3. Buildout Analysis

An important element of the NH Route 104 Access Management Study was the preparation of a buildout analysis based upon existing zoning, land use regulations, and environmental constraints in Meredith and New Hampton. This analysis provides information that can provide valuable input for Planning Board decisions by providing details about future land use, development capabilities, and the amount of additional traffic that could be generated if the corridor was developed to its full potential. The buildout analysis can also further quantify the need for future improvements to the transportation network.

The following is a description of the data collected, the analysis process, an estimate of potential residential lots and commercial square footage if the corridor were to be fully developed, and an estimate of trips generated if full buildout were to occur. The results of this analysis portray a condition along NH Route 104 if each residential and commercial parcel was developed to its ultimate density under current zoning. The buildout serves as a tool to be used to consider future needs and possible improvements to the corridor as well as potential access management strategies.

Data Development

The following is a description of the data development portion of the buildout analysis. As noted below, variations in available data resulted in differences in the process to compile data in similar formats for each community.

Tax Parcel Polygon Development

The town of Meredith provided their parcel data in a Geographic Information Systems (GIS) based format for use in this project. The town of New Hampton previously contracted with Cartographic Associates, Inc. to develop digital parcel data in Computer Aided Design (CAD) format. Considerable work was conducted by LRPC to convert the New Hampton CAD data into a suitable GIS format. This included minimizing errors inherent in this process, such as spatial alignment and polygon completeness.

Assessor Information

Assessor data were obtained from Meredith and joined to the GIS data using each parcel's unique identifier; this was an important step because the assessor parcel acreage was more accurate than what was stored in the GIS data. Assessor data were also obtained from New Hampton and joined using the same method, but acreage data from the tax parcel information did not exist in the assessor database. Acreage for each parcel in New Hampton was calculated using the LRPC's GIS software and then compared with acreage figures contained on the tax maps provided by the town.

Additional Attributes

Attributes that were excluded in the assessor data were added to the database using GIS overlays, aerial photograph interpretation, through field collection, or other processes. These additional data that were necessary for the buildout analysis include the underlying zoning district, minimum lot

size, water and sewer service availability, current land use type, total land area currently being used, and the number of existing residential units.

Environmental Constraints and Other Available Data

Existing data from various sources were used including the National Wetlands Inventory, steep slopes and conservation lands from The Society for the Protection of New Hampshire Forests, Natural Resources Conservation Service soils, and 2003 USGS digital orthoquad (DOQ) color photographs. Detailed wetlands data for Meredith were provided by the town.

The Buildout Process

Building Constraints

Based on current zoning ordinances, an environmental constraints GIS layer was created. This layer represented all the areas that were considered not buildable due to town building restrictions regarding the following: wetlands, hydric soils, slope, conservation lands, and waterbody setbacks, see *Map 2.5: Environmental Constraints*. Soils based lot sizing was also factored for each parcel. Areas that were environmentally constrained were subtracted from the total area of each parcel. Also, through aerial photograph interpretation, areas that were currently in use, such as buildings and parking lots, were identified. These areas were also considered unsuitable for further development for the purpose of this analysis. After all building constraints were calculated, the remainder was defined as the parcel's buildable area.

Parcels that are built on and could not be subdivided further were considered "built-out." Also considered built-out were parcels not likely to be developed due to their ownership status, such as conservation lands, the New Hampton School, and Public Service of New Hampshire land, see *Map 3.1, Development Status*.

A description of the assumptions used during the preparation of the buildout analysis can be found in *Appendix D - Buildout Analysis Assumptions.*

Existing Units

The number of existing residential units for each parcel was determined by field research and a review of each community's assessor data. The maximum number of potential units was calculated based on permitted uses in the zoning ordinances. For example, if a zone permitted both single-family and two-family residences, the two-family value was applied to produce a maximum number of potential units. However, existing single-family homes were not recalculated to meet maximum permitted uses (i.e. two-family homes), they remained as is. The number of potential units was calculated to 1 unit for each potential lot in single-family zones, 2 units for each potential lot in two-family zones, and equaled 1 unit per acre in multi-family zones, see *Figure 3.1, Permitted Uses/Maximum Lot Coverage.*

Figure 3.1, Permitted Uses/Maximum Lot Coverage

Meredith

Zoning District	Permitted Residence Type	Maximum Lot Coverage
Business and Industrial (BI)	Not allowed	75%
Central Business (CB)	Two-family	65%
Forestry and Rural (FR)	Single-family	25%
Residential (R)	Two-family	25%
Shoreline (S)	Single-family	30%

New Hampton

Zoning District	Permitted Residence Type	Maximum Lot Coverage
General Residential (GR)	Single-family	20%
Business/Industrial (BI)	Single-family	50%
Mixed Use (MU)	Multi-family	50%
General Business and Commercial 2 (BC-2)	Single-family	40%
General Business and Commercial 3 (BC-3)	Single-family	30%
Village Precinct (V)	Two-family	Not defined

Potential Lots

The next step was to calculate the number of potential residential lots for each parcel. Potential lots were defined as the number of lots a parcel could be subdivided into, not including the parcel's existing lot. This calculation was based on the amount of non-environmentally constrained land and minimum lot size or soils and slopes based lot sizing. Total lots include potential lots and the existing lot. Existing and total lots are portrayed in *Map 3.2, Total Lots and Potential Future Use*.

Developable Non-Residential Square Footage

Developable square footage was calculated for parcels that have commercial or industrial future land use potential, see *Map 3.2, Total Lots and Potential Future Use*. Two calculations were conducted, the first, where maximum lot coverage and a factor to account for parking, driveway, and landscaping were multiplied. The resulting value was then multiplied by total square footage of parcel. The second calculation, multiplied buildable square footage *(excluding environmentally constrained area or "built" existing lots)* and a factor to account for parking, driveway, and landscaping.

The more conservative of the two calculations was used to determine the amount of land suitable for non-residential development and was later used to calculate potential trip generation, see *Figure 3.2, Buildout Totals by Zone*, Non-Residential section. It is important to note that within this study area only a few parcels exist within the BI zone in New Hampton, and all are considered built-out. Also, the V and GR zones in New Hampton and the FR, R, and S zones in Meredith do not permit commercial development.

Figure 3.2, Buildout Totals by Zone

New Hampton

	Lots				Units				Acreage				
Zone	Existing Lots	Potential Lots	Total Lots	Existing Lots as % of Total Lots	Existing Units	Potential Units	Total Units	Existing Units as % of Total Units	Zone	Total Acreage	Non-constrained Acres	Buildable Acres	Total Potential Non-Residential Square Footage
BC2	16	41	57	28%	22	43	65	34%	BC2	92.3	78.8	56.5	395,196
BC3	25	55	80	31%	17	56	73	23%	BC3	112.6	96.8	75.5	300,467
BI	4	0	4	100%	55	0	55	100%	BI	64.9	57.7	21.0	0
GR	178	569	747	24%	131	585	716	18%	GR	1,642.9	1,101.1	1,001.0	228,807
MU	32	83	115	28%	29	91	120	24%	MU	190.0	152.9	131.7	732,672
V	56	29	85	66%	49	66	115	43%	V	145.5	125.7	88.7	0
TOTAL	311	777	1,088	**29%**	303	841	1,144	**26%**	**TOTAL**	2,248.2	1,612.8	1,374.2	**1,657,141**

Key: BC2 and BC3 = General Business and Commercial, BI = Business/Industrial, GR = General Residential, MU = Mixed Use, V = Village Precinct

Meredith

	Lots				Units				Acreage				
Zone	Existing Lots	Potential Lots	Total Lots	Existing Lots as % of Total Lots	Existing Units	Potential Units	Total Units	Existing Units as % of Total Units	Zone	Total Acreage	Non-constrained Acres	Buildable Acres	Total Potential Non-Residential Square Footage
BI	46	23	69	67%	35	0	75	47%	BI	192.6	109.7	62.1	1,090,888
CB	6	2	8	75%	8	4	12	67%	CB	10.2	10.1	5.3	60,026
FR	162	144	306	53%	131	164	295	44%	FR	1,464.7	754.7	497.2	408,053
R	146	41	187	78%	202	122	324	62%	R	330.7	250.8	116.9	0
S	40	18	58	69%	36	21	57	63%	S	78.0	46.3	24.0	0
TOTAL	400	228	628	**64%**	412	311	763	**54%**	**TOTAL**	2,076.2	1,171.6	705.5	**1,558,966**

Key: BI = Business and Industrial District, CB = Central Business District, FR = Forestry and Rural Residential, R = Residential District, S = Shoreline District

Source: LRPC Analysis

Daily Trip Generation

The Institute of Transportation Engineers publishes a manual containing the average vehicle trips generated for many land uses.[1] This manual was referenced and an average daily trip generation value was applied to the corresponding existing use of each parcel. A high level of detail was used when identifying existing land uses and non-residential building sizes because the manual's values are specific. For example, some commercial trip generation values are based on 1,000 square feet of gross floor area or number of pumps at a gas station. This process led to the calculation of total existing residential and existing non-residential trip values, see *Map 3.3, Existing Trips Generated*.

Total potential trips generated at buildout were also calculated; see *Map 3.4: Potential Trips Generated*. This calculation was based on assumptions developed by each town and the report's authors from LRPC. Each town was questioned about future development of each parcel, in hopes of determining if a parcel would be used for residential, commercial, or other purposes.

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1 Institute of Transportation Engineers, *Trip Generation, 6th Edition*, 1997.

Parcels that were still in question after this process were classified by LRPC according to their location in the corridor, existing use, and surrounding parcels uses, see *Map 3.2, Total Lots and*

Potential Future Use. Where available, detailed knowledge of potential future uses were applied through discussions with representatives of each community. For example, specific trip generation values were applied to a parcel in New Hampton for a planned development of a home improvement store, a supermarket, and a high turnover restaurant.

Buildout Analysis Results

Following the completion of the initial estimates of potential lots, the NH Route 104 Study Committee reviewed the results at a public meeting. LRPC staff also met with town representatives who were asked to provide further information about each parcel, so that the estimates could be refined. This review provided detailed information about built-out lots, current and future uses, new subdivision plans, and ownership.

The buildout was further refined and expanded to include the following: potential units, developable non-residential square footage, and existing and potential trips generated by each parcel.

Figure 3.3, Trip Generation Totals

	Existing			Potential		
	Trips Generated from Existing Residential Units	Trips Generated from Existing Non-Residential Facilities	Total Existing Trips Generated	Trips Generated from Existing and Potential Residential Units	Trips Generated from Existing and Potential Non-Residential Facilities	Total Existing and Potential Trips Generated
New Hampton	1,961	6,275	8,236	8,872	86,069	94,942
Meredith	3,127	8,400	11,527	5,920	54,221	60,140
Total	5,089	14,675	19,763	14,792	140,290	155,082

Totals By Zone

	Existing			Potential		
	Trips Generated from Existing Residential Units	Trips Generated from Existing Non-Residential Facilities	Total Existing Trips Generated	Trips Generated from Existing and Potential Residential Units	Trips Generated from Existing and Potential Non-Residential Facilities	Total Existing and Potential Trips Generated
New Hampton						
BC2	167	117	284	167	22,497	22,664
BC3	87	240	326	230	17,255	17,485
BI	343	52	395	343	52	395
GR	934	758	1,692	6,726	6,427	13,153
MU	77	4,977	5,053	469	39,676	40,145
V	354	131	485	938	162	1,100
Total	1,961	6,275	8,236	8,872	86,069	94,942
Meredith						
BI	10	6,585	6,595	10	48,958	48,967
CB	14	233	247	14	3,632	3,646
FR	1,176	799	1,975	2,697	957	3,654
R	1,622	783	2,405	2,692	674	3,366
S	305	0	305	506	0	506
Total	3,127	8,400	11,527	5,920	54,221	60,140

Key:

New Hampton: BC2 and BC3 = General Business and Commercial, BI = Business/Industrial, GR = General Residential, MU = Mixed Use, V = Village Precinct

Meredith: BI = Business and Industrial District, CB = Central Business District, FR = Forestry and Rural Residential, R = Residential District, S = Shoreline District

Source: LRPC Analysis

The results provide an insightful look at parcels in each community along this important east-west corridor in the Lakes Region. New Hampton has the potential to create 777 more lots and Meredith 228 along this 4,324 acre, 9.5-mile corridor. As shown in Figure 3.2, both towns have the combined potential to develop approximately 3.2 million square feet of non-residential land.

Total existing daily trips generated equal 8,236 in New Hampton and 11,527 in Meredith; see *Figure 3.3, Trip Generation Totals*. Total potential trips increase to 94,942 in New Hampton and 60,140 in Meredith at buildout. At buildout, as defined in this study, total daily trips for the corridor would increase dramatically from 19,763 to 155,082. These numbers only include estimated corridor study area trips generated. As noted earlier, the Study Committee expressed concern about potential commercial and residential development on large parcels just outside the study area. Seasonal variations and traffic generators outside of the corridor if considered would significantly impact the corridor as well.