9   6
'Rec44'   1211190   220967.9   6
'Rec45'   1211161   221037.4   6
'Rec46'   1211111   220982.2   6
'Rec47'   1211141   220912.6   6
'Rec48'   1211170   220845   6
'Rec49'   1211201   220777.7   6
'Rec50'   1211231   220708.8   0
'Rec51'   1211629   220463.8   6
'Rec52'   1211608   220428.1   6
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'Rec53'   1211584   220379.8   6
'Rec54'   1211541   220416.2   6
'Rec55'   1211491   220471   6
'Rec56'   1211436   220374.2   6
'Rec57'   1211492   220324.7   6
'Rec58'   1211541   220285.7   6
'Rec59'   1211504   220238.8   6
'Rec60'   1211444   220194.7   6
'Rec61'   1211505   220148   6
'Rec62'   1211562   220199   6
'Rec63'   1211601   220249.4   6
'Rec64'   1211661   220225   6
'Rec65'   1211732   220198.5   6
'Rec66'   1211792   220280.2   6
'Rec67'   1211722   220308.8   6
'Rec68'   1211665   220327.6   6
'Rec69'   1211695   220384   6
'Rec70'   1211731   220449.8   6
'2013 Newington Alt 12A'   70   1   0   'C'
 2
'WdbryWBthruatNBRamps'   'AG'   1212548.68   221196.21   1212776.28   221123.94   1   20   2
60   48   3   164   100.45   1600   1   3
 2
'WdbryEBthruatNBRamps'   'AG'   1212516.84   221157.73   1212325.68   221183.05   1   20   2
60   15   3   432   100.45   1600   1   3
 2
'WdbryEBlftatNBRamps'   'AG'   1212519.48   221180.42   1212336.77   221204.68   1   10   1
60   27   3   577   100.45   1600   1   3
 2
'NBOffRampatWdbryAve'   'AG'   1212524.23   221139.09   1212497.3   221010.88   1   20   2
60   45   3   129   100.45   1600   1   3
 2
'WdbryWBatSBRamps'   'AG'   1211620.33   221050.6   1211837.93   221141.63   1   20   2
60   44   3   183   100.45   1600   1   3
 2
'WdbryEBlftatSBRamps'   'AG'   1211551.18   220997.48   1211359.15   220917.56   1   10   1
60   44   3   58   100.45   1600   1   3
 2
'WdbryEBthruatSBRamps'   'AG'   1211559.76   220977.17   1211366.24   220895.68   1   20   2
60   28   3   487   100.45   1600   1   3
 2
'SBOffRampLeft'   'AG'   1211561.99   221044.52   1211484.94   221231.41   1   20   2
60   32   3   522   100.45   1600   1   3
 2
'SBOffRampRight'   'AG'   1211544.45   221037.3   1211470.19   221216.07   1   10   1
60   16   3   195   100.45   1600   1   3
 2
'WdbryWBatRvrRd'   'AG'   1211216.2   220880.22   1211510.53   221003.49   1   20   2
60   39   3   347   100.45   1600   1   3
 2
'RvrRdSBatWdbry'   'AG'   1211178.38   220884.24   1211103.8   221055.18   1   10   1
60   21   3   210   100.45   1600   1   3
 2
'RvrRdNBatWdbry'   'AG'   1211231.04   220819.11   1211314.68   220631.02   1   10   1
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60   21   3   452   100.45   1600   1   3
 1
'WoodburyAveExt1'   'AG'   1213414   220701.1   1212973   220991.9   1703   15.537   1   78
 1
'WoodburyAveExt2'   'AG'   1212972   220992.1   1212821   221081.6   1703   15.537   1   86
 1
'WoodburyAveExt3'   'AG'   1212536   221179.9   1212819   221082.5   849   15.537   1   86
 1
'WoodburyAveExt4'   'AG'   1212534   221179.1   1212321   221206.7   1192   15.537   1   94
 1
'WoodburyAveExt5'   'AG'   1212320   221203.8   1212093   221190.4   1192   15.537   1   94
 1
'WoodburyAveExt6'   'AG'   1212092   221187.8   1211854   221123.6   1192   15.537   1   94
 1
'WoodburyAveExt7'   'AG'   1211852   221125.2   1211597   221016.8   1192   15.537   1   94
 1
'WoodburyAveExt8'   'AG'   1211595   221015.2   1211205   220852.8   892   15.537   1   94
 1
'Rte16NB1'   'AG'   1212711   220195.5   1212281   221155.4   3000   15.232   1   75
 1
'Rte16NB2'   'AG'   1212281   221156.7   1211974   222008.3   3000   15.232   1   75
 1
'Rte16SB1'   'AG'   1211917   221988.7   1212213   221142.3   1278   15.232   1   75
 1
'Rte16SB2'   'AG'   1212212   221142.2   1212659   220169.5   1368   15.232   1   75
 1
'NBOffRamp1'   'AG'   1212766   220206.5   1212514   220829.5   129   16.923   1   37
 1
'NBoffRamp2'   'AG'   1212515   220830.6   1212494   220914   129   16.923   1   37
 1
'NBOffRamp3'   'AG'   1212496   220914.8   1212496   221014.8   129   16.923   1   37
 1
'NBOffRamp4'   'AG'   1212498   221015.8   1212534   221179   129   16.923   1   37
 1
'NBOnRamp1'   'AG'   1212535   221177.9   1212547   221259.8   432   16.923   1   35
 1
'NBOnRamp2'   'AG'   1212545   221260.5   1212528   221301.9   432   16.923   1   35
 1
'NBOnRamp3'   'AG'   1212527   221300.8   1212254   221638.5   432   16.923   1   35
 1
'NBOnRamp4'   'AG'   1212679   221178.3   1212581   221270.7   853   16.923   1   35
 1
'NBOnRamp5'   'AG'   1212582   221272.3   1212202   221738.1   853   16.923   1   38
 1
'NBOnRamp6'   'AG'   1212203   221739.5   1212028   222041.6   1286   16.923   1   38
 1
'SBOnRamp1'   'AG'   1211618   221026.2   1211521   221258.9   90   16.923   1   36
 1
'SBOnRamp2'   'AG'   1211521   221260.1   1211514   221357.8   90   16.923   1   36
 1
'SBOnRamp3'   'AG'   1211517   221357.8   1211543   221456.4   90   16.923   1   36
 1
'SBOnRamp4'   'AG'   1211546   221455.9   1211610   221542.3   90   16.923   1   36
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'SBOnRamp5'   'AG'   1211612   221541.7   1211707   221599.3   90   16.923   1   36
 1
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 1
'SBOnRamp7'   'AG'   1211810   221612.4   1211920   221588.1   90   16.923   1   36
 1
'SBOnRamp8'   'AG'   1211920   221586.8   1212008   221523.3   90   16.923   1   36
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'SBOnRamp9'   'AG'   1212009   221522   1212091   221387.5   90   16.923   1   36
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 1
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 1
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'RiverRdCon7'   'AG'   1211111   221070   1211086   221183.4   382   15.537   1   61
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'ArbDrve4'   'AG'   1211340   220136.1   1211198   220145.4   16   15.537   1   48
 1
'ArbDrve5'   'AG'   1211198   220146.4   1211110   220179.5   16   15.537   1   48
 1
'ArbDrve6'   'AG'   1211110   220180.3   1210702   220413.8   16   15.537   1   48
1   0   4   1000   2   'Y'   10   0   36
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2013 Build (Alternative 13)

```
'Newington'   60   175   0   0   50   0.3048   1   0
'Rec1'   1212517   220989.1   6
'Rec2'   1212530   221063   6
'Rec3'   1212544   221125.5   6
'Rec4'   1212605   221108.5   6
'Rec5'   1212675   221082.9   6
'Rec6'   1212731   221174.8   6
'Rec7'   1212670   221217.7   6
'Rec8'   1212621   221261.7   6
'Rec9'   1212568   221323.2   6
'Rec10'   1212521   221381.7   6
'Rec11'   1212462   221349.2   6
'Rec12'   1212510   221289   6
'Rec13'   1212523   221229.9   6
'Rec14'   1212461   221240.1   6
'Rec15'   1212386   221248.8   6
'Rec16'   1212366   221150.2   6
'Rec17'   1212440   221142   6
'Rec18'   1212502   221132.9   6
'Rec19'   1212488   221071.8   6
'Rec20'   1212474   220997.4   6
'Rec21'   1211744   221134.9   6
'Rec22'   1211675   221105   6
'Rec23'   1211618   221079.6   6
'Rec24'   1211594   221138   6
'Rec25'   1211565   221207.4   6
'Rec26'   1211471   221167.8   6
'Rec27'   1211499   221098.2   6
'Rec28'   1211524   221039.6   6
'Rec29'   1211465   221014.9   6
'Rec30'   1211396   220987.3   6
'Rec31'   1211478   220911.7   6
'Rec32'   1211548   220939.2   6
'Rec33'   1211616   220968.4   6
'Rec34'   1211684   220997.7   6
'Rec35'   1211754   221026.8   6
'Rec36'   1211313   220692.8   6
'Rec37'   1211283   220762.1   6
'Rec38'   1211255   220818.1   6
'Rec39'   1211312   220842.2   6
'Rec40'   1211382   220871.3   6
'Rec41'   1211342   220966   6
'Rec42'   1211271   220937.5   6
'Rec43'   1211215   220910.9   6
'Rec44'   1211190   220967.9   6
'Rec45'   1211161   221037.4   6
'Rec46'   1211111   220982.2   6
'Rec47'   1211141   220912.6   6
'Rec48'   1211170   220845   6
'Rec49'   1211201   220777.7   6
'Rec50'   1211231   220708.8   0
'Rec51'   1211629   220463.8   6
'Rec52'   1211608   220428.1   6
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'Rec53'   1211584   220379.8   6
'Rec54'   1211541   220416.2   6
'Rec55'   1211491   220471   6
'Rec56'   1211436   220374.2   6
'Rec57'   1211492   220324.7   6
'Rec58'   1211541   220285.7   6
'Rec59'   1211504   220238.8   6
'Rec60'   1211444   220194.7   6
'Rec61'   1211505   220148   6
'Rec62'   1211562   220199   6
'Rec63'   1211601   220249.4   6
'Rec64'   1211661   220225   6
'Rec65'   1211732   220198.5   6
'Rec66'   1211792   220280.2   6
'Rec67'   1211722   220308.8   6
'Rec68'   1211665   220327.6   6
'Rec69'   1211695   220384   6
'Rec70'   1211731   220449.8   6
'2013 Newington Alt 13 Build'   68   2   0   'C'
 2
'NBOffRamplftrt'   'AG'   1212475.34   221264.81   1212439.48   221117.68   1   20   2
110   91   3   129   100.145   1600   1   3
 2
'WdbryAveEB'   'AG'   1212513.2   221313.41   1212868.6   221078.94   1   20   2
110   96   3   16   100.145   1600   1   3
 2
'WdbryWBthru'   'AG'   1212470.13   221288.54   1212299.98   221369.16   1   20   2
110   31   3   545   100.145   1600   1   3
 2
'WdbryWBLft'   'AG'   1212478.73   221308.13   1212317.12   221387.34   1   10   1
110   61   3   432   100.145   1600   1   3
 2
'ArborSB'   'AG'   1211588.45   220268.27   1211515.62   220181.3   1   10   1
110   104   3   19   100.145   1600   1   3
 2
'SBOffRampNB'   'AG'   1211600.09   220349.39   1211704.48   220547.21   1   30   3
110   52   3   834   100.145   1600   1   3
 2
'ArborEBLft'   'AG'   1211631.03   220291.56   1211795.5   220226.1   1   10   1
110   104   3   16   100.145   1600   1   3
 2
'ArborEBthrght'   'AG'   1211640.81   220311.47   1211802.88   220246.42   1   10   1
110   92   3   452   100.145   1600   1   3
 2
'WdbryWBLft'   'AG'   1211563.97   220315.43   1211456.02   220408.32   1   10   1
110   104   3   16   100.145   1600   1   3
 2
'Wdbrythrght'   'AG'   1211554.38   220304.37   1211441.47   220403.84   1   10   1
110   92   3   19   100.145   1600   1   3
 1
'Rte16NB1'   'AG'   1212711   220195.5   1212281   221155.4   3000   18.652   1   75
 1
'Rte16NB2'   'AG'   1212281   221156.7   1211974   222008.3   3000   18.652   1   75
 1
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'Rte16SB1'   'AG'   1211917   221988.7   1212213   221142.3   1333   18.652   1   75
 1
'Rte16SB2'   'AG'   1212212   221142.2   1212659   220169.5   1333   18.652   1   75
 1
'WdbryAve1'   'AG'   1213414   220700.8   1212963   220998.2   1586   15.537   1   73
 1
'WdbryAve2'   'AG'   1212963   220999   1212489   221301.4   670   15.537   1   83
 1
'WdbryAveExt1'   'AG'   1212490   221303   1212313   221387.7   1013   15.537   1   88
 1
'WdbryAveExt2'   'AG'   1212311   221384.1   1212122   221425.1   1013   15.537   1   88
 1
'WdbryAveExt3'   'AG'   1212121   221423.8   1211958   221426.8   1013   15.537   1   88
 1
'WdbryAveExt4'   'AG'   1211958   221424.3   1211820   221404.6   1013   15.537   1   88
 1
'WdbryAveExt5'   'AG'   1211821   221402.8   1211652   221345   1013   15.537   1   88
 1
'WdbryAveExt6'   'AG'   1211652   221342.8   1211538   221272.5   1013   15.537   1   88
 1
'WdbryAveExt7'   'AG'   1211540   221271.5   1211438   221171.3   1013   15.537   1   88
 1
'WdbryAveExt8'   'AG'   1211441   221167.9   1211375   221062.1   1013   15.537   1   88
 1
'WdbryAveExt9'   'AG'   1211377   221060.7   1211325   220876.6   1013   15.537   1   88
 1
'WdbryAveExt10'   'AG'   1211325   220876.2   1211333   220689.5   1013   15.537   1   88
 1
'WdbryAveExt11'   'AG'   1211332   220688.9   1211392   220522.5   1013   15.537   1   88
 1
'WdbryAveExt12'   'AG'   1211393   220522.8   1211483   220399.3   1013   15.537   1   88
 1
'WdbryAveExt13'   'AG'   1211483   220398.5   1211598   220302.8   1013   15.537   1   88
 1
'Arbor1'   'AG'   1211597   220302.3   1211796   220226.1   775   15.537   1   83
 1
'Arbor2'   'AG'   1211796   220227.7   1212132   220129.7   775   15.537   1   83
 1
'Arbor3'   'AG'   1212132   220129.4   1212261   220064   775   15.537   1   60
 1
'Arbor4'   'AG'   1212261   220063   1212362   219966.3   775   15.537   1   60
 1
'Arbor5'   'AG'   1212363   219964.9   1212464   219775.5   775   15.537   1   60
 1
'arbor6'   'AG'   1211597   220301.5   1211521   220203.3   55   15.537   1   55
 1
'arbor7'   'AG'   1211520   220203.6   1211451   220156.6   55   15.537   1   55
 1
'arbor8'   'AG'   1211451   220158.9   1211389   220139.3   55   15.537   1   55
 1
'arbor9'   'AG'   1211388   220139.8   1211310   220138.6   55   15.537   1   55
 1
'arbor10'   'AG'   1211310   220138.1   1211242   220139.5   55   15.537   1   43
 1
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'arbor11'   'AG'   1211242   220140.2   1211149   220161.6   55   15.537   1   43
 1
'arbor12'   'AG'   1211150   220161.9   1211070   220201.5   55   15.537   1   43
 1
'arbor13'   'AG'   1211071   220202.4   1210868   220319.3   55   15.537   1   43
 1
'SBOffRamptoWdbryExt1'   'AG'   1211668   220509.7   1211598   220475.3   542   16.923   1   38
 1
'SBOffRamptoWdbryExt2'   'AG'   1211597   220476.5   1211525   220478   542   16.923   1   38
 1
'SBOffRamptoWdbryExt3'   'AG'   1211526   220479   1211427   220542   542   16.923   1   38
 1
'SBOnRamp1'   'AG'   1211616   220291.1   1211895   220815.2   35   16.923   1   38
 1
'SBOnRamp2'   'AG'   1211896   220813.5   1211971   220883.8   35   16.923   1   38
 1
'SBOnRamp3'   'AG'   1211974   220881   1212046   220909.6   35   16.923   1   38
 1
'SBOnRamp4'   'AG'   1212048   220907.9   1212137   220912.5   35   16.923   1   38
 1
'SBOnRamp5'   'AG'   1212137   220912.5   1212231   220882.3   35   16.923   1   38
 1
'SBOnRamp6'   'AG'   1212230   220880.9   1212303   220820.8   35   16.923   1   38
 1
'SBOnRamp7'   'AG'   1212303   220820.8   1212455   220513.3   35   16.923   1   38
 1
'SBOffRamp1'   'AG'   1211871   221969.6   1211988   221571.9   834   16.923   1   40
 1
'SBOffRamp2'   'AG'   1211989   221571.3   1212008   221407.9   834   16.923   1   40
 1
'SBOffRamp3'   'AG'   1212008   221405.5   1211995   221201.9   834   16.923   1   40
 1
'SBOffRamp4'   'AG'   1211994   221201.8   1211939   221007.5   834   16.923   1   40
 1
'SBOffRamp5'   'AG'   1211937   221007.4   1211846   220820.6   834   16.923   1   40
 1
'SBOffRamp6'   'AG'   1211845   220821   1211582   220313.2   834   16.923   1   45
 1
'NBOffRamp1'   'AG'   1212767   220207.8   1212458   220961.2   129   16.923   1   38
 1
'NBOffRamp2'   'AG'   1212460   220962.5   1212440   221076.6   129   16.923   1   38
 1
'NBOffRamp3'   'AG'   1212441   221077.5   1212449   221170.1   129   16.923   1   38
 1
'NBOffRamp4'   'AG'   1212450   221169.8   1212485   221297.7   129   16.923   1   38
 1
'NBOnRamp1'   'AG'   1212486   221296   1212514   221360   1348   16.923   1   38
 1
'NBOnRamp2'   'AG'   1212513   221360.5   1212498   221414.1   1348   16.923   1   38
 1
'NBOnRamp3'   'AG'   1212495   221413.3   1212375   221584.7   1348   16.923   1   38
 1
'NBOnRamp4'   'AG'   1212381   221589.5   1212046   222059.2   1348   16.923   1   36
 1
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'WdbrytoNBOnRamp1'   'AG'   1212834   221131.6   1212631   221305.3   432   16.923   1   34
 1
'WdbrytoNBOnRamp2'   'AG'   1212633   221306.5   1212421   221542.4   432   16.923   1   34
1   0   4   1000   2   'Y'   10   0   36
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Dover

2013 Build (Alternatives 2, 3)

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'Newington Dover Route 16'   60   175   0   0   50   0.3048   1   1
'Rec1'   1206030   231561.4   6
'Rec2'   1206002   231634.3   6
'Rec3'   1205961   231687.8   6
'Rec4'   1205993   231746.0   6
'Rec5'   1206025   231815.9   6
'Rec6'   1205934   231869.6   6
'Rec7'   1205900   231802.8   6
'Rec8'   1205865   231738.2   0
'Rec9'   1205820   231680.1   6
'Rec10'   1205772   231622.5   6
'Rec11'   1205855   231533.2   6
'Rec12'   1205899   231593.3   6
'Rec13'   1205932   231639.9   6
'Rec14'   1205961   231591.5   6
'Rec15'   1205978   231517.5   6
'Rec16'   1205565   231017.6   6
'Rec17'   1205539   231089.0   6
'Rec18'   1205510   231149.7   6
'Rec19'   1205555   231198.7   6
'Rec20'   1205607   231253.0   6
'Rec21'   1205480   231287.3   6
'Rec22'   1205427   231233.4   6
'Rec23'   1205385   231190.8   6
'Rec24'   1205352   231242.6   6
'Rec25'   1205311   231305.9   6
'Rec26'   1205276   231276.5   6
'Rec27'   1205317   231212.7   6
'Rec28'   1205352   231156.8   6
'Rec29'   1205306   231111.0   6
'Rec30'   1205271   231075.4   6
'Rec31'   1205329   230983.4   6
'Rec32'   1205382   231035.4   6
'Rec33'   1205428   231082.7   6
'Rec34'   1205471   231035.6   6
'Rec35'   1205501   230965.5   6
'Rec36'   1204843   230365.8   6
'Rec37'   1204808   230431.8   6
'Rec38'   1204777   230490.8   6
'Rec39'   1204827   230531.6   6
'Rec40'   1204886   230580.3   6
'Rec41'   1204809   230654.9   6
'Rec42'   1204751   230606.7   6
'Rec43'   1204693   230558.6   6
'Rec44'   1204637   230512.7   6
'Rec45'   1204580   230464.3   6
'Rec46'   1204800   230334.3   6
'Rec47'   1204762   230400.0   6
'Rec48'   1204733   230453.9   6
'Rec49'   1204685   230415.7   6
'Rec50'   1204627   230367.8   6
'Alternative2 2013 Dover'   46   1   0   'C'
 2
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'DP WB thru at Rte4'   'AG'   1205878.85   231721.01   1205978.66   231898.14   1   20   2
90   23   3   542   100.145   1600   1   3
 2
'DP WB left at Rte4'   'AG'   1205893.96   231712.04   1205994.38   231888.94   1   10   1
90   79   3   4   100.145   1600   1   3
 2
'DP NB lft rght Rte4'   'AG'   1205944.75   231678.19   1206005.97   231588.69   1   10   1
90   79   3   12   100.145   1600   1   3
 2
'Rte 4 EB at DP Rd'   'AG'   1205917.3   231676.59   1205835   231559.78   1   20   2
90   40   3   1068   100.145   1600   1   3
 2
'Rte4WBthruatNBoffrmp'   'AG'   1205419.77   231180.28   1205628.06   231394.92   1   20   2
90   69   3   530   100.145   1600   1   3
 2
'Rte4EBthruatNBoffrmp'   'AG'   1205422.32   231098.93   1205299.45   230976.39   1   10   1
90   58   3   234   100.145   1600   1   3
 2
'Rte4EBlftatNBofframp'   'AG'   1205415.11   231107.24   1205298.98   230990.92   1   10   1
90   79   3   19   100.145   1600   1   3
 2
'NBoffRampLeft at Rt4'   'AG'   1205439.13   231104.72   1205524.1   231025.12   1   20   2
90   44   3   1169   100.145   1600   1   3
 2
'NBoffRmpRghtatRte4'   'AG'   1205484.41   231147.47   1205539.79   231023.21   1   20   2
90   44   3   834   100.145   1600   1   3
 2
'Rte4WBlftatSBonRamp'   'AG'   1204736.27   230533.92   1204920.39   230686.62   1   20   2
45   29   3   394   100.145   1600   1   3
 2
'Rte4WBthruatSBOnRamp'   'AG'   1204721.54   230553.4   1204903.66   230706.64   1   20   2
45   6   3   1305   100.145   1600   1   3
 2
'Rte4SBthruatSBOnRamp'   'AG'   1204726.94   230482.61   1204553.24   230343.41   1   10   1
45   28   3   253   100.145   1600   1   3
 1
'Route 16 Southbound1'   'AG'   1204542   233020.5   1205610   229725.6   1255   18.652   1   66
 1
'Route 16 Northbound1'   'AG'   1205659   229744   1204600   233044.7   2556   18.652   1   66
 1
'DoverpointRd1'   'AG'   1205906   231704.2   1206034   231973.1   1609   15.537   1   83
 1
'Doverpoint Rd2'   'AG'   1205905   231700.9   1205973   231638.9   23   15.537   1   48
 1
'Rte4 btwn DPRd NBoff'   'AG'   1205906   231703.4   1205438   231158.9   1617   15.537   1   91
 1
'Rte4 btwn NBoff SBon'   'AG'   1205437   231159.9   1204731   230511.4   1952   15.537   1   83
 1
'Rte4 btwn SBon BHRd'   'AG'   1204731   230512.8   1204436   230272   1559   15.537   1   83
 1
'Rte16NBoffRamp1'   'AG'   1205438   231164   1205529   231007.8   2003   16.923   1   66
 1
'Rte16NBoffRamp2'   'AG'   1205530   231007   1205549   230611   2003   16.923   1   42
 1
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'Rte16SBOnRamp'   'AG'   1204731   230514.5   1205214   229634.3   394   16.923   1   42
 1
'Rte16NBOnRamp'   'AG'   1205399   231127.7   1205112   231573.6   39   16.923   1   38
 1
'Doverpoint Rd1b'   'AG'   1206037   231975.4   1206060   232185.5   1609   15.537   1   42
 1
'Doverpoint Rd 1c'   'AG'   1206060   232187.2   1205984   232476.8   1609   15.537   1   42
 1
'Doverpoint Rd2b'   'AG'   1205972   231635.8   1206011   231541.7   23   15.537   1   48
 1
'Doverpoint Rd2c'   'AG'   1206007   231539.9   1205984   230288.2   23   15.537   1   48
 1
'Doverpoint Rd1d'   'AG'   1205983   232477.6   1205855   232709.6   1609   15.537   1   42
 1
'Rte16NBoffRamp3'   'AG'   1205549   230610   1205584   230281.6   2003   16.923   1   42
 1
'Rte16NBoffRamp4'   'AG'   1205585   230280.4   1205702   229786   2003   16.923   1   42
 1
'Rte4btwn SBon BHRd2'   'AG'   1204434   230274.2   1204192   230149.4   2190   15.537   1   83
 1
'Rte4 btwn SBon BHRd3'   'AG'   1204192   230149   1203945   230105.8   2190   15.537   1   83
 1
'Rte16SBOnRamp2'   'AG'   1204533   230295.9   1204622   230310.4   631   16.923   1   38
 1
'Rte16SBOnRamp3'   'AG'   1204623   230308.2   1204721   230296.6   631   16.923   1   38
 1
'Rte16SBOnRamp4'   'AG'   1204721   230292.8   1204841   230231.3   631   16.923   1   38
 1
'Rte16SBOnRamp5'   'AG'   1204841   230225.5   1205108   229777.8   631   16.923   1   38
 1
'Spur Rd 1'   'AG'   1203946   230105.8   1203959   230190   140   15.537   1   42
 1
'Spur Rd 2'   'AG'   1203961   230191.2   1204016   230235.5   140   15.537   1   42
 1
'Spur Rd 3'   'AG'   1204021   230231.6   1204328   230349.7   140   15.537   1   42
 1
'Spur Rd 4'   'AG'   1204328   230353.2   1204453   230451   140   15.537   1   42
 1
'Spur Rd 5'   'AG'   1204452   230453.7   1204801   230877   140   15.537   1   42
 1
'Spur Rd 6'   'AG'   1204803   230878.7   1204714   231856.4   140   15.537   1   42
 1
'BostonHarborRd1'   'AG'   1203943   230105.8   1203985   229995   164   15.537   1   42
 1
'BostonHarborRd2'   'AG'   1203987   229994   1204697   229814.2   164   15.537   1   42
 1
'BostonHarborRd3'   'AG'   1204696   229807   1205001   229528.8   164   15.537   1   42
 1
'Rte4 btwn SBOn BHRd4'   'AG'   1203945   230105.8   1203715   230103.9   2081   15.537   1   83
1   0   4   1000   2   'Y'   10   0   36
```

Microscale Results Summary

Newington

1 Hour CO Results

Highest values for specific receptors are in bold

Newington

Receptor Location	Intersection/Receptors	2003 Existing	2013 No Build	2013 Alt 10A Build	2013 Alt 12A Build	2013 Alt 13 Build	2025 No Build	2025 Alt 10A Build	2025 Alt 12A Build	2025 Alt 13 Build
	Spaulding Turnpike Exit 3 Northbound Off Ramp at Woodbury Avenue Extension									
	Recp 1	**5.5**	**4.7**	3.3	3.3	3.1	**4.8**	3.4	3.4	**3.2**
Southeast Quadrant	Recp 2	4.5	3.8	3.1	3.1	3.0	3.9	3.4	3.4	3.0
	Recp 3	4.0	3.5	**4.1**	**4.1**	**3.1**	3.6	**4.3**	**4.3**	3.1
	Recp 4	3.6	3.2	3.3	3.3	3.0	3.2	3.5	3.5	3.0
	Recp 5	3.3	3.1	3.3	3.3	3.0	3.1	3.4	3.4	3.0
	Recp 6	4.2	3.8	3.3	3.3	3.4	3.8	3.6	3.6	3.4
Northeast Quadrant	Recp 7	4.6	4.0	**3.8**	**3.8**	3.4	4.1	**4.1**	**4.1**	3.5
	Recp 8	4.6	4.0	3.4	3.4	3.6	4.0	3.7	3.7	3.7
	Recp 9	**4.2**	3.6	3.5	3.5	**3.7**	**3.7**	3.7	3.7	**3.8**
	Recp 10	4.0	**3.7**	3.5	3.5	4.4	3.7	3.7	3.7	4.6
	Recp 11	**4.8**	4.2	3.1	3.1	3.8	4.2	3.1	3.1	3.8
Northwest Quadrant	Recp 12	4.3	3.8	3.0	3.0	4.4	3.8	3.3	3.3	4.4
	Recp 13	4.0	3.5	3.5	3.5	3.8	3.6	3.7	3.7	3.8
	Recp 14	4.7	**4.2**	3.5	3.5	4.7	**4.2**	3.8	3.8	4.4
	Recp 15	9.4	7.6	**3.7**	**3.7**	**3.6**	7.9	**4.0**	**4.0**	**3.6**
	Recp 16	6.6	5.4	**3.9**	**3.9**	**3.9**	5.5	**4.4**	**4.4**	**4.1**
Southwest Quadrant	Recp 17	**7.8**	**6.5**	3.5	3.5	3.3	**6.8**	3.9	3.9	3.4
	Recp 18	4.6	4.0	3.5	3.5	3.0	4.0	3.6	3.6	3.1
	Recp 19	5.5	4.7	3.2	3.2	3.1	4.8	3.4	3.4	3.2
	Recp 20	9.1	7.4	3.2	3.2	3.5	7.7	3.5	3.5	3.5
	Spaulding Turnpike Exit 3 Southbound Ramps at Woodbury Avenue Extension									
	Recp 21	**2.7**	2.5	**3.2**	**3.2**	2.7	**2.6**	**3.3**	**3.3**	2.7
Northeast Quadrant	Recp 22	2.7	2.5	3.2	3.2	2.6	2.5	3.3	3.3	2.7
	Recp 23	2.6	**2.6**	3.2	3.2	2.5	2.6	3.3	3.3	2.6
	Recp 24	2.7	2.5	2.8	2.8	2.6	2.5	2.9	2.9	2.6
	Recp 25	2.6	2.5	2.6	2.6	**2.8**	2.5	2.7	2.7	**2.9**
	Recp 26	2.6	2.4	3.0	3.0	3.1	2.4	3.1	3.1	3.2
Northwest Quadrant	Recp 27	2.6	2.5	3.5	3.5	**2.6**	2.6	3.5	3.5	**2.6**
	Recp 28	**2.6**	**2.5**	**3.7**	**3.7**	2.5	**2.6**	**4.1**	**4.1**	2.5
	Recp 29	2.6	2.5	3.3	3.3	2.5	2.5	3.4	3.4	2.5
	Recp 30	2.6	2.3	3.0	3.0	2.8	2.4	3.1	3.1	2.8
	Recp 31	2.6	2.5	3.2	3.2	2.4	2.5	3.3	3.3	2.4
South Quadrant	Recp 32	2.6	2.4	**3.3**	**3.3**	2.5	2.4	**3.3**	**3.3**	2.5
	Recp 33	2.6	2.4	3.0	3.0	2.5	2.4	3.0	3.0	2.5
	Recp 34	**2.7**	**2.6**	3.0	3.0	2.5	2.6	3.1	3.1	2.6
	Recp 35	2.7	2.6	3.0	3.0	**2.6**	**2.6**	3.1	3.1	**2.7**

	River Road Connector at Woodbury Avenue Extension									
	Recp 36	2.5	2.4	2.7	2.7	3.2	2.4	2.7	2.7	3.3
Southeast Quadrant	Recp 37	2.4	2.4	2.8	2.8	2.8	2.4	2.8	2.8	2.9
	Recp 38	2.4	2.3	2.9	2.9	**2.7**	2.3	3.0	3.0	**2.7**
	Recp 39	2.6	2.3	2.9	2.9	3.2	2.3	3.0	3.0	3.2
	Recp 40	**2.6**	**2.5**	**3.0**	**3.0**	2.5	**2.5**	**3.1**	**3.1**	2.5
	Recp 41	2.6	2.3	2.9	2.9	3.1	2.3	3.1	3.1	3.1
Northeast Quadrant	Recp 42	2.6	2.3	2.8	2.8	**2.7**	**2.4**	2.9	2.9	**2.9**
	Recp 43	**2.6**	**2.4**	**3.5**	**3.5**	2.6	2.4	**3.3**	**3.3**	2.7
	Recp 44	2.4	2.3	2.7	2.7	2.5	2.4	2.7	2.7	2.6
	Recp 45	2.4	2.3	2.5	2.5	2.5	2.3	2.5	2.5	2.5
	Recp 46	2.4	2.3	2.7	2.7	2.5	2.3	2.7	2.7	2.5
West Quadrant	Recp 47	2.5	2.3	3	3	2.5	**2.4**	3.1	3.1	2.6
	Recp 48	**2.5**	**2.3**	**3.3**	**3.3**	2.6	2.3	**3.4**	**3.4**	2.6
	Recp 49	2.4	2.3	3.1	3.1	2.5	2.3	3.3	3.3	**2.7**
	Recp 50	2.5	2.3	2.8	2.8	**2.7**	2.3	2.9	2.9	2.7
	Spaulding Turnpike Exit 3 Southbound Ramps at Woodbury Avenue Extension									
	Recp 51	2.5	2.4	2.3	2.3	3.7	2.4	2.4	2.4	3.8
Northeast Quadrant	Recp 52	2.4	2.4	2.3	2.3	4	2.4	2.4	2.4	3.8
	Recp 53	**2.5**	**2.4**	**2.3**	**2.3**	**4.2**	**2.4**	**2.4**	**2.4**	**4.0**
	Recp 54	2.4	2.4	2.3	2.3	3.5	2.4	2.4	2.4	3.3
	Recp 55	2.5	2.4	2.3	2.3	3.0	2.4	2.4	2.4	3.0
	Recp 56	2.4	2.4	2.6	2.6	3.2	2.4	2.6	2.6	3.5
Northwest Quadrant	Recp 57	2.5	2.3	**2.7**	**2.7**	3.6	2.4	**2.7**	**2.7**	3.6
	Recp 58	**2.5**	**2.4**	2.6	2.6	**3.9**	**2.4**	2.7	2.7	**3.9**
	Recp 59	2.4	2.3	2.4	2.4	3.0	2.4	2.6	2.6	3.1
	Recp 60	2.4	2.3	2.4	2.4	2.9	2.3	2.5	2.5	2.9
	Recp 61	2.4	2.3	2.3	2.3	3.0	2.3	2.4	2.4	3.4
Southwest Quadrant	Recp 62	2.4	2.4	2.4	2.4	3.4	2.4	2.6	2.6	**3.4**
	Recp 63	2.4	**2.4**	2.6	2.6	**3.4**	2.4	2.7	2.7	3.3
	Recp 64	2.5	2.4	2.6	2.6	3.2	**2.4**	**2.8**	**2.8**	3.3
	Recp 65	**2.5**	2.4	**2.7**	**2.7**	3.1	2.4	2.7	2.7	3.2
	Recp 66	2.6	2.4	2.4	2.4	3.2	2.4	2.4	2.4	3.2
Southeast Quadrant	Recp 67	2.5	2.4	2.3	2.3	3.1	2.4	2.4	2.4	3.0
	Recp 68	2.5	2.4	**2.4**	**2.4**	**3.2**	2.4	2.4	2.4	3.2
	Recp 69	**2.6**	**2.5**	2.3	2.3	3.2	**2.5**	**2.4**	**2.4**	**3.2**
	Recp 70	2.6	2.5	2.3	2.3	2.7	2.5	2.4	2.4	2.9

8 Hour CO Results

Highest values for specific receptors are in bold

Newington

Receptor Location	Intersection/Receptors	2003 Existing	2013 No Build	2013 Alt 10A Build	2013 Alt 12A Build	2013 Alt 13 Build	2025 No Build	2025 Alt 10A Build	2025 Alt 12A Build	2025 Alt 13 Build
	Spaulding Turnpike Exit 3 Northbound Off Ramp at Woodbury Avenue Extension									
	Recp 1	**3.9**	**3.3**	2.3	2.3	2.2	**3.4**	2.4	2.4	**2.2**
Southeast Quadrant	Recp 2	3.2	2.7	2.2	2.2	2.1	2.7	2.4	2.4	2.1
	Recp 3	2.8	2.5	2.9	**2.9**	**2.2**	2.5	3.0	**3.0**	2.2
	Recp 4	2.5	2.2	2.3	2.3	2.1	2.2	2.5	2.5	2.1
	Recp 5	2.3	2.2	2.3	2.3	2.1	2.2	2.4	2.4	2.1
	Recp 6	2.9	2.7	2.3	2.3	2.4	2.7	2.5	2.5	2.4
Northeast Quadrant	Recp 7	3.2	2.8	2.7	**2.7**	2.4	2.9	2.9	**2.9**	2.5
	Recp 8	3.2	2.8	2.4	2.4	2.5	2.8	2.6	2.6	2.6
	Recp 9	**2.9**	2.5	2.5	2.5	**2.6**	**2.6**	2.6	2.6	**2.7**
	Recp 10	2.8	**2.6**	2.5	2.5	3.1	2.6	2.6	2.6	3.2
	Recp 11	**3.4**	2.9	2.2	2.2	2.7	2.9	2.2	2.2	2.7
Northwest Quadrant	Recp 12	3.0	2.7	2.1	2.1	3.1	2.7	2.3	2.3	3.1
	Recp 13	2.8	2.5	2.5	2.5	2.7	2.5	2.6	2.6	2.7
	Recp 14	3.3	**2.9**	2.5	2.5	3.3	**2.9**	2.7	2.7	3.1
	Recp 15	6.6	5.3	2.6	**2.6**	**2.5**	5.5	2.8	**2.8**	**2.5**
	Recp 16	4.6	3.8	2.7	**2.7**	**2.7**	3.9	3.1	**3.1**	**2.9**
Southwest Quadrant	Recp 17	**5.5**	**4.6**	2.5	2.5	2.3	**4.8**	2.7	2.7	2.4
	Recp 18	3.2	2.8	2.5	2.5	2.1	2.8	2.5	2.5	2.2
	Recp 19	3.9	3.3	2.2	2.2	2.2	3.4	2.4	2.4	2.2
	Recp 20	6.4	5.2	2.2	2.2	2.5	5.4	2.5	2.5	2.5
	Spaulding Turnpike Exit 3 Southbound Ramps at Woodbury Avenue Extension									
	Recp 21	**1.9**	1.8	2.2	**2.2**	1.9	**1.8**	2.3	**2.3**	1.9
Northeast Quadrant	Recp 22	1.9	1.8	2.2	2.2	1.8	1.8	2.3	2.3	1.9
	Recp 23	1.8	**1.8**	2.2	2.2	1.8	1.8	2.3	2.3	1.8
	Recp 24	1.9	1.8	2.0	2.0	1.8	1.8	2.0	2.0	1.8
	Recp 25	1.8	1.8	1.8	1.8	**2.0**	1.8	1.9	1.9	**2.0**
	Recp 26	1.8	1.7	2.1	2.1	2.2	1.7	2.2	2.2	2.2
Northwest Quadrant	Recp 27	1.8	1.8	2.5	2.5	**1.8**	1.8	2.5	2.5	**1.8**
	Recp 28	**1.8**	**1.8**	2.6	**2.6**	1.8	**1.8**	2.9	**2.9**	1.8
	Recp 29	1.8	1.8	2.3	2.3	1.8	1.8	2.4	2.4	1.8
	Recp 30	1.8	1.6	2.1	2.1	2.0	1.7	2.2	2.2	2.0
	Recp 31	1.8	1.8	2.2	2.2	1.7	1.8	2.3	2.3	1.7
South Quadrant	Recp 32	1.8	1.7	2.3	**2.3**	1.8	1.7	2.3	**2.3**	1.8
	Recp 33	1.8	1.7	2.1	2.1	1.8	1.7	2.1	2.1	1.8
	Recp 34	**1.9**	**1.8**	2.1	2.1	1.8	1.8	2.2	2.2	1.8
	Recp 35	1.9	1.8	2.1	2.1	**1.8**	**1.8**	2.2	2.2	**1.9**

	River Road Connector at Woodbury Avenue Extension									
	Recp 36	1.8	1.7	1.9	1.9	2.2	1.7	1.9	1.9	2.3
Southeast Quadrant	Recp 37	1.7	1.7	2.0	2.0	2.0	1.7	2.0	2.0	2.0
	Recp 38	1.7	1.6	2.0	2.0	**1.9**	1.6	2.1	2.1	**1.9**
	Recp 39	1.8	1.6	2.0	2.0	2.2	1.6	2.1	2.1	2.2
	Recp 40	**1.8**	**1.8**	2.1	**2.1**	1.8	**1.8**	2.2	**2.2**	1.8
	Recp 41	1.8	1.6	2.0	2.0	2.2	1.6	2.2	2.2	2.2
Northeast Quadrant	Recp 42	1.8	1.6	2.0	2.0	**1.9**	**1.7**	2.0	2.0	**2.0**
	Recp 43	**1.8**	**1.7**	2.5	**2.5**	1.8	1.7	2.3	**2.3**	1.9
	Recp 44	1.7	1.6	1.9	1.9	1.8	1.7	1.9	1.9	1.8
	Recp 45	1.7	1.6	1.8	1.8	1.8	1.6	1.8	1.8	1.8
	Recp 46	1.7	1.6	1.9	1.9	1.8	1.6	1.9	1.9	1.8
West Quadrant	Recp 47	1.8	1.6	2.1	2.1	1.8	**1.7**	2.2	2.2	1.8
	Recp 48	**1.8**	**1.6**	2.3	**2.3**	1.8	1.6	2.4	**2.4**	1.8
	Recp 49	1.7	1.6	2.2	2.2	1.8	1.6	2.3	2.3	**1.9**
	Recp 50	1.8	1.6	2.0	2.0	**1.9**	1.6	2.0	2.0	1.9
	Spaulding Turnpike Exit 3 Southbound Ramps at Woodbury Avenue Extension									
	Recp 51	1.8	1.7	1.6	1.6	2.6	1.7	1.7	1.7	2.7
Northeast Quadrant	Recp 52	1.7	1.7	1.6	1.6	2.8	1.7	1.7	1.7	2.7
	Recp 53	**1.8**	**1.7**	1.6	**1.6**	**2.9**	**1.7**	1.7	**1.7**	**2.8**
	Recp 54	1.7	1.7	1.6	1.6	2.5	1.7	1.7	1.7	2.3
	Recp 55	1.8	1.7	1.6	1.6	2.1	1.7	1.7	1.7	2.1
	Recp 56	1.7	1.7	1.8	1.8	2.2	1.7	1.8	1.8	2.5
Northwest Quadrant	Recp 57	1.8	1.6	1.9	**1.9**	2.5	1.7	1.9	**1.9**	2.5
	Recp 58	**1.8**	**1.7**	1.8	1.8	**2.7**	**1.7**	1.9	1.9	**2.7**
	Recp 59	1.7	1.6	1.7	1.7	2.1	1.7	1.8	1.8	2.2
	Recp 60	1.7	1.6	1.7	1.7	2.0	1.6	1.8	1.8	2.0
	Recp 61	1.7	1.6	1.6	1.6	2.1	1.6	1.7	1.7	2.4
Southwest Quadrant	Recp 62	1.7	1.7	1.7	1.7	2.4	1.7	1.8	1.8	**2.4**
	Recp 63	1.7	**1.7**	1.8	1.8	**2.4**	1.7	1.9	1.9	2.3
	Recp 64	1.8	1.7	1.8	1.8	2.2	**1.7**	2.0	**2.0**	2.3
	Recp 65	**1.8**	1.7	1.9	**1.9**	2.2	1.7	1.9	1.9	2.2
	Recp 66	1.8	1.7	1.7	1.7	2.2	1.7	1.7	1.7	2.2
Southeast Quadrant	Recp 67	1.8	1.7	1.6	1.6	2.2	1.7	1.7	1.7	2.1
	Recp 68	1.8	1.7	1.7	**1.7**	**2.2**	1.7	1.7	1.7	2.2
	Recp 69	**1.8**	**1.8**	1.6	1.6	2.2	**1.8**	1.7	**1.7**	**2.2**
	Recp 70	1.8	1.8	1.6	1.6	1.9	1.8	1.7	1.7	2.0

Dover

1 Hour CO Results

Highest values for specific receptors are in bold

Receptor Location	Intersection/Receptors	2003 Existing	2013 No Build	2013 Alt 2 Build	2013 Allt 3 Build	2025 No Build	2025 Alt 2 Build	2025 Alt. 3 Build
	Dover Point Road at Route 4							
	Recp 1	3.0	2.8	2.8	2.8	2.8	3.0	3.0
Southeast Quadrant	Recp 2	3.3	2.9	3.0	3.0	3.0	3.4	3.4
	Recp 3	**3.8**	**3.5**	**4.1**	**4.1**	**3.5**	4.8	4.8
	Recp 4	3.8	3.4	3.6	3.6	3.5	**4.9**	**4.9**
	Recp 5	4.4	3.6	3.4	3.4	3.6	4.2	4.2
	Recp 6	3.2	2.9	3.4	3.4	2.9	3.9	3.9
North Quadrant	Recp 7	3.4	3.0	3.5	3.5	3.0	4.1	4.1
	Recp 8	3.5	3.1	3.6	3.6	3.4	4.2	4.2
	Recp 9	3.7	3.2	3.7	3.7	3.2	4.2	4.2
	Recp 10	**3.9**	**3.3**	**3.7**	**3.7**	**3.4**	**4.3**	**4.3**
	Recp 11	**3.8**	3.3	3.4	3.4	**3.4**	4.0	4.0
Southwest Quadrant	Recp 12	3.7	3.3	3.4	3.4	3.5	4.2	4.2
	Recp 13	3.7	**3.3**	**3.7**	**3.7**	3.3	**4.5**	**4.5**
	Recp 14	3.3	3.0	3.0	3.0	3.0	3.4	3.4
	Recp 15	3.1	2.9	2.8	2.8	2.9	3.1	3.1
	Spaulding Turnpike Exit 6 Northbound Off Ramp at Route 4							
	Recp 16	**4.2**	**3.6**	4.9	4.9	**3.7**	**5.2**	**5.2**
Southeast Quadrant	Recp 17	4.8	4.1	4.9	4.9	4.1	4.9	4.9
	Recp 18	3.9	3.5	**5.1**	**5.1**	3.5	5.2	5.2
	Recp 19	3.8	3.4	4.2	4.2	3.4	4.1	4.1
	Recp 20	4.5	4.0	3.8	3.8	4.0	3.8	3.8
	Recp 21	5.9	5.1	**5.5**	**5.5**	5.2	**5.3**	**5.3**
Northeast Quadrant	Recp 22	6.2	5.3	5.3	5.3	5.4	5.3	5.3
	Recp 23	6.4	5.3	4.1	4.1	5.6	4.3	4.3
	Recp 24	**4.9**	**4.2**	3.7	3.7	**4.3**	3.7	3.7
	Recp 25	4.8	4.1	3.4	3.4	4.2	3.5	3.5
	Recp 26	5.4	**4.6**	3.6	3.6	**4.8**	3.8	3.8
Northwest Quadrant	Recp 27	**5.5**	4.5	3.7	3.7	4.8	3.7	3.7
	Recp 28	6.7	5.6	4.0	4.0	5.8	4.2	4.2
	Recp 29	7.6	6.3	4.4	4.4	6.5	4.5	4.5
	Recp 30	9.8	7.9	**5.6**	**5.6**	8.3	**5.8**	**5.8**
	Recp 31	**6.8**	**5.7**	4.5	4.5	**5.8**	4.6	4.6
Southwest Quadrant	Recp 32	5.1	4.4	4.3	4.3	4.5	4.5	4.5
	Recp 33	4.5	3.9	**4.8**	**4.8**	4.0	**4.9**	**4.9**
	Recp 34	4.1	3.7	4.7	4.7	3.7	4.8	4.8
	Recp 35	5.0	4.2	4.2	4.2	4.4	4.3	4.3
	Spaulding Turnpike Exit 6 Southbound On Ramp at Route 4							
	Recp 36	3.2	3.0	2.7	2.7	3.0	2.9	2.9
Southeast Quadrant	Recp 37	3.3	3.1	2.9	2.9	3.2	3.1	3.1
	Recp 38	3.6	3.2	**3.7**	**3.7**	3.3	3.8	3.8
	Recp 39	3.6	3.3	3.5	3.5	3.3	3.7	3.7
	Recp 40	**3.7**	**3.3**	3.6	3.6	**3.4**	**3.9**	**3.9**
	Recp 41	5.3	4.5	3.6	3.6	4.7	**3.8**	**3.8**
North Quadrant	Recp 42	5	4.3	3.5	3.5	4.4	3.6	3.6
	Recp 43	**4.7**	**4.1**	**3.6**	**3.6**	**4.1**	3.6	3.6
	Recp 44	4.3	3.9	3.4	3.4	4.0	3.4	3.4
	Recp 45	4.1	3.6	3.4	3.4	3.8	3.5	3.5
	Recp 46	3.2	2.9	3	3	3.1	3.1	3.1
Southwest Quadrant	Recp 47	3.4	2.9	3.1	3.1	3.0	3.2	3.2
	Recp 48	4	3.4	3.9	3.9	3.5	4.0	4.0
	Recp 49	**3.6**	**3.2**	**3.9**	**3.9**	**3.3**	**4.1**	**4.1**
	Recp 50	3.3	3.1	3.8	3.8	3.2	3.9	3.9

8 Hour CO Results

Highest values for specific receptors are in bold

Receptor Location	Intersection/Receptors	2003 Existing	2013 No Build	2013 Alt 2 Build	2013 Allt 3 Build	2025 No Build	2025 Alt 2 Build	2025 Alt. 3 Build
	Dover Point Road at Route 4							
	Recp 1	2.1	2.0	2.0	2.0	2.0	2.1	2.1
Southeast Quadrant	Recp 2	2.3	2.0	2.1	2.1	2.1	2.4	2.4
	Recp 3	**2.7**	**2.5**	**2.9**	2.9	**2.5**	3.4	3.4
	Recp 4	2.7	2.4	2.5	2.5	2.5	**3.4**	3.4
	Recp 5	3.1	2.5	2.4	2.4	2.5	2.9	2.9
	Recp 6	2.2	2.0	2.4	2.4	2.0	2.7	2.7
North Quadrant	Recp 7	2.4	2.1	2.5	2.5	2.1	2.9	2.9
	Recp 8	2.5	2.2	2.5	2.5	2.4	2.9	2.9
	Recp 9	2.6	2.2	2.6	2.6	2.2	2.9	2.9
	Recp 10	**2.7**	**2.3**	**2.6**	2.6	**2.4**	**3.0**	3.0
	Recp 11	**2.7**	2.3	2.4	2.4	**2.4**	2.8	2.8
Southwest Quadrant	Recp 12	2.6	2.3	2.4	2.4	2.5	2.9	2.9
	Recp 13	2.6	**2.3**	**2.6**	2.6	2.3	**3.2**	3.2
	Recp 14	2.3	2.1	2.1	2.1	2.1	2.4	2.4
	Recp 15	2.2	2.0	2.0	2.0	2.0	2.2	2.2
	Spaulding Turnpike Exit 6 Northbound Off Ramp at Route 4							
	Recp 16	**2.9**	**2.5**	3.4	3.4	**2.6**	**3.6**	3.6
Southeast Quadrant	Recp 17	3.4	2.9	3.4	3.4	2.9	3.4	3.4
	Recp 18	2.7	2.5	**3.6**	3.6	2.5	3.6	3.6
	Recp 19	2.7	2.4	2.9	2.9	2.4	2.9	2.9
	Recp 20	3.2	2.8	2.7	2.7	2.8	2.7	2.7
	Recp 21	4.1	3.6	**3.9**	3.9	3.6	**3.7**	3.7
Northeast Quadrant	Recp 22	4.3	3.7	3.7	3.7	3.8	3.7	3.7
	Recp 23	4.5	3.7	2.9	2.9	3.9	3.0	3.0
	Recp 24	**3.4**	**2.9**	2.6	2.6	**3.0**	2.6	2.6
	Recp 25	3.4	2.9	2.4	2.4	2.9	2.5	2.5
	Recp 26	3.8	**3.2**	2.5	2.5	**3.4**	2.7	2.7
Northwest Quadrant	Recp 27	**3.9**	3.2	2.6	2.6	3.4	2.6	2.6
	Recp 28	4.7	3.9	2.8	2.8	4.1	2.9	2.9
	Recp 29	5.3	4.4	3.1	3.1	4.6	3.2	3.2
	Recp 30	6.9	5.5	**3.9**	3.9	5.8	**4.1**	4.1
	Recp 31	**4.8**	**4.0**	3.2	3.2	**4.1**	3.2	3.2
Southwest Quadrant	Recp 32	3.6	3.1	3.0	3.0	3.2	3.2	3.2
	Recp 33	3.2	2.7	**3.4**	3.4	2.8	**3.4**	3.4
	Recp 34	2.9	2.6	3.3	3.3	2.6	3.4	3.4
	Recp 35	3.5	2.9	2.9	2.9	3.1	3.0	3.0
	Spaulding Turnpike Exit 6 Southbound On Ramp at Route 4							
	Recp 36	2.2	2.1	1.9	1.9	2.1	2.0	2.0
Southeast Quadrant	Recp 37	2.3	2.2	2.0	2.0	2.2	2.2	2.2
	Recp 38	2.5	2.2	**2.6**	2.6	2.3	2.7	2.7
	Recp 39	2.5	2.3	2.5	2.5	2.3	2.6	2.6
	Recp 40	**2.6**	**2.3**	2.5	2.5	**2.4**	**2.7**	2.7
	Recp 41	3.7	3.2	2.5	2.5	3.3	**2.7**	2.7
North Quadrant	Recp 42	3.5	3.0	2.5	2.5	3.1	2.5	2.5
	Recp 43	**3.3**	**2.9**	**2.5**	2.5	**2.9**	2.5	2.5
	Recp 44	3.0	2.7	2.4	2.4	2.8	2.4	2.4
	Recp 45	2.9	2.5	2.4	2.4	2.7	2.5	2.5
	Recp 46	2.2	2.0	2.1	2.1	2.2	2.2	2.2
Southwest Quadrant	Recp 47	2.4	2.0	2.2	2.2	2.1	2.2	2.2
	Recp 48	2.8	2.4	2.7	2.7	2.5	2.8	2.8
	Recp 49	**2.5**	**2.2**	**2.7**	2.7	**2.3**	**2.9**	2.9
	Recp 50	2.3	2.2	2.7	2.7	2.2	2.7	2.7