Maine Turnpike Southern Toll Plaza Replacement Study

Draft Phase I Report

for submittal to the

U.S. Army Corps of Engineers

Presented to

Maine Turnpike Authority

November 5, 2009

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Maine Turnpike Southern Toll Plaza Replacement Study

Purpose of today's meeting

1. Deliver the Draft Phase I Report
2. Present our findings regarding alternate locations
3. Present our recommendations

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Maine Turnpike Southern Toll Plaza Replacement Study

Phase I Report Index

- Part 1 – Introduction and Overview
- Part 2 – Existing Site Evaluation
- Part 3 – Alternate Site Evaluation
- Part 4 – Site Screening

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Maine Turnpike Southern Toll Plaza Replacement Study

Agenda

1. Overview of Alternatives Evaluation
2. Brief Review of
   - A. Design Guidelines
   - B. Review Project Purpose and Need
   - C. Existing Conditions and Safety Concerns
   - D. Tolling Strategies
   - E. Proposed Toll Plaza Sizing
3. Existing Site Evaluation and Recommendations
4. Alternate Site Identification & Screening
5. Phase 1 Recommendation

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Alternatives Evaluation

1. Followed USACE Highway Methodology
2. Followed Section 404 of Clean Water Act
3. Followed DEP Natural Resources Protection Act
4. Objective of the evaluation with respect to resources is:
   A. Avoidance of impacts
   B. Minimization of impacts
   C. Compensation for unavoidable impacts

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Maine Turnpike Southern Toll Plaza Replacement Study

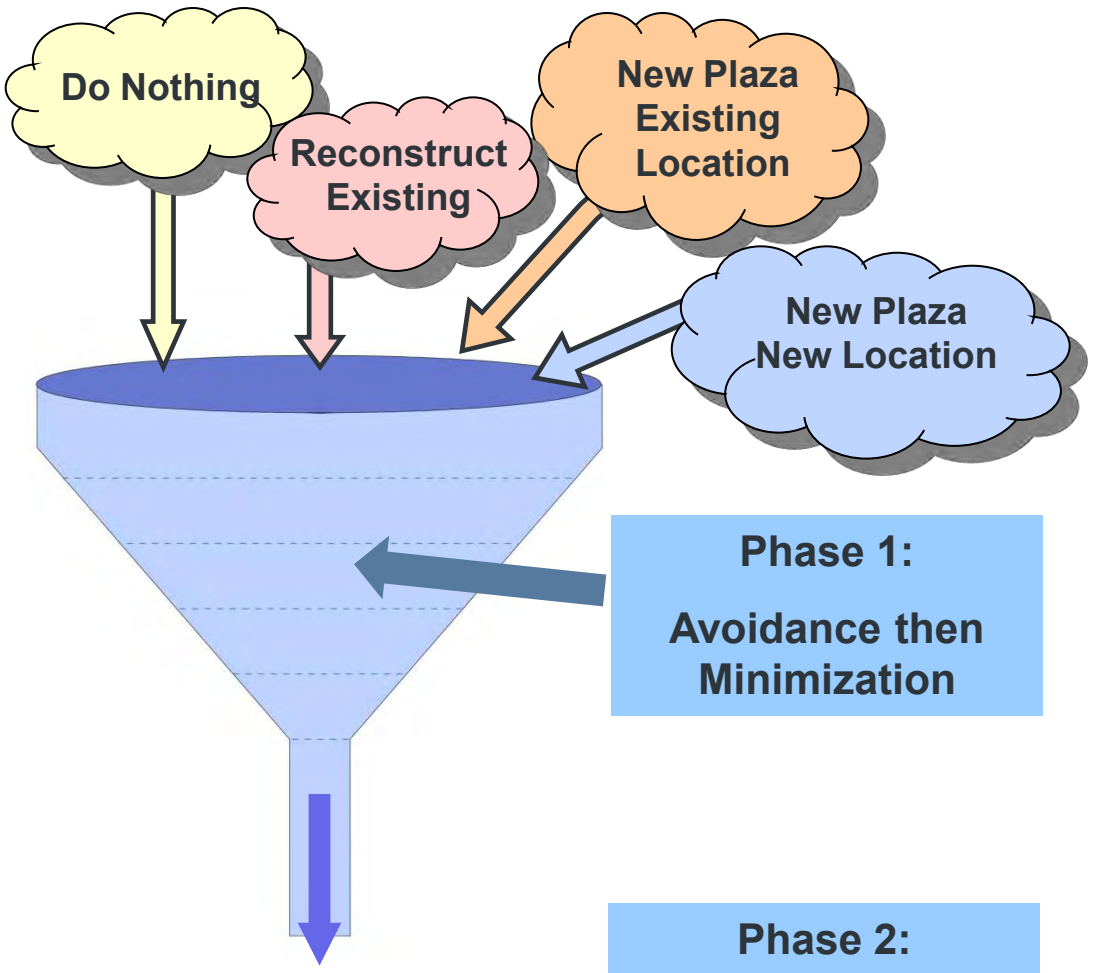
Thinking Ahead

Project Purpose & Need Concurrence

Alternatives (Site Identification & Screening)

Corps' LEDPA

Permitting



Phase 1:

Avoidance then Minimization

PREFERRED ALTERNATIVE

Phase 2:

Avoidance, Minimization & Compensation

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Where are we today?

1. The Maine Turnpike Authority identified a need and authorized a feasibility study to replace/reconstruct the York Toll Plaza.
2. MTA resolved to proceed forward with the implementation of highway speed tolling (now referred to as Open Road Tolling)
3. The preliminary study yielded: 1) existing site alternatives would not meet basic engineering guidelines or environmental reasonableness, 2) 16 alternative sites were identified as meeting basic criteria and environmental reasonableness
4. MTA hosted the York Selectboard to hear thoughts and concerns.
5. MTA directed, at the request of the York Selectboard, HNTB to re-investigate any possible options at the existing site
6. ***HNTB completed the Existing Site Evaluation Report and presented it June 16, 2009 to the Authority and the York Selectboard.***
7. ***MTA approved the Existing Site Evaluation Recommendations and directed HNTB to resume investigation for potential Alternate Sites.***
8. ***HNTB has completed the Alternate Site Identification and Screening and has developed the Phase I report for presentation today.***

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Review Design Guidelines

Same Design Guidelines and Criteria Applied to Both Existing Site and Alternate Sites Evaluations

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Nationally Published Guidelines

Maine Turnpike Southern Toll Plaza Replacement Study

Maine Turnpike Authority utilizes nationally recognized engineering guidelines.

1. "Geometric Design of Highways and Streets (AASHTO, 2004)
2. "Manual on Uniform Traffic Control Devices" - MUTCD (Federal Highway Administration, 2003)
3. "Roadside Design Guide" (AASHTO, 2006)
4. "State of the Practice and Recommendations on Traffic Control Strategies at Toll Plazas" (FHWA, 2006)

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Nationally Published Guidelines

Manual on Uniform Traffic Control Devices (MUTCD):

Excerpt from Section 1A.01 Purpose of Traffic Control Devices: „The purpose of traffic control devices, as well as the principles for their use, is to promote highway safety and efficiency by providing for the orderly movement of all road users on streets and highways throughout the Nation."

State of the Practice and Recommendations on Traffic Control Strategies at Toll Plazas:

Excerpt from page 1: "The goal is to achieve a consistent strategy for handling potential points of conflict, controlling flow of various vehicle types and conveying information at toll plazas so that safety and operations are enhanced, better efficiency and economy of design are achieved, and motorist recognition and comprehension are improved."

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Nationally Published Guidelines

A common theme among these guidelines, as it relates to their purpose, is that *uniformity of design practices and procedures is a key factor in the safety of travelers* on our Nation‟s highways. As well, operational efficiency of our roadway network can be improved through the use of these national guidelines and best practices. Another important result of the application of these guidelines is the efficient use of resources and the positive impact it has on our environment.

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Nationally Published Guidelines

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Basic Design Criteria for Toll Plazas

1. **Separation from Interchanges:**
   A. Minimum 1 mile between interchange and center of toll plaza.
2. **Separation from overhead bridges:**
   A. Minimum 2500‟ between overhead bridge and center of toll plaza.
   B. Desirably not within footprint (approx 8000‟)
3. **Horizontal Tangent:**
   A. Straight stretch of approximately 8,000 feet
4. **Crest vertical curve:**
   A. Center of straight stretch (toll plaza) at or near the top of a small gradual hill.

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Review Project Purpose and Need

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Purpose and Need

Age + Location + Traffic Growth = Plaza Problems

1. Increasingly unsafe for motorists
2. Increasingly unsafe for employees
3. Unnecessary noise
4. Increasing maintenance costs
5. Inability to accommodate new traffic flows and up-to-date tolling technology

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Purpose and Need

Plaza Lifespan

1. York Toll Plaza built in 1969
2. Planned life thru 1982 (13+/- years)
3. Structural lifespan = 25 years
4. Current age of plaza = 40 years

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Existing Conditions and Safety Concerns

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Existing Conditions & Concerns

Conditions and Deficiencies at York Toll Plaza

1. Safety Concerns and Issues
2. Booths, Tunnel and Canopy
3. Plaza (Area) Design
4. Operations (Traffic Flow)
5. Tolling Technology

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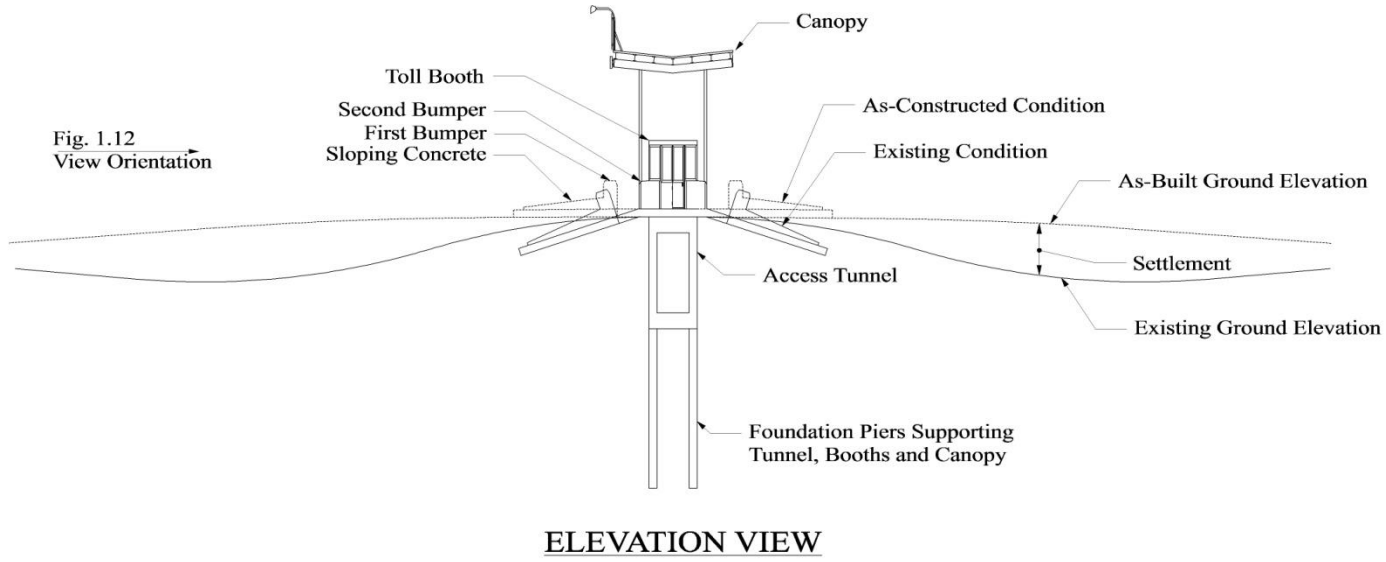

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Review Tolling Strategies

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Tolling Strategies

Toll Collection Strategy

1. **Collection Strategy**
   A. Split Plazas
   B. One-way Tolling
2. **Collection Technology**
   A. Booth (Stop and Slow Speed – Existing)
   B. All Electronic
   C. Open Road (also known as Highway Speed)
3. **Maine Turnpike Authority has adopted Open Road Tolling for the Replacement York Toll Plaza**

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Tolling Strategies

Open Road Tolling (formerly Highway Speed)

1. EZPass Customers pay tolls at 55-65mph – *less congestion – increased capacity – better service*
2. Cash customers are physically separated from highway speed customers – *increased safety*
3. Addresses Existing and Future Traffic Demand – *increased capacity – customer service - safety*
4. 58% of traffic use E-ZPass at York Plaza
5. Over 80% of York Truck Traffic use E-ZPass
6. Reduced Noise Events
   A. Engine brakes and heavy acceleration
   B. Rumble strips
   C. Similar amount of noise as mainline today

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Thinking Ahead

Open Road Tolling

MTA Decision to Implement Open Road Tolling

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Proposed Toll Plaza Sizing

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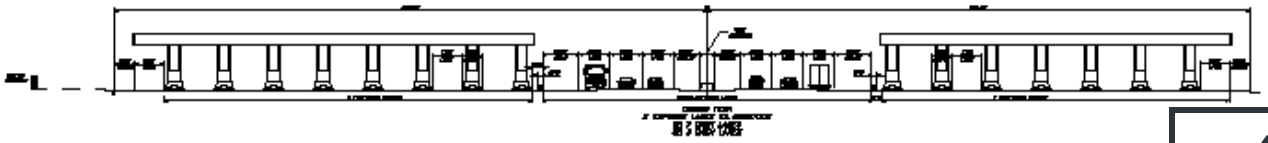
Thinking Ahead

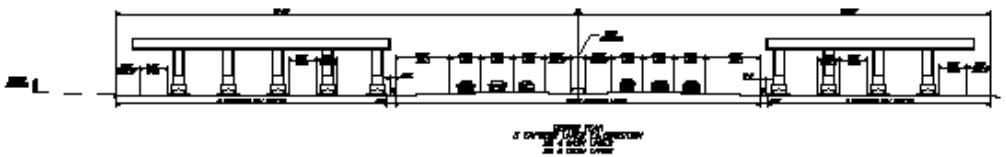
Plaza Sizing

= 295’

= 535’



= 435’



= 335’

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Existing Site Evaluation and Recommendations

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Existing Site Evaluation

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Recommendations

1. Advance No Build as required by Permit process
2. Advance Option 4A
3. Advance option 4B
4. Revisit Site Identification With Refined Footprint
5. Advance alternate locations that:
   A. better meet design guidelines
   B. adhere to purpose and need
   C. are less environmentally damaging
   D. displaces no homes
   E. minimizes impact to private property

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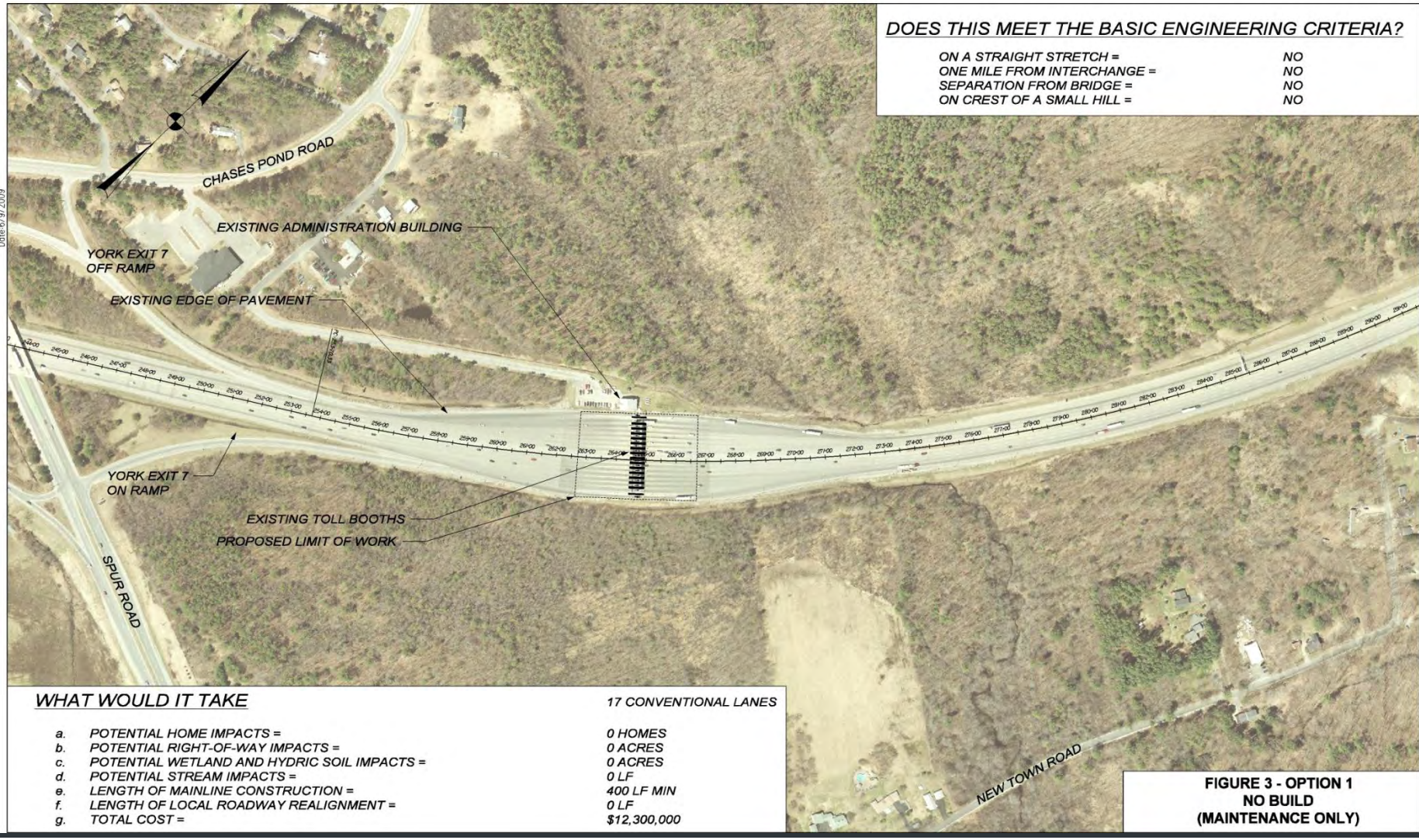

DOES THIS MEET THE BASIC ENGINEERING CRITERIA?

ON A STRAIGHT STRETCH =	NO
ONE MILE FROM INTERCHANGE =	NO
SEPARATION FROM BRIDGE =	NO
ON CREST OF A SMALL HILL =	NO

WHAT WOULD IT TAKE

17 CONVENTIONAL LANES

a.	POTENTIAL HOME IMPACTS =	0 HOMES
b.	POTENTIAL RIGHT-OF-WAY IMPACTS =	0 ACRES
c.	POTENTIAL WETLAND AND HYDRIC SOIL IMPACTS =	0 ACRES
d.	POTENTIAL STREAM IMPACTS =	0 LF
e.	LENGTH OF MAINLINE CONSTRUCTION =	400 LF MIN
f.	LENGTH OF LOCAL ROADWAY REALIGNMENT =	0 LF
g.	TOTAL COST =	$12,300,000

FIGURE 3 - OPTION 1
NO BUILD
(MAINTENANCE ONLY)

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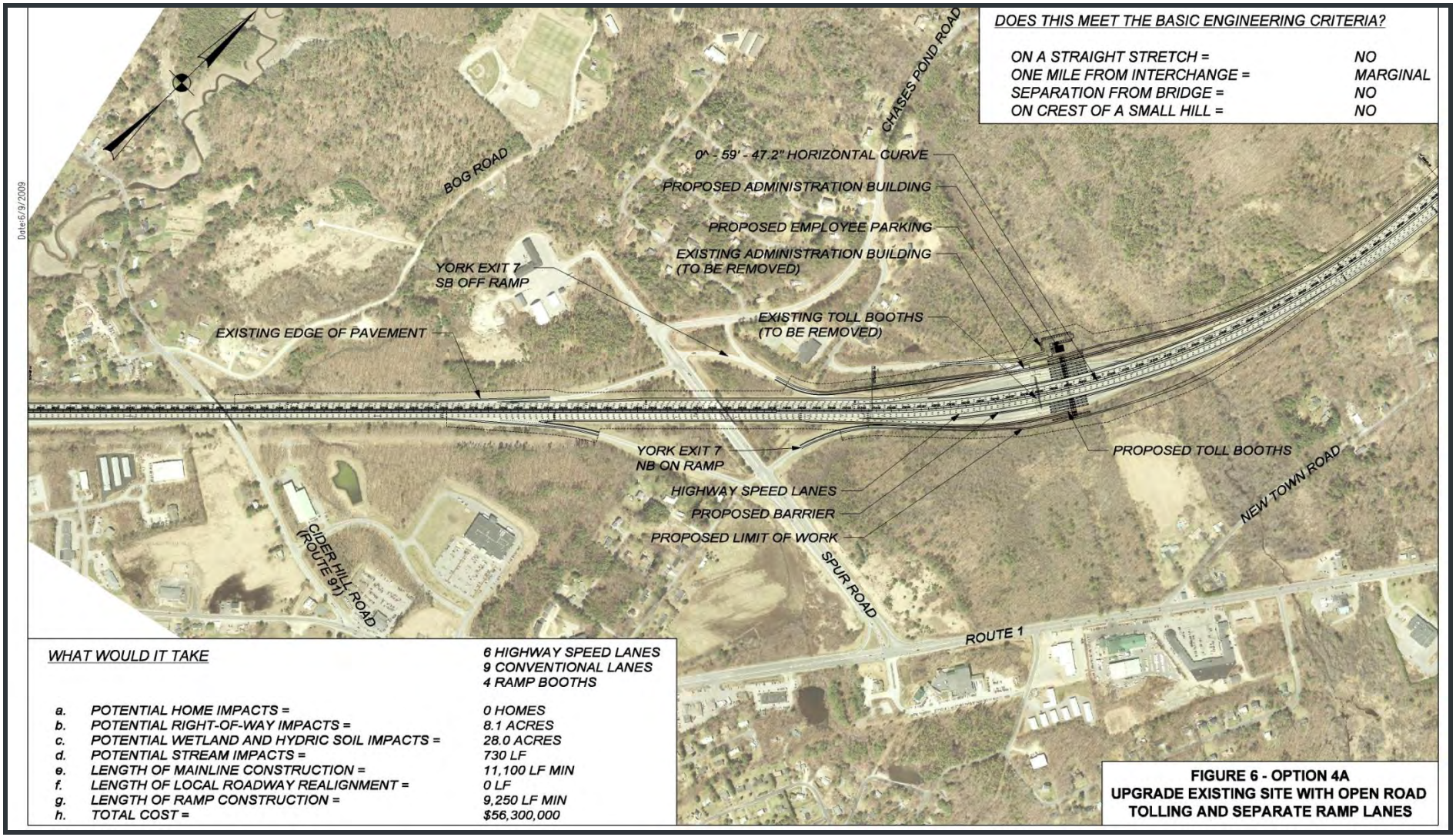

FIGURE 6 - OPTION 4A
UPGRADE EXISTING SITE WITH OPEN ROAD TOLLING AND SEPARATE RAMP LANES

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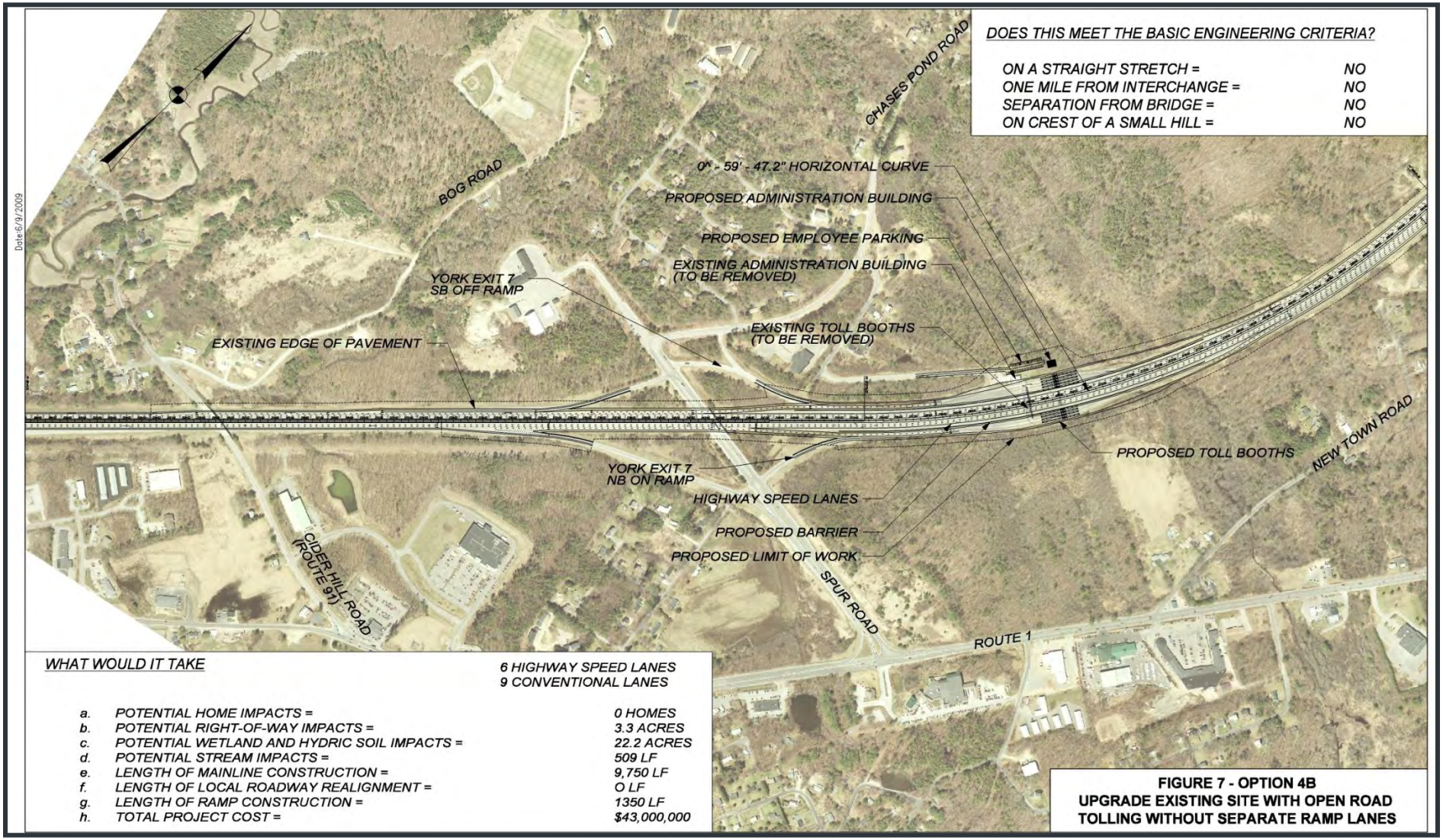

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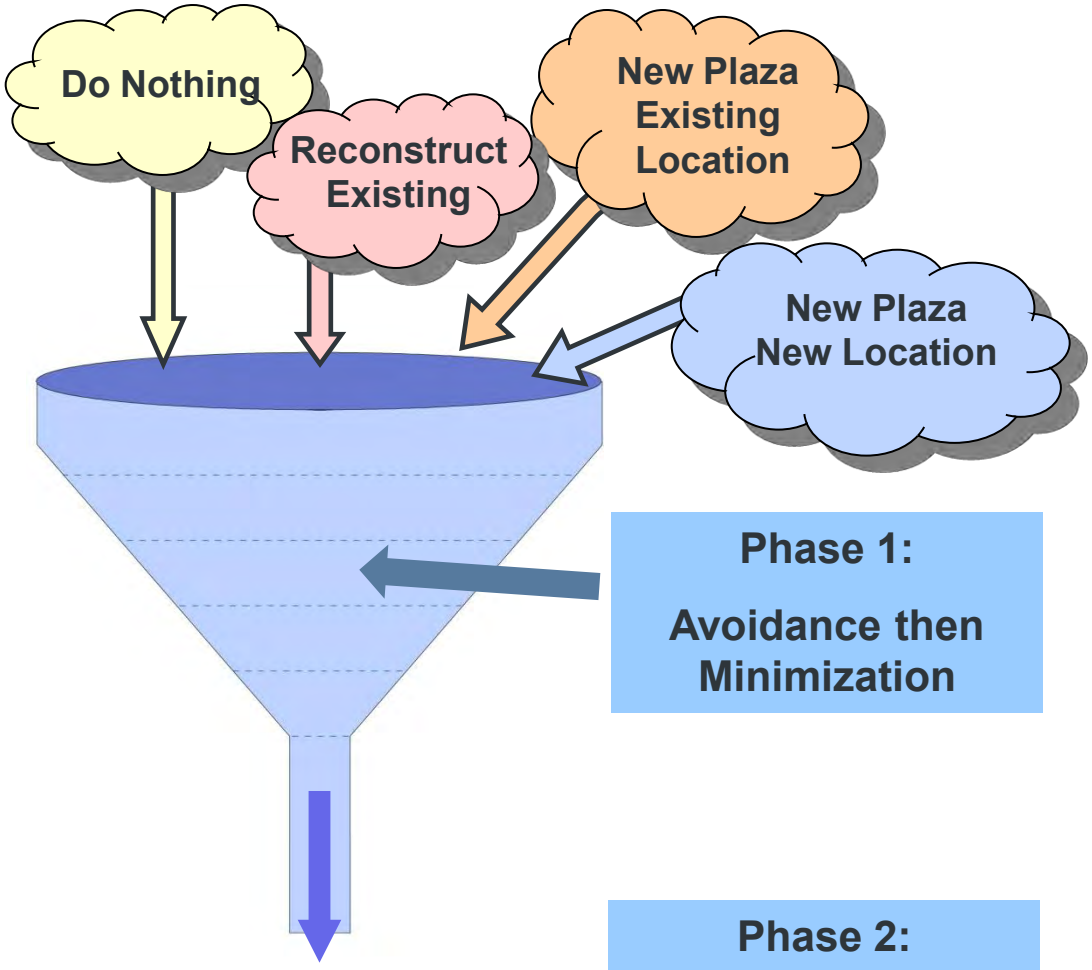
Thinking Ahead

Project Purpose & Need Concurrence

Alternatives (Site Identification & Screening)

Corps' LEDPA

Permitting



Phase 1:

Avoidance then Minimization

PREFERRED ALTERNATIVE

Phase 2:

Avoidance, Minimization & Compensation

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"LEDPA"

Least Environmentally Damaging

Practicable Alternative

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Alternate Site Identification & Screening

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Alternate Site ID and Screening Process

Site Identification and Screening

1. Level One Evaluation
   A. Basic Engineering criteria
   B. Physical features
2. Level Two Evaluation
   A. Engineering criteria
   B. Natural resources
   C. Social resources

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Thinking Ahead

Alternate Site ID and Screening Process

Level 1

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Study Corridor

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Thinking Ahead

Alternate Site ID and Screening Process

Level 1

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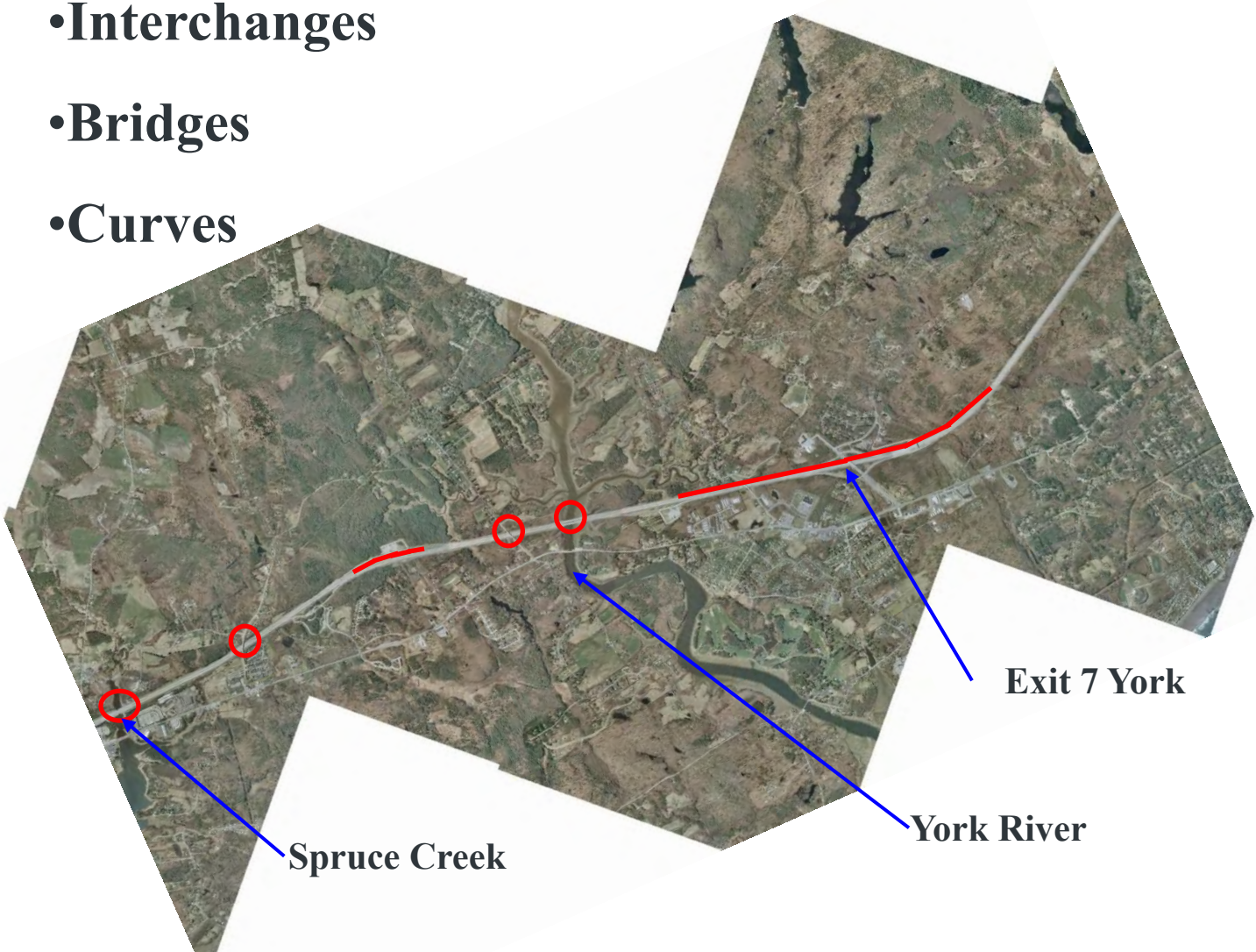
Locate "Out-of-Bound" Areas

- Interchanges
- Bridges
- Curves



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Thinking Ahead

Alternate Site ID and Screening Process

Level 1

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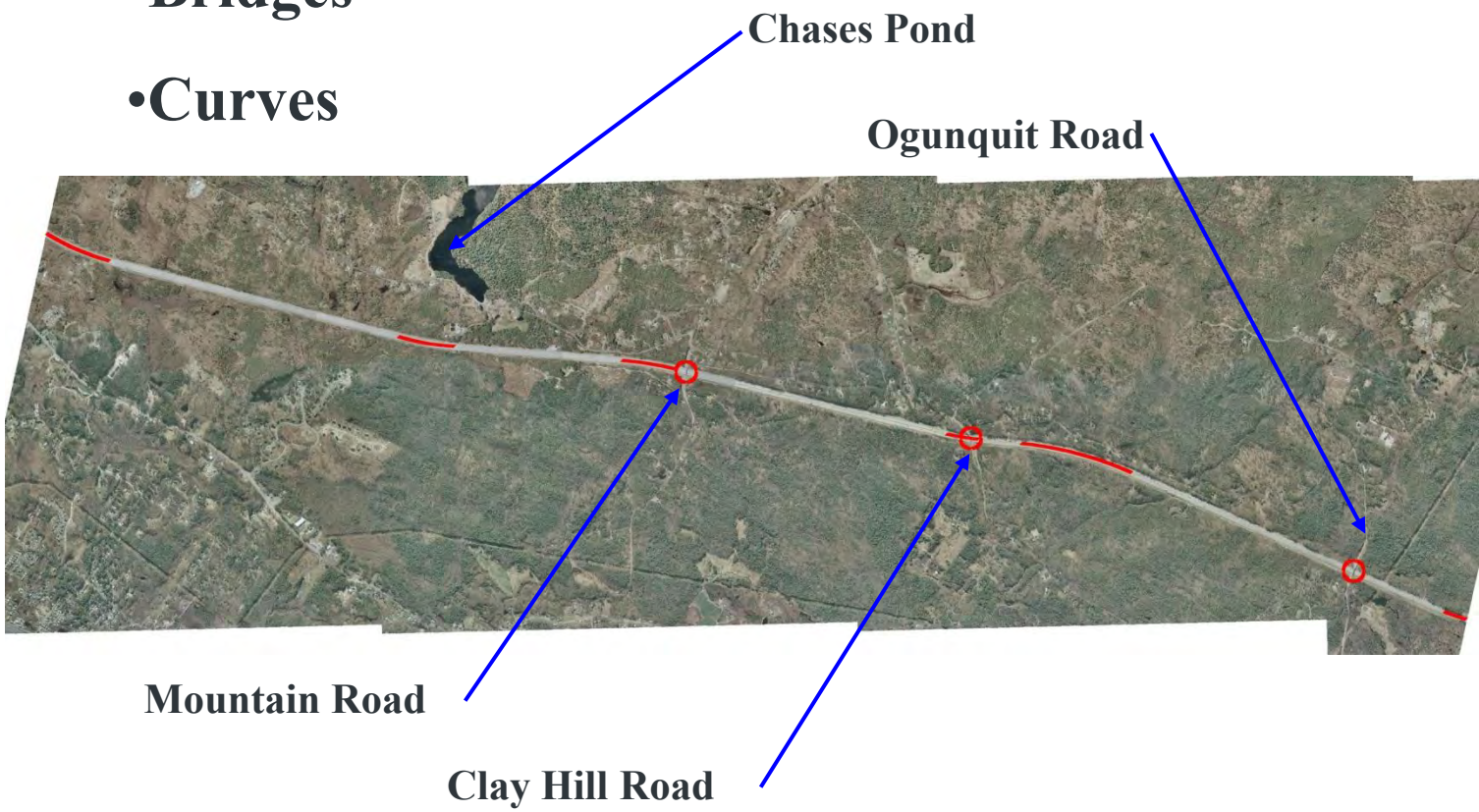

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Thinking Ahead

Alternate Site ID and Screening Process

Level 1

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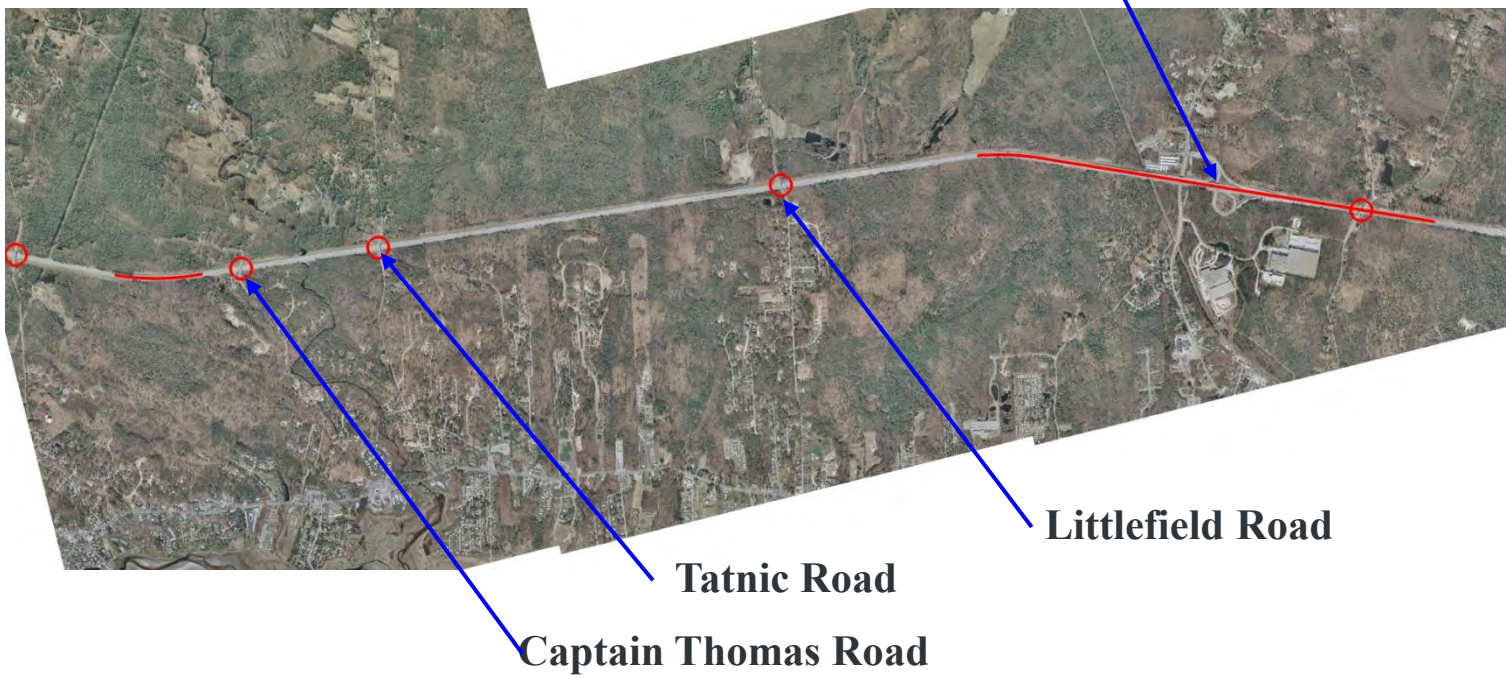

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Thinking Ahead

Alternate Site ID and Screening Process

Level 1

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Locate tangent sections (straight sections) for plaza footprint that are not out-of-bounds.

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Thinking Ahead

Alternate Site ID and Screening Process

Level 1

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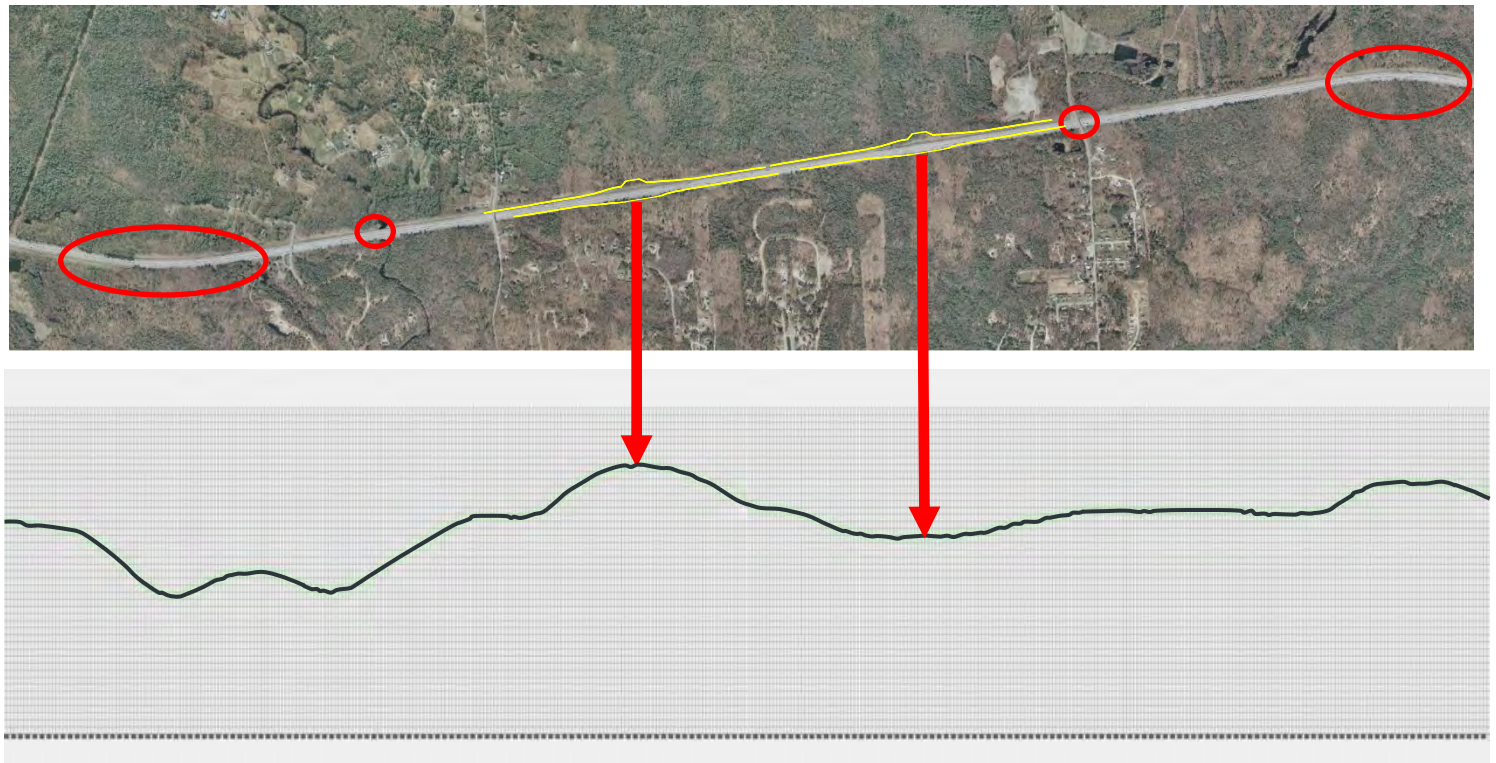
Check overhead structures (and sight distance).

Check for gradual hill crest at center of plaza.



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Alternate Site ID and Screening Process

Level One Screening Results

16 Locations Meet the Basic Design Criteria

- South of Chases Pond Road (Exit 7) – 2 locations
- Chases Pond Road to Mountain Road – 7 locations
- Mountain Road to Clay Hill Road – 2 locations
- Clay Hill Road to N. Berwick Road – 1 location
- N. Berwick Road to Capt Thomas Road – 0 locations
- Capt. Thomas Road to Tatnic Road – 0 locations
- Tatnic Road to Littlefield Road – 3 locations
- Littlefield Road to Wells Interchange – 1 location

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Thinking Ahead

Alternate Site ID and Screening Process

Level 1

Site ID Process Yields 16 Candidate Locations

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Alternate Site ID and Screening Process

Level Two Screening – Additional Engineering

- Highway grades
- Sight distances
- Typical cross-section

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Alternate Site ID and Screening Process

Level Two Screening – Social Resources

- Homes
- Schools
- Parks
- Municipal facilities
- Planned development
- Private Property

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Alternate Site ID and Screening Process

Level Two Screening - Environmental Resources

- Wetlands & wetland soils
- Rivers and Streams
- Floodplain
- Aquifers (Groundwater)
- Historic and Archaeological Resources

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Thinking Ahead

Alternate Site ID and Screening Process

Level 2

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Maine Turnpike Southern Toll Plaza Replacement Study

Thinking Ahead

Alternate Site ID and Screening Process

Level 2

HNTB

Maine Turnpike Southern Toll Plaza Replacement Study

Thinking Ahead

Alternate Site ID and Screening Process

Level 2

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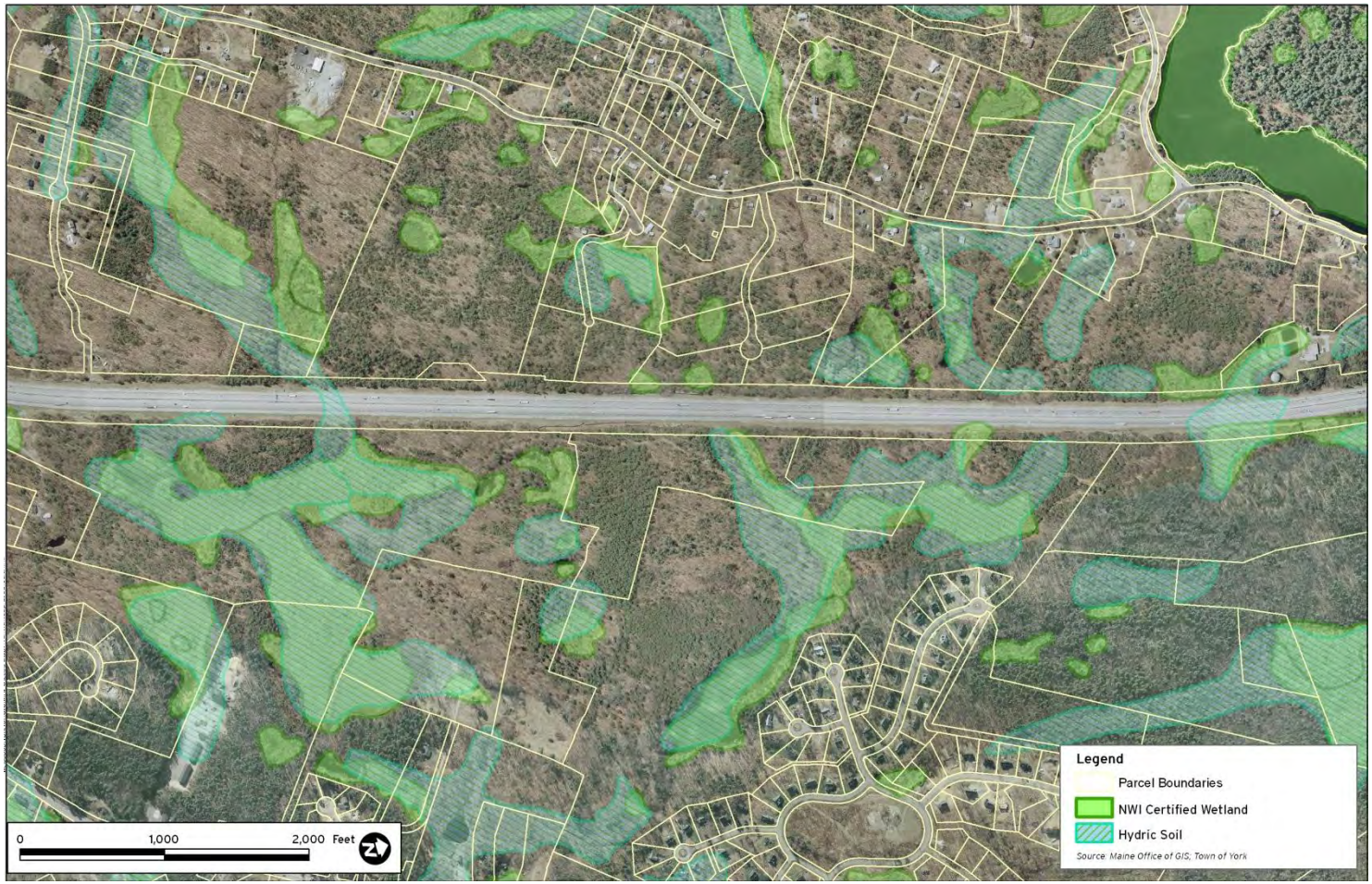
Maine Turnpike Southern Toll Plaza Replacement Study

Thinking Ahead

Alternate Site ID and Screening Process

Level 2



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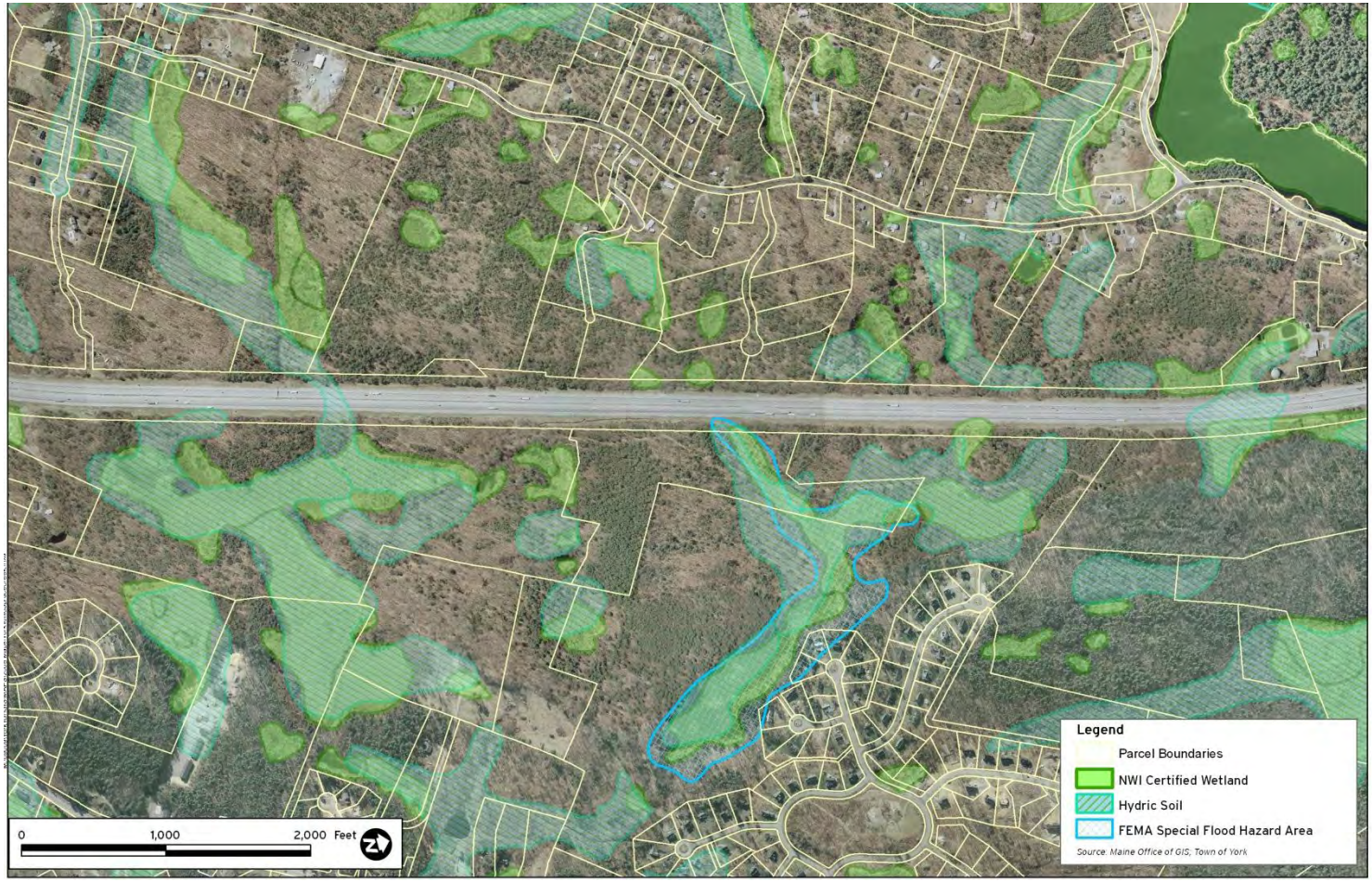
Thinking Ahead

Alternate Site ID and Screening Process

Level 2



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Thinking Ahead

Alternate Site ID and Screening Process

Level 2

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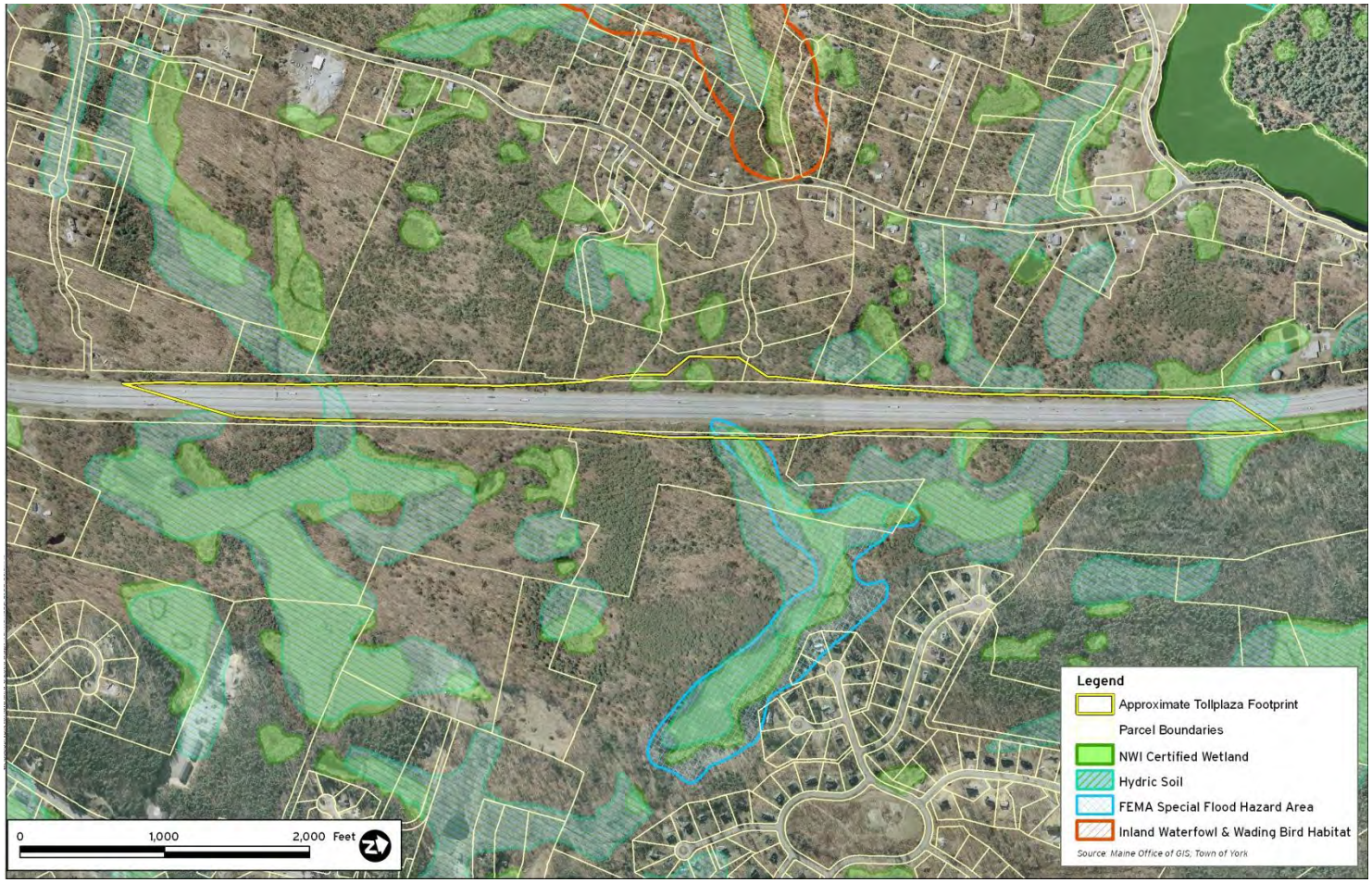
Thinking Ahead

Alternate Site ID and Screening Process

Level 2



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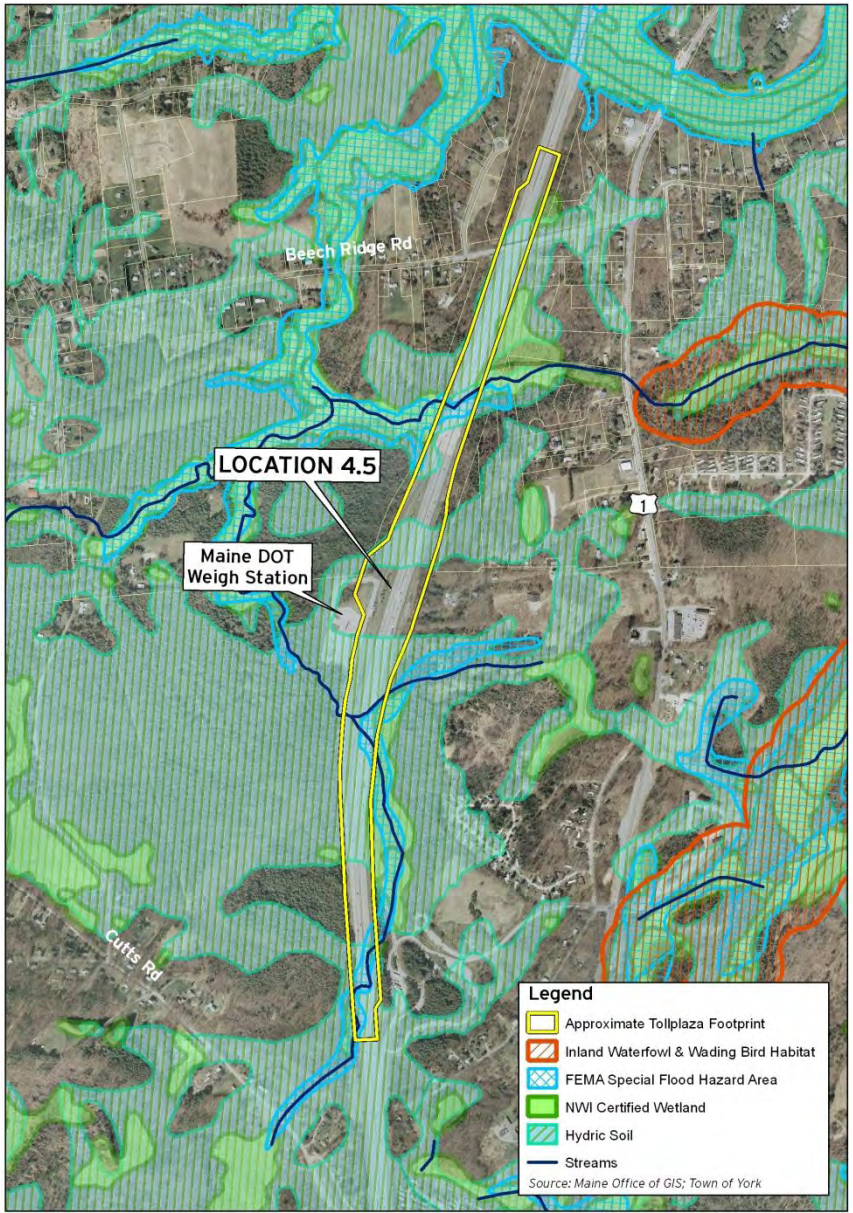
Thinking Ahead

Alternate Site ID and Screening Process



Location 4.5

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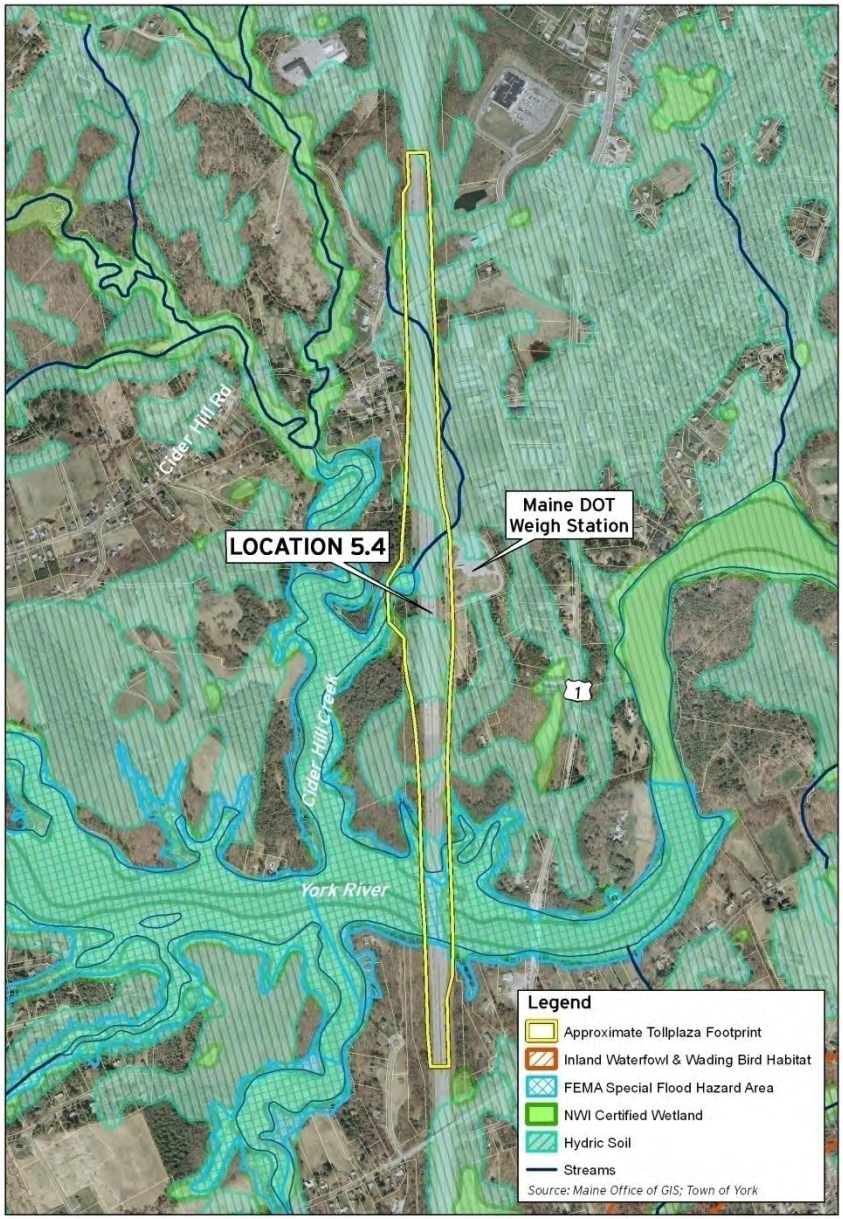
Thinking Ahead

Alternate Site ID and Screening Process



Location 5.4

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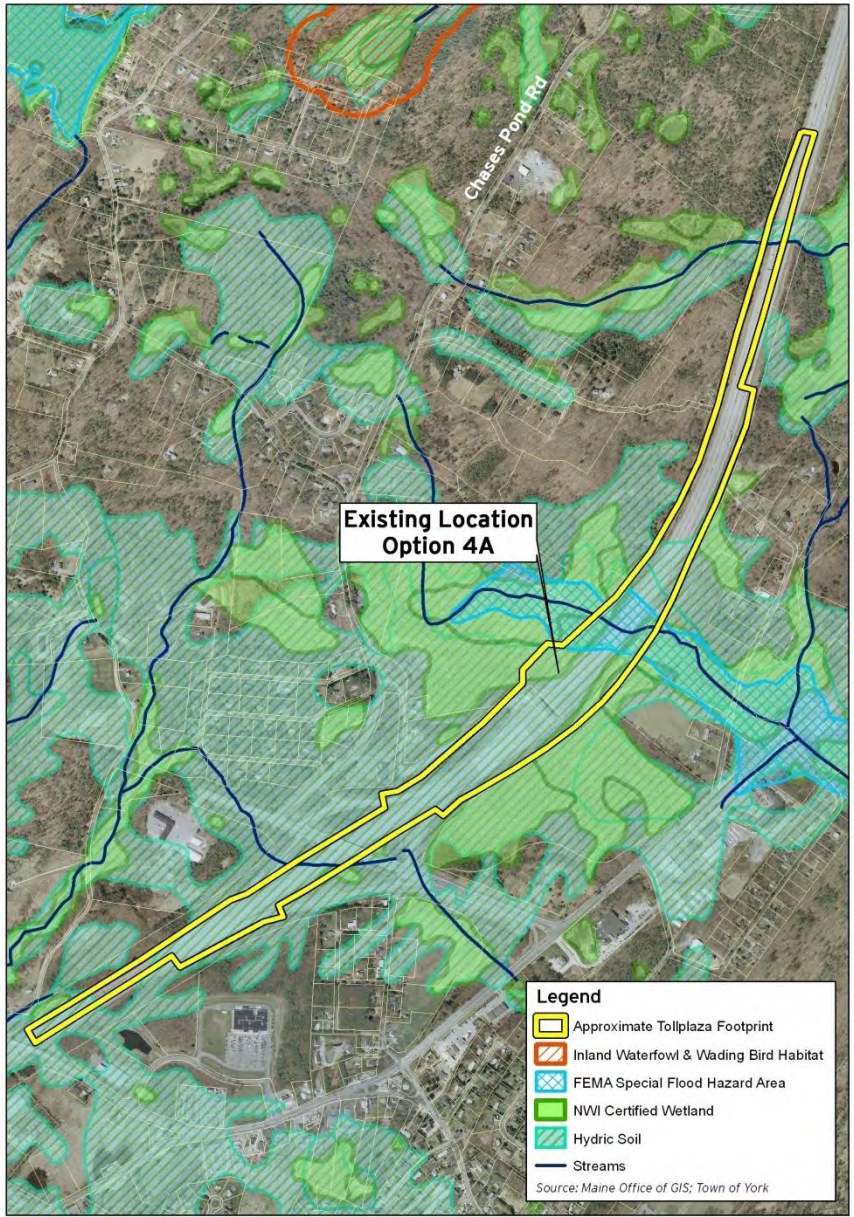
Thinking Ahead

From Existing Site Evaluation



Location 7.3

Option 4A

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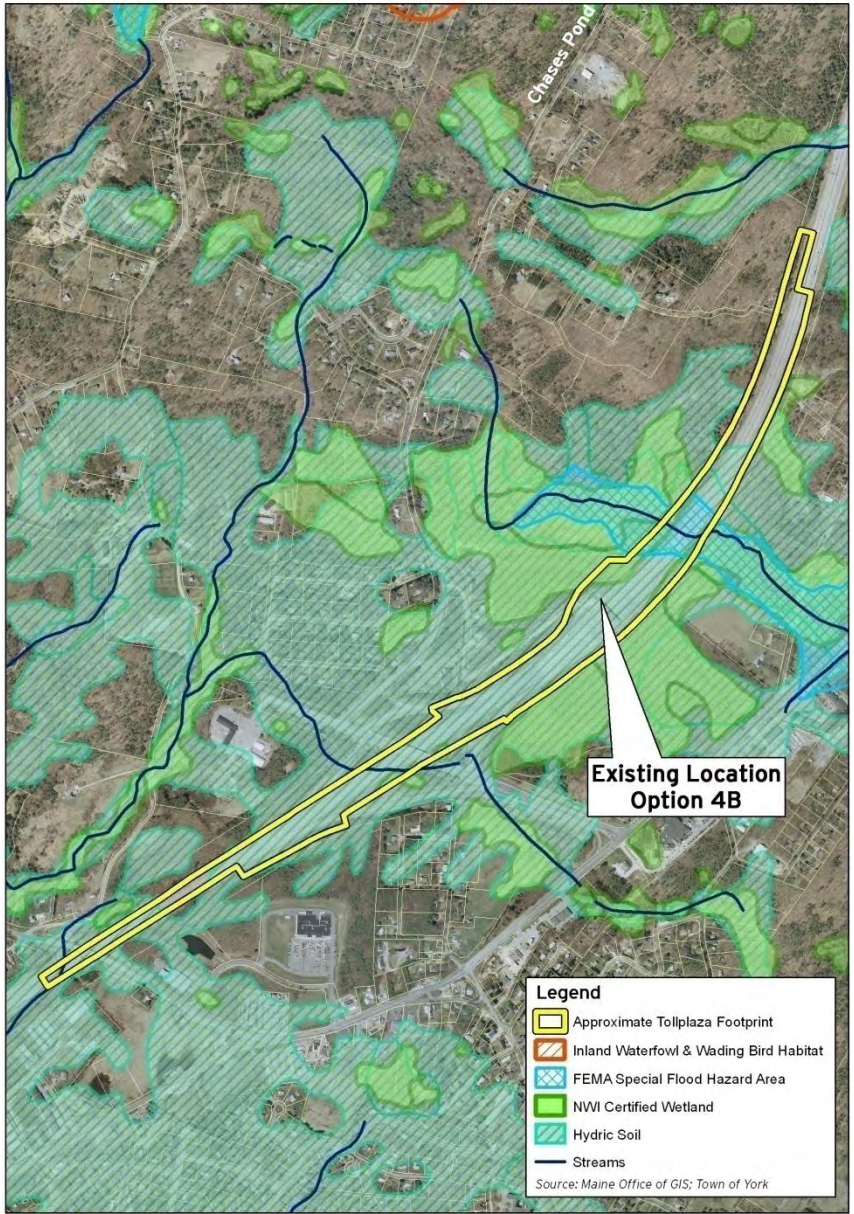
Thinking Ahead

From Existing Site Evaluation



Location 7.3

Option 4B

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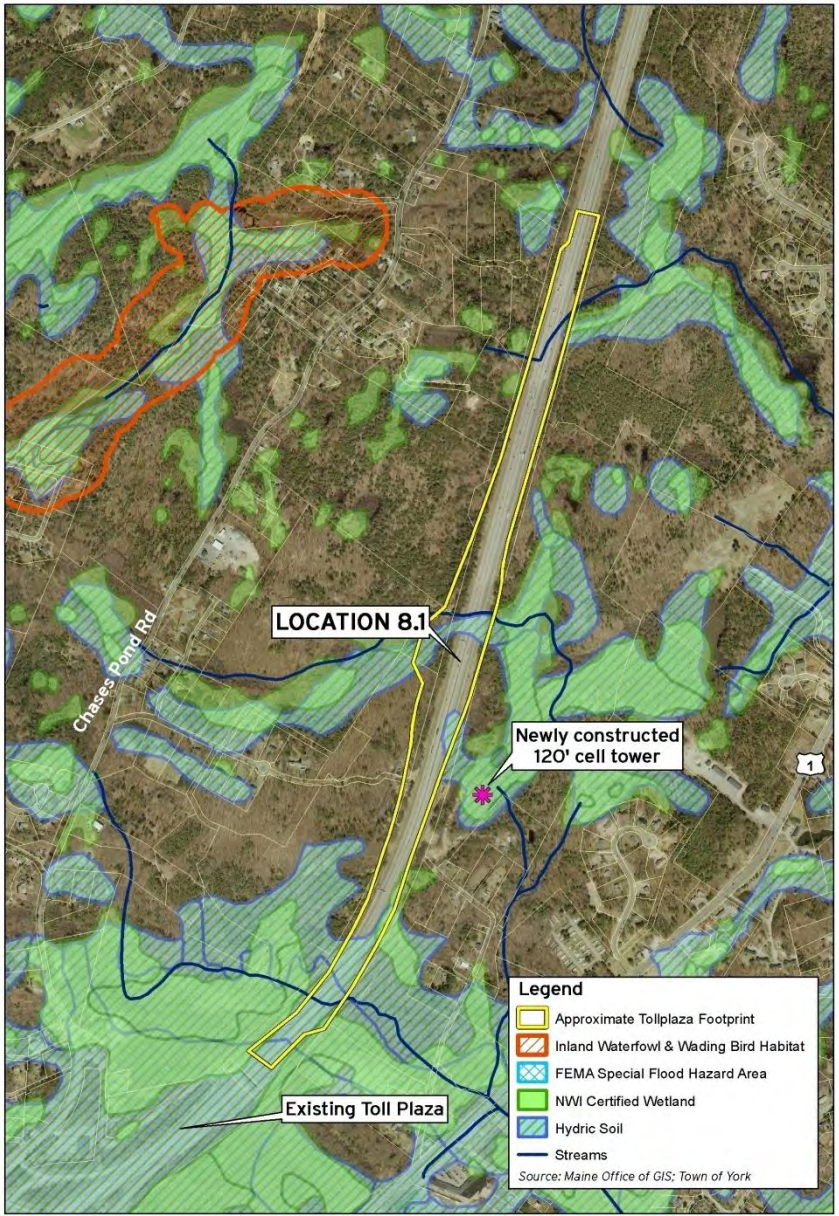
Thinking Ahead

Alternate Site ID and Screening Process



Location 8.1

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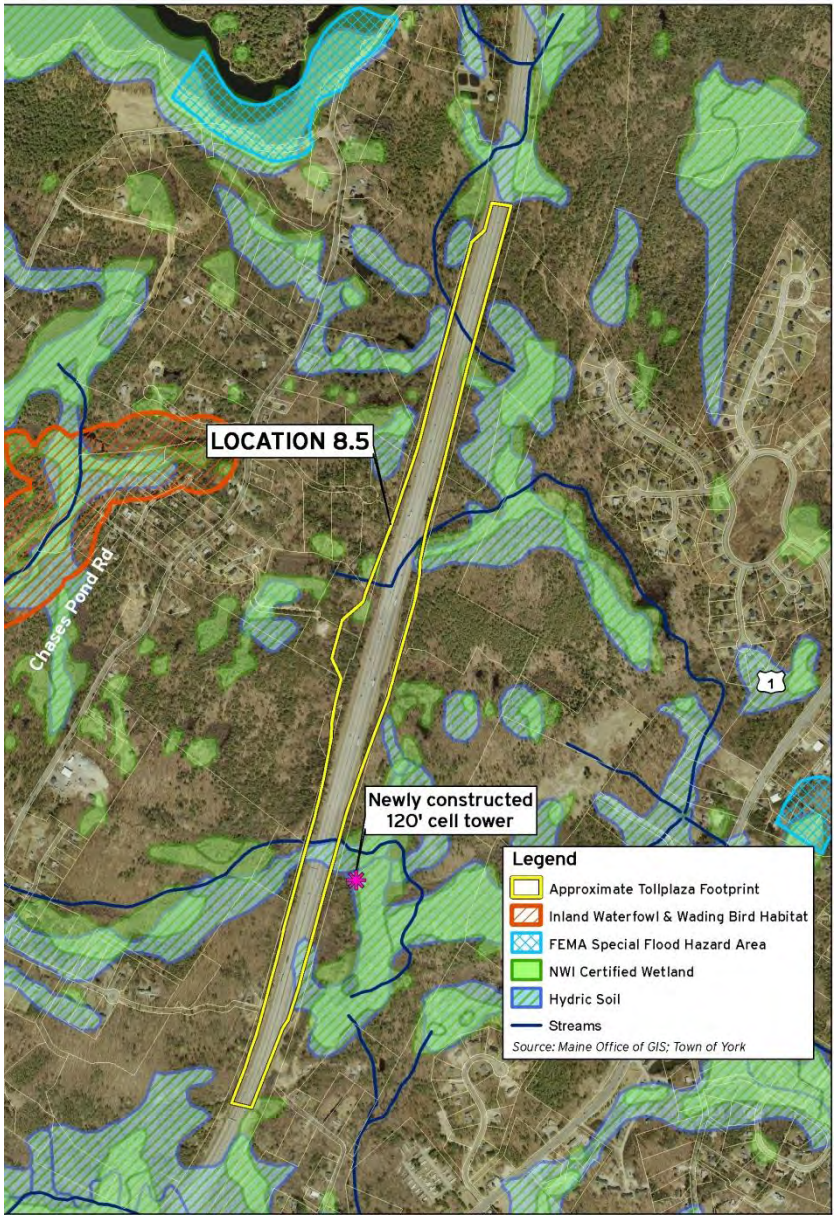
Thinking Ahead

Alternate Site ID and Screening Process



Location 8.5

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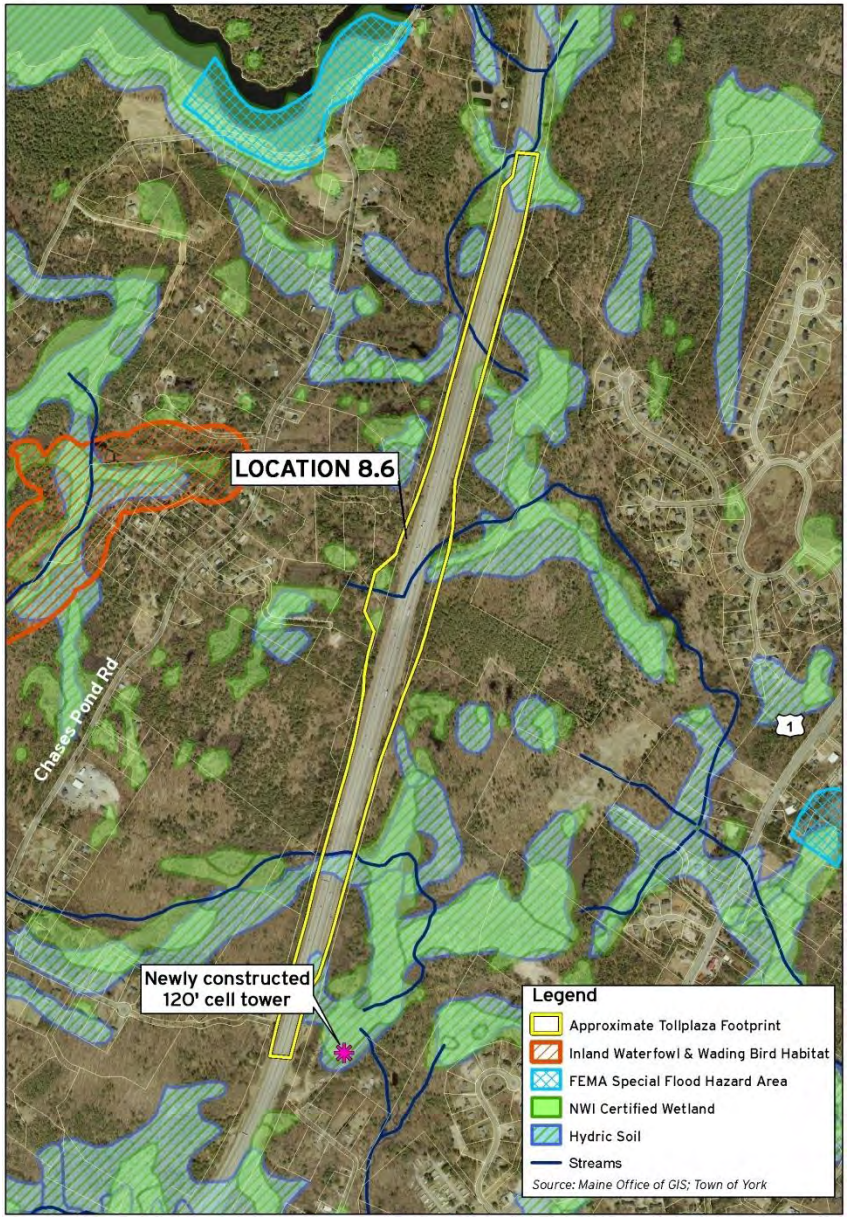
Thinking Ahead

Alternate Site ID and Screening Process



Location 8.6

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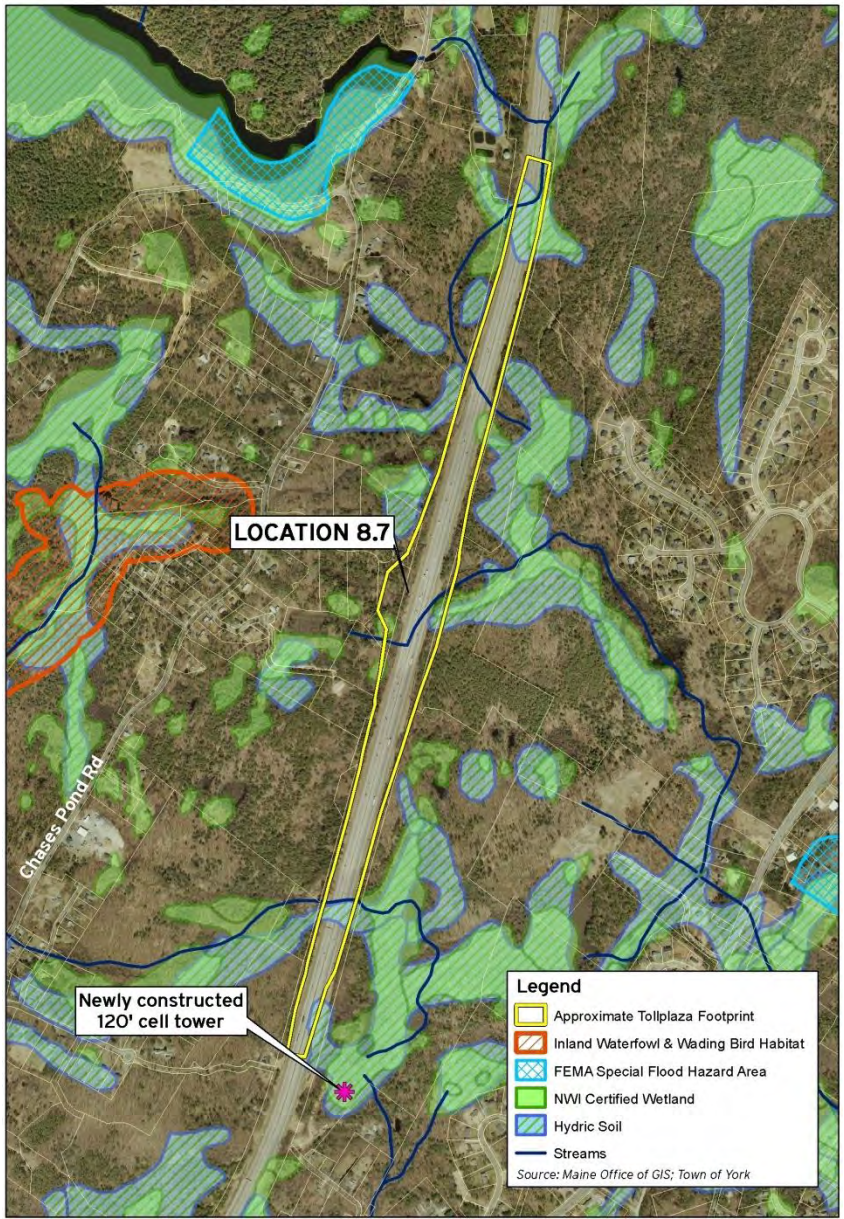
Thinking Ahead

Alternate Site ID and Screening Process



Location 8.7

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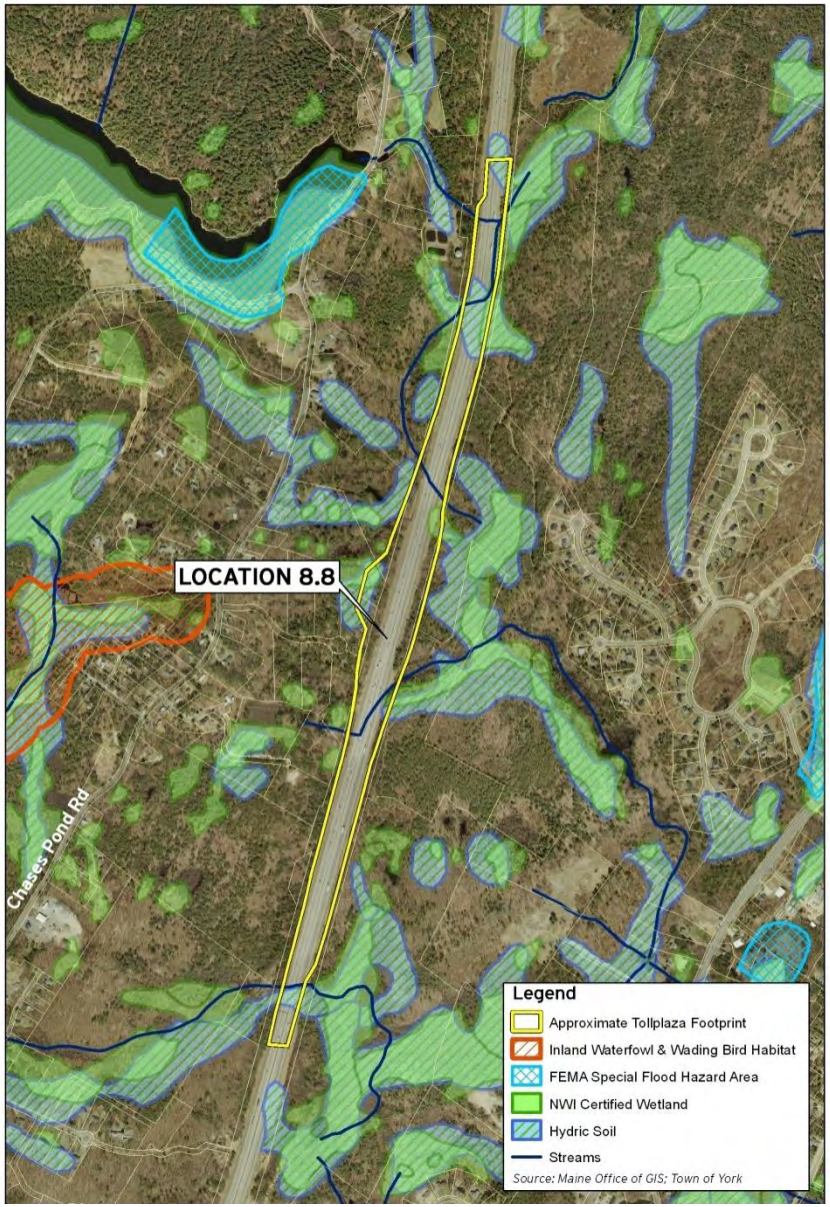
Thinking Ahead

Alternate Site ID and Screening Process



Location 8.8

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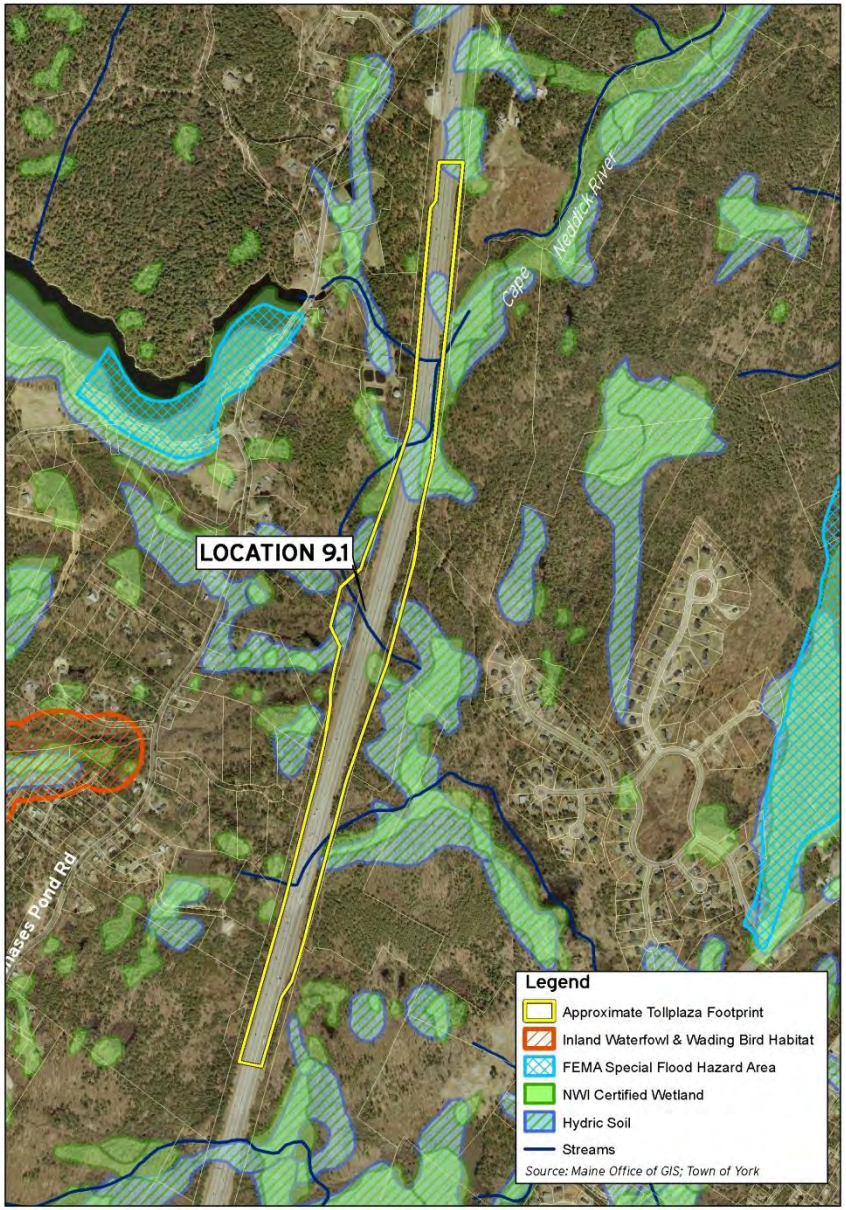
Thinking Ahead

Alternate Site ID and Screening Process



Location 9.1

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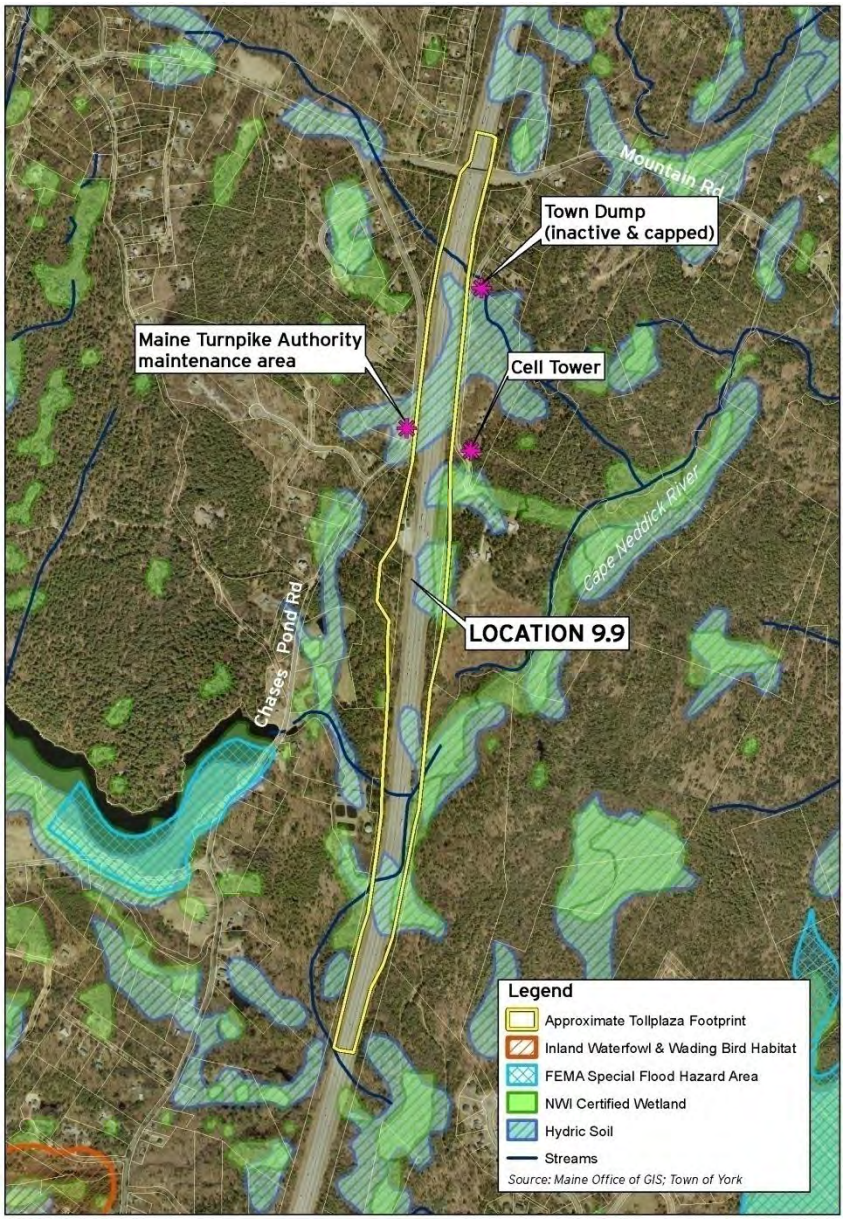
Maine Turnpike Southern Toll Plaza Replacement Study

Thinking Ahead

Alternate Site ID and Screening Process



Location 9.9

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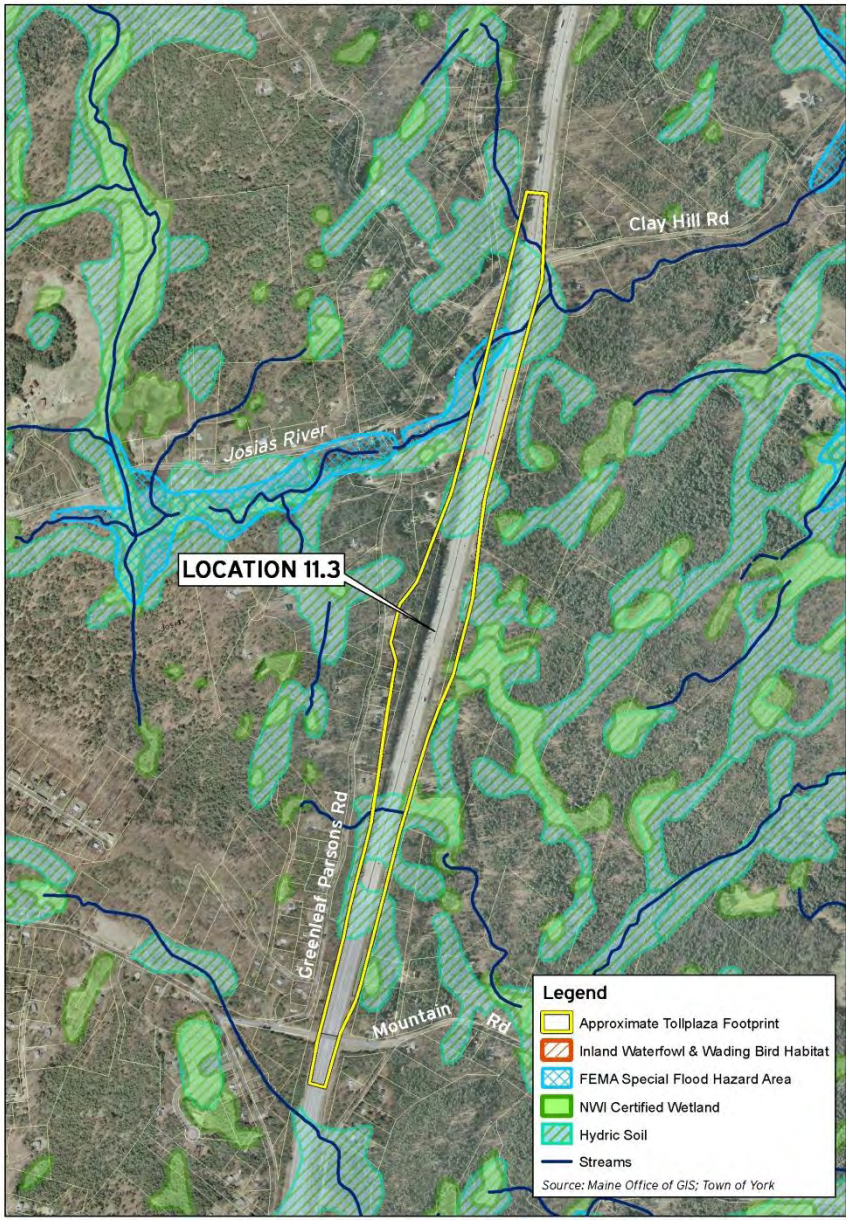
Maine Turnpike Southern Toll Plaza Replacement Study

Thinking Ahead

Alternate Site ID and Screening Process



Location 11.3

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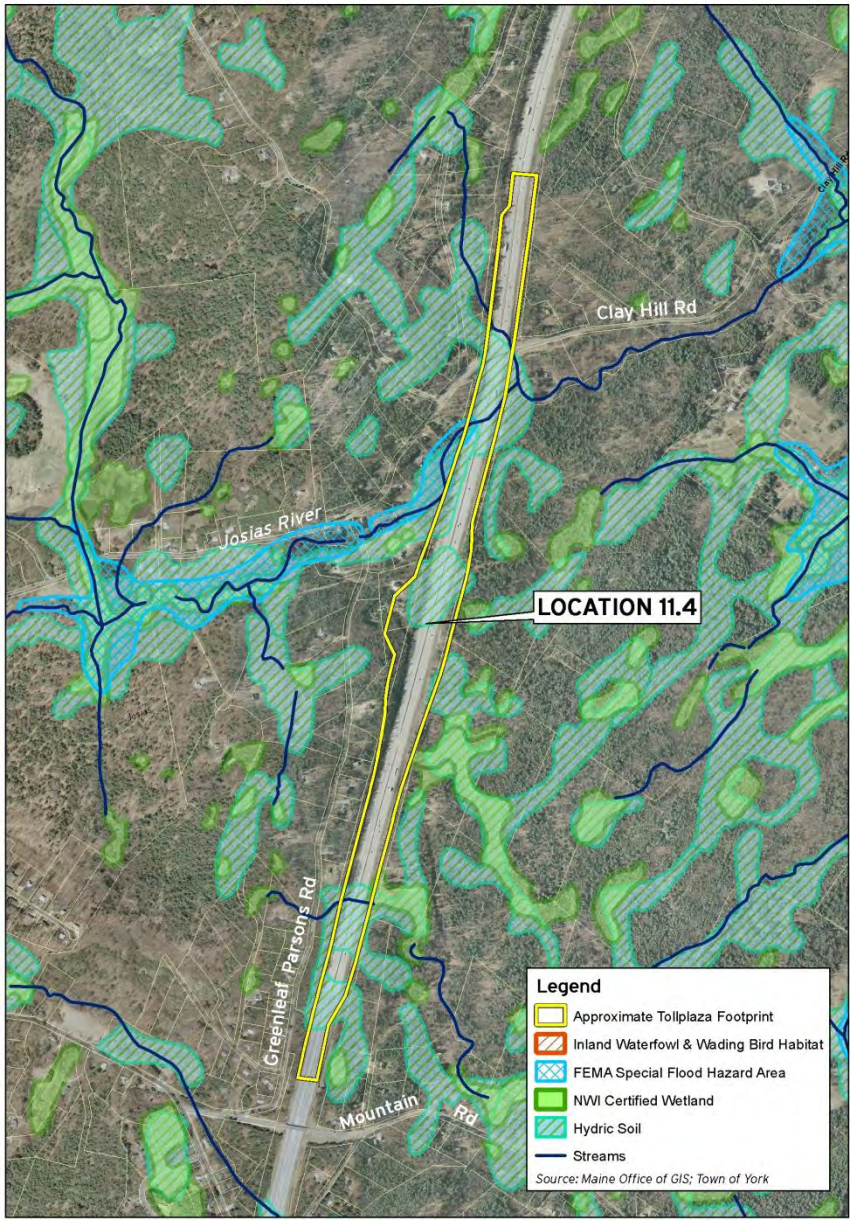
Maine Turnpike Southern Toll Plaza Replacement Study

Thinking Ahead

Alternate Site ID and Screening Process



Location 11.4

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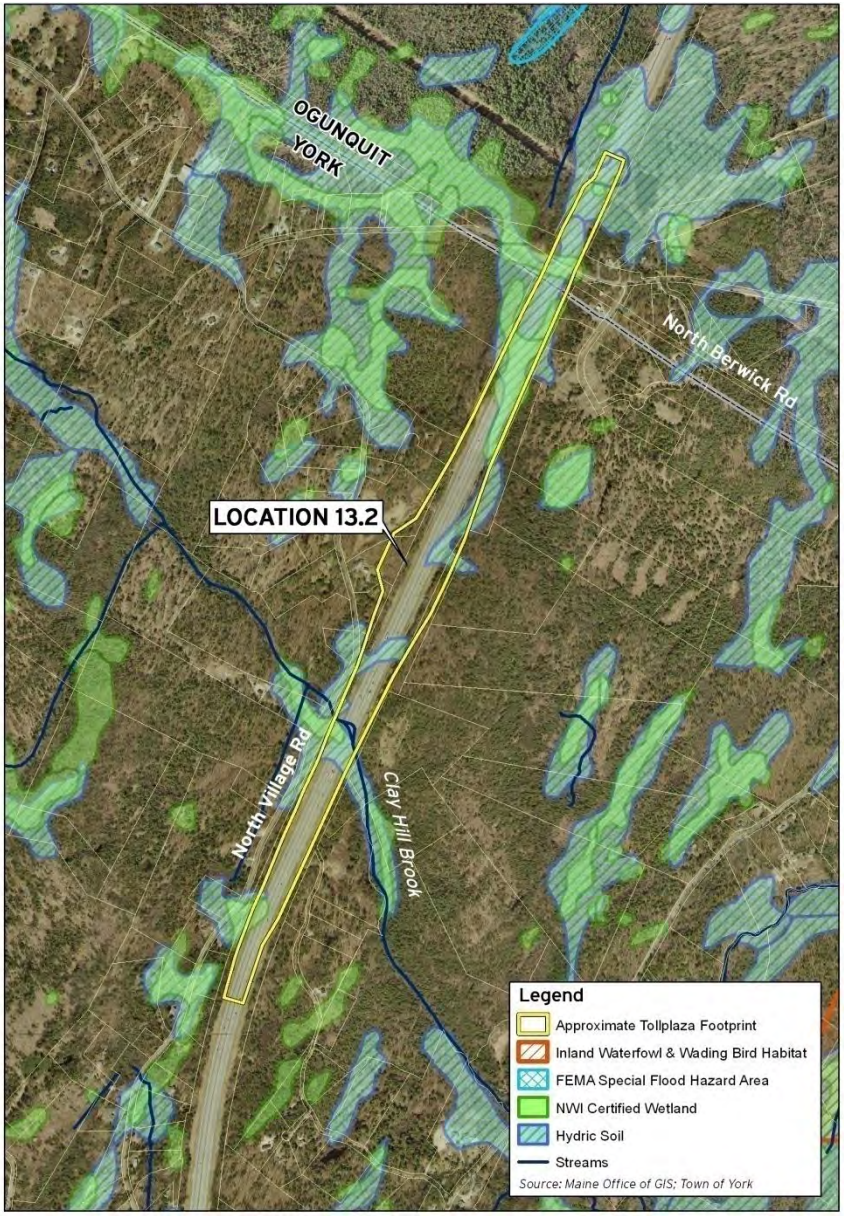
Maine Turnpike Southern Toll Plaza Replacement Study

Thinking Ahead

Alternate Site ID and Screening Process



Location 13.2

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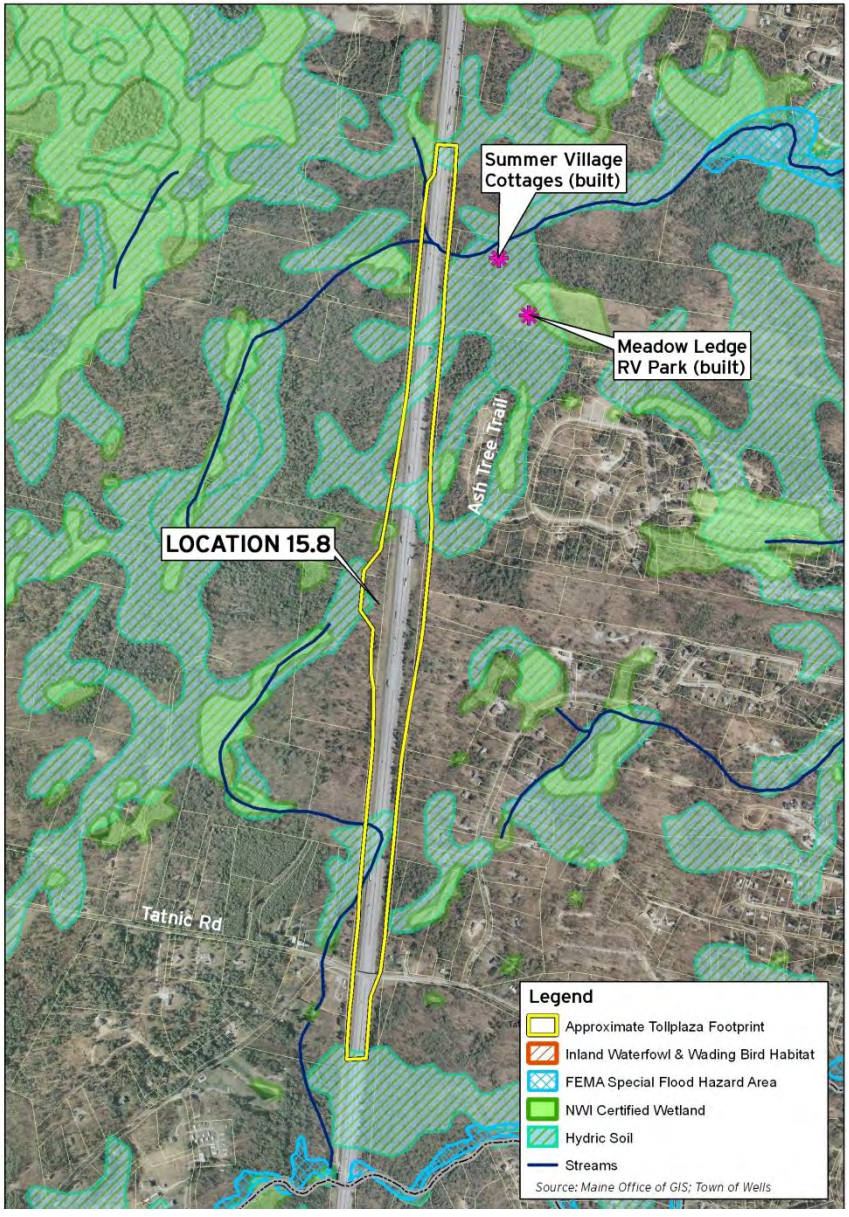
Maine Turnpike Southern Toll Plaza Replacement Study

Thinking Ahead

Alternate Site ID and Screening Process



Location 15.8

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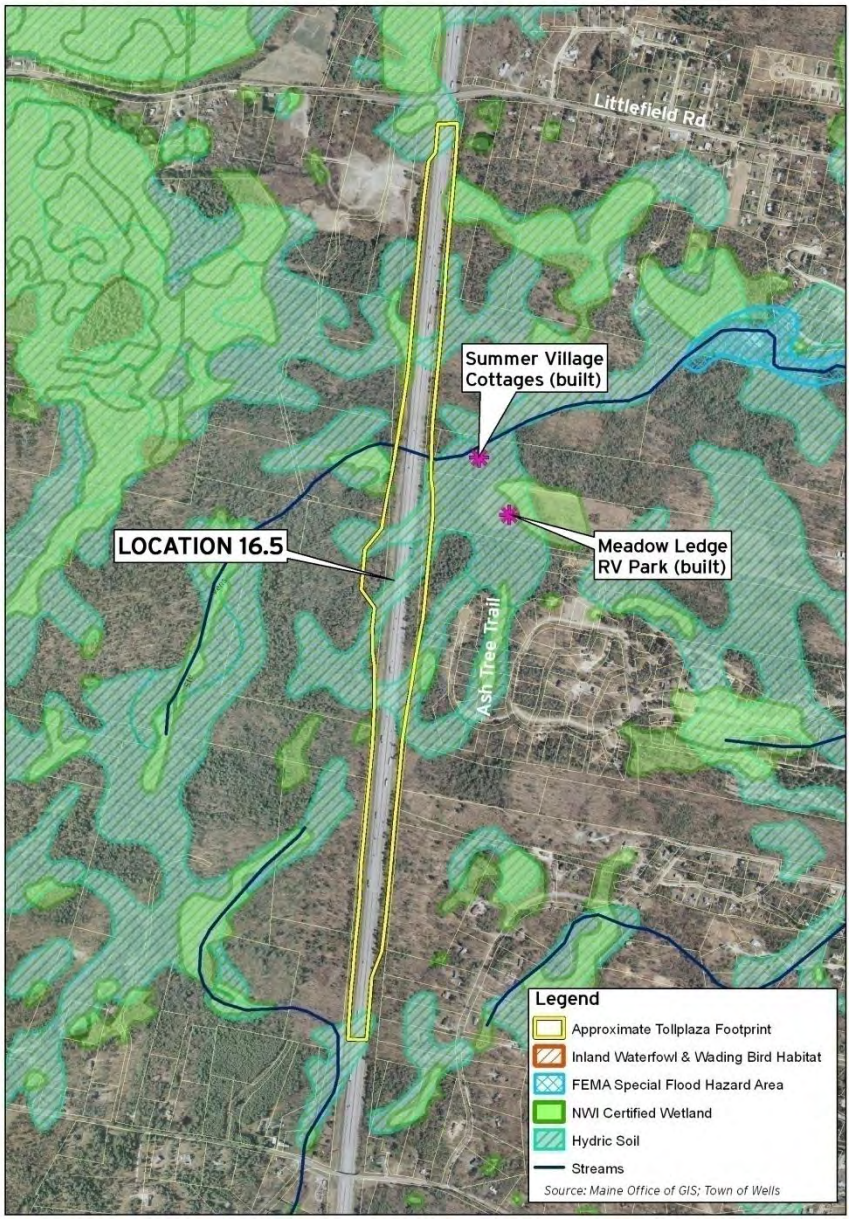
Maine Turnpike Southern Toll Plaza Replacement Study

Thinking Ahead

Alternate Site ID and Screening Process



Location 16.5

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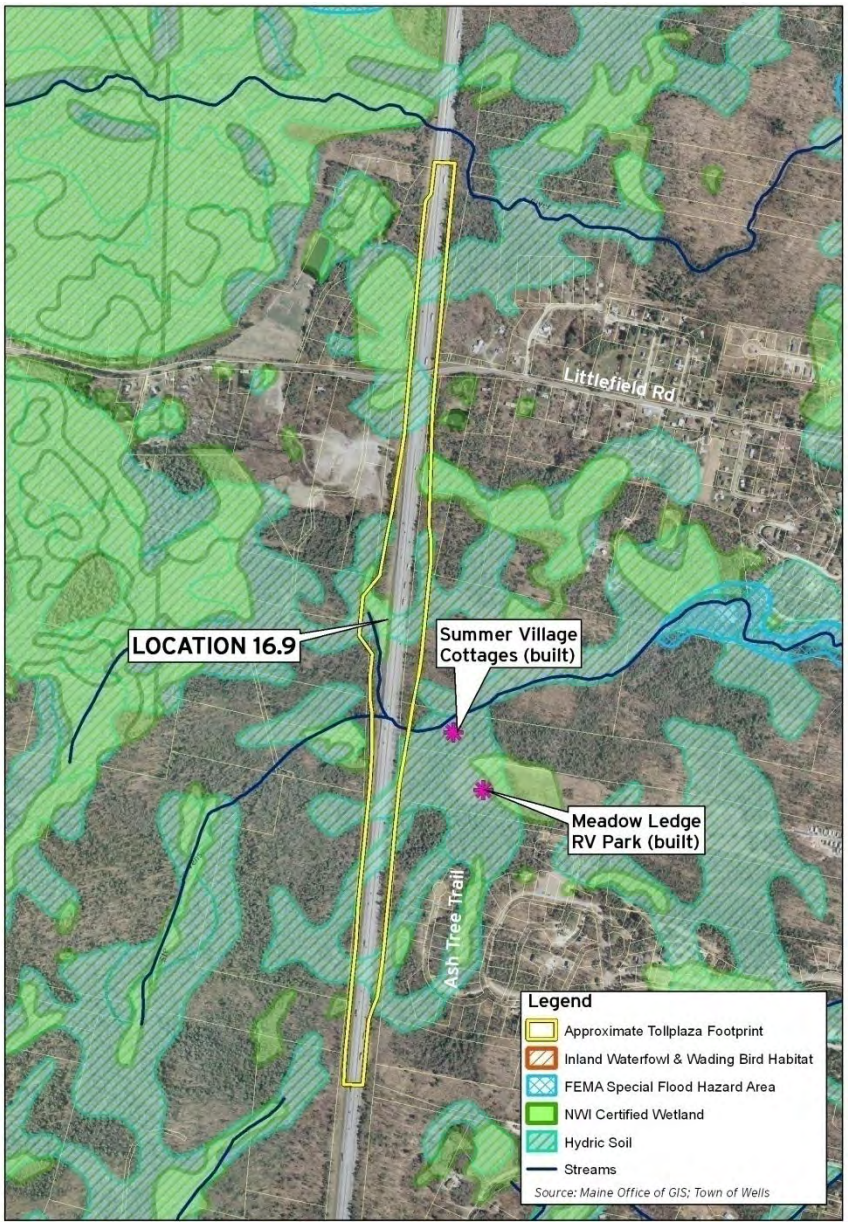
Maine Turnpike Southern Toll Plaza Replacement Study

Thinking Ahead

Alternate Site ID and Screening Process



Location 16.9

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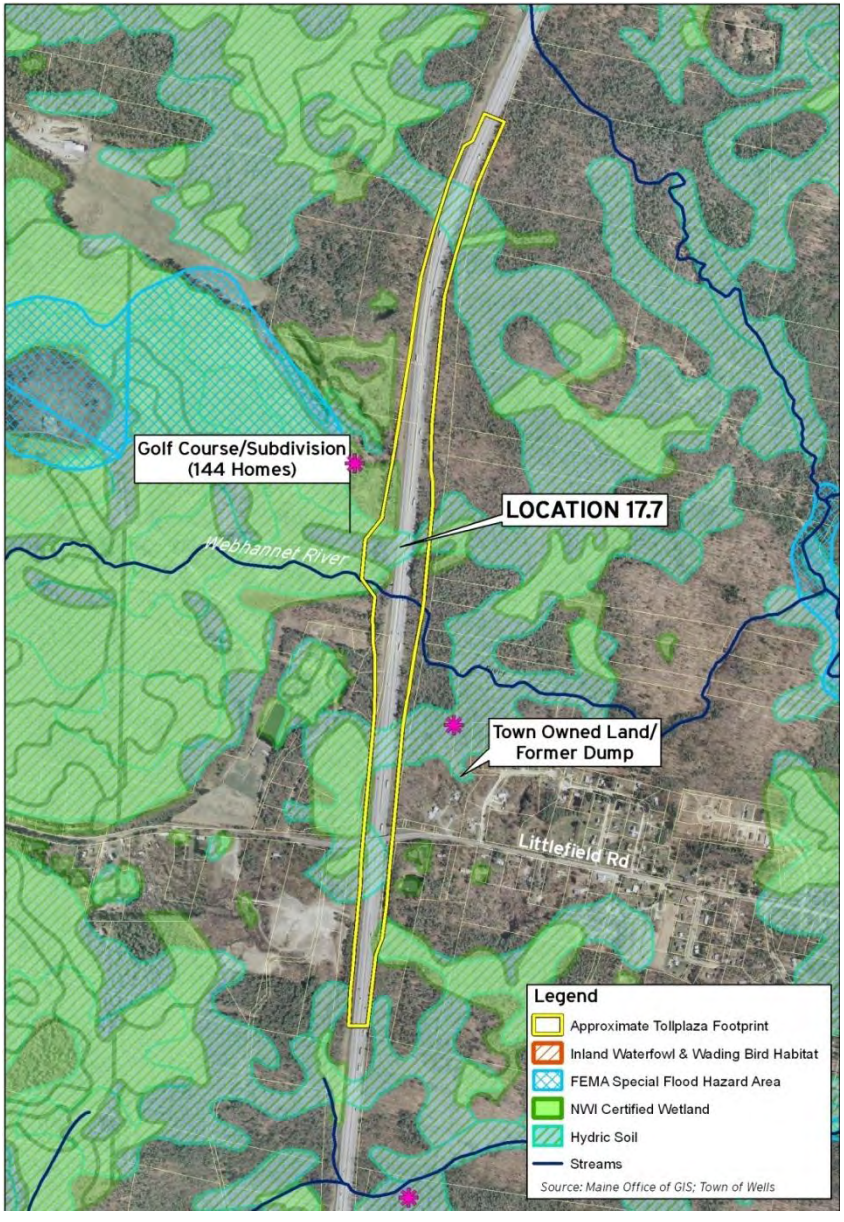
Thinking Ahead

Alternate Site ID and Screening Process



Location 17.7

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Maine Turnpike Southern Toll Plaza Replacement Study

Location\Evaluation Parameter	1	2	3	4	5	6	7	8	9	10	11	12	13
	Engineering Criteria						Natural Resource & Built Environment Impacts						
	Horizontal Alignment	Vertical Alignment	Separation from Interchange (>1 mile)	Separation from Overhead Structure (>2000 feet)	Sight Distance	Satisfies Purpose and Need	Potential Right-of-Way Impacts (Acres)	Potential Wetland Impacts - National Wetland Inventory (acres)	Potential Wetland Impacts - Natural Resource Conservation Services (acres)	Potential Stream Impacts - Maine OGIS (LF)	Potential Floodplain Impacts - Federal Emergency Management Agency Floodmaps (acres)	Potential Home Displacements (Homes)[3]	Homes Within 1000 ft (Homes)
SPRUCE CREEK													
Location 4.5[4]	NOT On Straight Section	At Crest of Hill	Yes	Yes	Good, both directions	NO	0.8	1.8	18.6	958	2.4	0	28
Location 5.4[4]	On Straight Section	At Crest of Hill	Yes	Yes	Good, both directions	NO	6.3	3.0	17.1	711	3.2	2	27
EXISTING LOCATION													
Option 1 (Existing Site, No Build)	NOT On Straight Strecth	NOT At Crest of Hill	No	No	Poor, both directions	NO	0.0	0.0	0.0	0	0.0	0	5
Location 7.3 - Option 4A (Existing Site with Highway Speed Tolling)	NOT On Straight Strecth	NOT At Crest of Hill	Marginal, barrier separated ramps	No	Poor, both directions	MARGINAL	8.1	8.8	28.0	729	4.3	0	41
Location 7.3 - Option 4B (Existing Site with Highway Speed Tolling)	NOT On Straight Strecth	NOT At Crest of Hill	No	No	Poor, both directions	NO	3.3	4.9	22.2	509	2.8	0	32
CHASES POND ROAD													
Location 8.1	On Straight Section	At Crest of Hill[2]	Yes	Yes	Good, both directions	MARGINAL	7.3	0.5	5.7	662	1.2	0	8
Location 8.5	On Straight Section	At Crest of Hill	Yes	Yes	Good, both directions	YES	12.5	0.7	0.6	544	0.2	2	7
Location 8.6	On Straight Section	At Crest of Hill	Yes	Yes	Good, both directions	YES	6.9	1.6	1.4	809	0.6	0	8
Location 8.7	On Straight Section	At Crest of Hill	Yes	Yes	Good, both directions	YES	7.0	2.4	1.7	939	0.5	0	6
Location 8.8	On Straight Section	At Crest of Hill	Yes	Yes	Good, both directions	YES	7.2	1.7	2.7	1487	0.4	0	12
Location 9.1	On Straight Section	At Crest of Hill	Yes	Yes	Good, both directions	YES	7.1	1.6	3.8	1582	0.1	0	9
Location 9.9	On Straight Section	At Crest of Hill	Yes	Yes	Good, both directions	YES	8.4	3.4	6.5	816	0.0	2	34
MOUNTAIN ROAD													
Location 11.3	On Straight Section	At Crest of Hill	Yes	Yes	Good, both directions	YES	11.8	0.3	9.4	454	0.8	5	29
Location 11.4	On Straight Section	At Crest of Hill	Yes	Yes	Good, both directions	YES	8.7	0.2	11.0	667	0.6	1	38
CLAY HILL ROAD													
Location 13.2	On Straight Section	At Crest of Hill	Yes	Yes	Good, both directions	YES	11.1	0.1	3.9	160	Negligible	2	19
TATNIC ROAD													
Location 15.8[4]	On Straight Section	At Crest of Hill	Marginal, would require future barrier separated ramps	Yes	Good, both directions	MARGINAL	11.6	0.4	5.3	593	0.1	0	26
Location 16.5[4]	On Straight Section	At Crest of Hill	Marginal, would require future barrier separated ramps	Yes	Good, both directions	MARGINAL	13.9	1.0	7.6	576	0.4	0	18
Location 16.9[4]	On Straight Section	At Crest of Hill	Marginal, would require future barrier separated ramps	Yes	Good, both directions	MARGINAL	13.5	2.9	9.7	1095	3.3	0	12
LITTLEFIELD ROAD													
Location 17.7	Not On Straight Section	At Crest of Hill	No	Yes	Good, both directions	MARGINAL	22.3	4.2	7.0	466	0.0	0	5
WELLS INTERCHANGE													
Low-Range of impacts							0-7.4	0-2.9	0-9.3	0-527	0-1.4	0	0-17
Middle-Range of impacts							7.5-14.8	3.0-5.8	9.4-18.6	528-1054	1.5-2.8	0	18-29
High-Range of impacts							>14.8	>5.8	>18.6	>1054	>2.8	>0	>29

Footnotes:

1. Location would change tolling structure (plaza south of exit 7). New weight station required to replace displaced weight station. Additional environmental impacts for new weigh station likely but not estimated here.
2. Vertical grade excessive at toll plaza.
3. Taking of any homes is considered a "high-range of impact"
4. Barrier separated ramps to accommodate an interchange would require additional environmental and social impacts. Additional impacts not estimated here.

Maine Turnpike Southern Toll Plaza Replacement Study

Thinking Ahead

Alternate Site ID and Screening Process

Level 2

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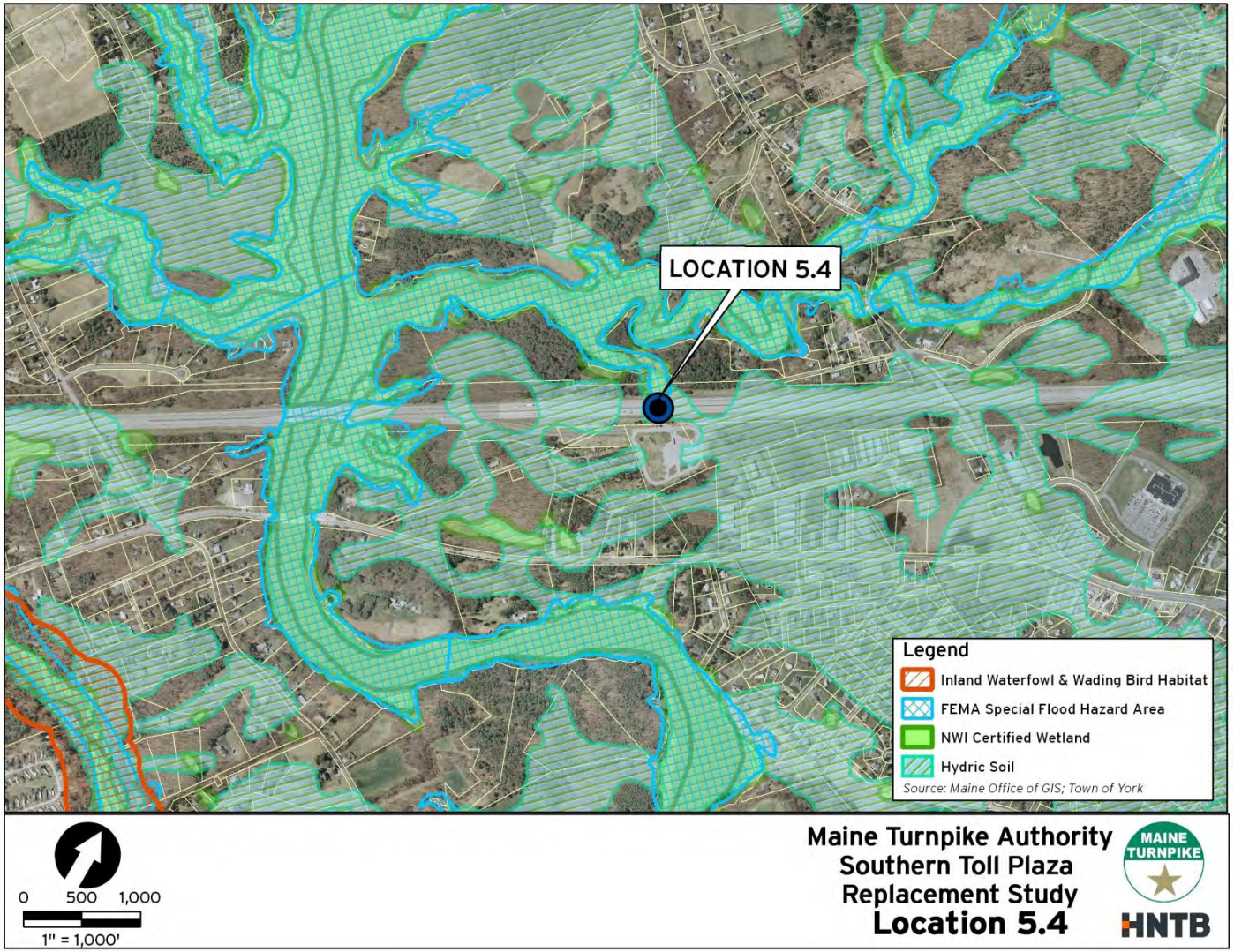
Example of Location Not Advanced



Candidate Site ID and Screening Process

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Maine Turnpike Southern Toll Plaza Replacement Study

Level Two Screening Results

14 Alternate Locations NOT Advanced

- South of Chases Pond Road (Exit 7) – 2 (of 2) locations
- Chases Pond Rd to Mountain Rd – 5 (of 7) locations
- Mountain Road to Clay Hill Road – 2 (of 2) locations
- Clay Hill Road to N. Berwick Road – 1 (of 1) locations
- N. Berwick Rd to Capt Thomas Rd – 0 (of 0) locations
- Capt. Thomas Road to Tatnic Road – 0 (of 0) locations
- Tatnic Road to Littlefield Road – 3 (of 3) locations
- Littlefield Road to Wells Interchange – 1 (of 1) locations

Plus: One Existing Site Option NOT Advanced

- Existing Site – 1 (of 2) options

Maine Turnpike Southern Toll Plaza Replacement Study

Conclusion

Recommendations

- The following three locations, along with the no-build option, are proposed to be further evaluated and compared in Phase II of the Highway Methodology.
  - Advance No Build as required by Permit process
  - Advance Existing Site Option 4A
  - Advance Alternate Site MM8.7
  - Advance Alternate Site MM9.1

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Maine Turnpike Southern Toll Plaza Replacement Study

Discussion

Questions & Answers

Thank-You!

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