F i n a l R e p o r t

GORHAM/PORTLAND CORRIDOR ALTERNATIVES ANALYSIS

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Prepared for:

Portland Area Comprehensive Transportation Committee
Portland, Maine

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This document has been prepared in cooperation with the U.S. Department of Transportation, Federal Highway Administration and the Maine Department of Transportation.

The contents of this document reflect the views of the authors who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the views of the Federal Highway Administration or the Maine Department of Transportation. This project does not constitute a standard, specification or regulation.

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PURPOSE AND NEED

Chapter One

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1.1 STUDY BACKGROUND

Over the past decade, the Gorham/Portland Corridor has been the subject of extensive technical analysis to determine appropriate improvements for the transportation infrastructure. ***The purpose of this study was to define the most appropriate and feasible transportation investment strategy for the corridor which addresses <u>both</u> current transportation problems and those anticipated over the next 20 years.***

The study was conducted under the auspices of both federal Major Investment Study (MIS) guidelines and the Maine Department of Transportation (MDOT) Rule for the Maine Sensible Transportation Policy Act (STPA). Both legislative mandates required a thorough evaluation of the full range of reasonable alternatives for addressing current and anticipated corridor needs.

The study area (shown in Figure 1) basically comprises the same geographic area as that covered in a November 1993 study of the Route 25 corridor prepared by MDOT. The corridor includes the region's principal concentrations of employment and of retail activity: the Portland Peninsula and the Maine Mall/Jetport area. The corridor is also home to major employers (e.g., S.D. Warren in Westbrook; University of Southern Maine (USM) in Gorham and Portland); several industrial parks (i.e., in Gorham and Westbrook); key subregional centers for retail, banking, and other services (e.g., Gorham Village, downtown Westbrook); and numerous concentrations of both long-standing and newly-built residential areas.

This study was conducted by the Portland Area Comprehensive Transportation Committee (PACTS). Direction during the course of the study was provided by an Advisory Committee (see membership list at the front of this report). Public input was solicited through a series of public meetings, interviews of area residents, active promotion of the project through the media, and personal contacts with local stakeholders.

This study made extensive use of the information compiled in previous studies which addressed at least portions of the study corridor, including:

- Route 25 Corridor Study, Maine Department of Transportation, November 1993
- Portland Area Interchange Study, Maine Turnpike Authority, January 1993
- Gorham Center Transportation Study, PACTS, December 1995
- Westerly Connector Study, Maine Turnpike Authority and Maine Department of Transportation, April 1988
- PACTS Travel Demand Management Study, 1994
- PACTS Bicycle/Pedestrian Plan, 1995

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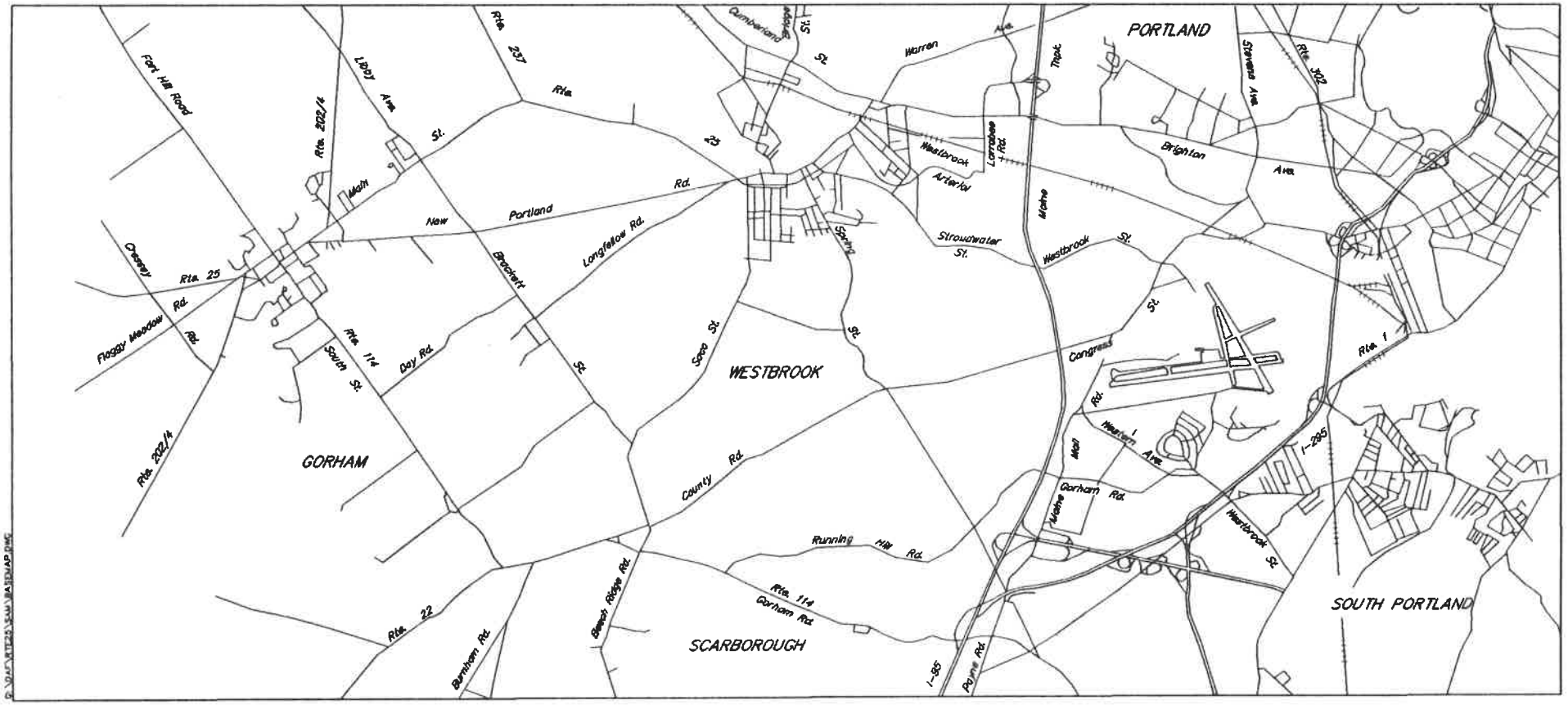


Figure 1: Gorham/Portland Corridor Study Area

0 2000 4000 Feet

Original Base Map Developed
by Vanasse Hangen Brustlin, Inc.
Watertown, Massachusetts

As a demonstration of the seriousness and longevity of the transportation problems which have plagued Gorham Village in particular, it is interesting to note that (1) the 1960, 1972, 1986, and 1992 versions of the Gorham Comprehensive Plan called for a relief route for through traffic in the village; (2) in 1977, Maine DOT completed a preliminary design for a new roadway from Route 25 west of the Village to Route 114 south of the Village; (3) in 1978 Maine DOT completed a regional study which among its recommendations included a bypass of the Village; and (4) in 1980 and 1989 the Town of Gorham commissioned studies of on-street parking and traffic flow improvement needs along Main Street/Route 25.

1.2 PURPOSE AND NEED FOR CORRIDOR IMPROVEMENTS

As part of the initial problem identification and quantification phase of this project, five existing and evolving transportation issues facing the Gorham/Portland corridor were defined.

1.2.1 Issue 1: Mobility for Motorists

There currently is a ***high level of traffic congestion at several key points in the study corridor*** including Gorham Village, North Scarborough/South Gorham where Routes 22 and 114 overlap, downtown Westbrook, the Exit 8 area, Brighton Avenue, and Congress Street. This congestion causes an increase in motorist travel time and reduces the flexibility of motorists who are faced with driving in the corridor. Traffic density on Route 25 (and on Route 22 in the section where it runs concurrent with Route 114) makes entry from side roads and driveways very difficult.

Traffic congestion throughout the corridor occurs during both the morning and evening peak periods, Monday through Friday, and on weekends in Gorham Village.

This traffic congestion along the corridor's principal roadways has caused some traffic to divert to alternate routes. Some of the traffic has shifted to appropriate parallel paths, but others have ***diverted to inappropriate routes*** (e.g., neighborhood streets).

Traffic congestion is forecast to worsen over the next 20 years. There is expected to be an increase in the number of vehicle-trips and in the miles traveled by vehicles in the corridor. Residential growth in Gorham, Standish and other communities west of Gorham will fuel much of the growth in commuter travel in the corridor.

1.2.2 Issue 2: Mobility for Users of Alternative Travel Modes

While it is important to improve current levels of motorist mobility, the ***availability of non-auto modes must be increased and travel by these non-auto modes must be promoted and encouraged.*** The personal mobility needs of all travellers must be ensured if the region's economy and the overall quality of life for the corridor's residents, visitors, and workers are to be maintained or improved. Mobility requires the provision of capacity within the transportation system to move people into, within, and out of the corridor by all means available (e.g., auto, pedestrian, transit, bicycle).

There is a general lack of travel mode options available to residents and workers in the corridor. The Greater Portland Transit District (METRO) provides transit service in the corridor within and between Westbrook and Portland. USM operates shuttle bus service (on days that USM is in session) for its staff and students between Gorham and Portland/South Portland and within Portland. However, most residences in the corridor are not within a close walk of any all-day, fixed-route transit service. There are only limited efforts to promote carpooling, vanpooling, and transit in the corridor. Bicycle facilities in the corridor are also limited.

1.2.3 Issue 3: Transportation System Safety

A safe transportation system is expected by all users of the corridor's transportation system. This concern for safety affects motorists, pedestrians, transit patrons, bicyclists, and any other users of the transportation system. Each traveler is concerned that the chances (or opportunities) for accidents are minimized and that the chances for severe accidents (i.e., those involving injuries) are likewise minimized. At the same time, even the perception of unsafe conditions can affect travel patterns. For example, motorists might avoid a congested intersection or avoid making a left turn across traffic into a business establishment. A commuter might choose to not take transit because of the inadequate pedestrian facilities leading to a bus stop. A study area worker might choose to drive his/her car for midday errands to nearby retail sites because walking conditions are unsafe.

Pedestrian safety and mobility often take a backseat to the mobility of motor vehicles. ***There are numerous locations within the corridor where there is a significant volume of pedestrians and where pedestrian safety and mobility could be improved***, including along and near Bill Clarke Drive in Westbrook and throughout the Gorham Village commercial district.

1.2.4 Issue 4: Goods Movement

The Gorham/Portland Corridor is an integral part of the region's freight transportation system. In fact, Route 25 (between the Maine Turnpike and Gorham Village) and Route 202 (west of Gorham Village) are part of the National Highway System in recognition of their importance in the state in providing "an interconnected system of principal arterial routes which will serve major population centers, international border crossings, airports, public transportation facilities and other major travel destinations, meet national defense requirements, and serve interstate and interregional travel." A wide variety of commodities currently pass through Gorham Village by truck. These include logging and pulp trucks, oil tank trucks, mobile homes on trailers, etc.

Conversely, ***the movement of trucks through the corridor is a concern to corridor residents*** because of their noise, because they add to overall traffic congestion, and because of residents' concern over the safety of the transportation of oil and hazardous material through a congested and built-up area.

1.2.5 Issue 5: Land Use Compatibility

The important relationship between transportation systems and land use is recognized as key to the ultimate success of this study to provide solutions. A primary function of the local-service elements of a transportation network is to provide accessibility for adjacent land uses. Many businesses in the corridor (e.g., in Gorham Village, in downtown Westbrook, in various industrial parks, at the Exit 8 interchange area, and on the Portland peninsula) depend on the road network daily for access to customers, suppliers, and employees. Therefore, the quality of the transportation system has a direct economic impact on the region.

Likewise, the types and character of land uses feeding the corridor dictate transportation system needs. For example, low-density, dispersed residential subdivisions, with homes set a significant distance from the nearest arterial road serving them, dictate a reliance on the personal automobile and effectively eliminate the potential for fixed-route public transit service to such areas.

In addition to the long-term goal of influencing land use patterns to support the efficient functioning of the transportation system, it is just as critical that the transportation system be appropriate to the various existing land uses it serves. For example, while the road network should provide adequate accessibility to businesses, it must also serve to protect residential neighborhoods from undesirable levels of through-traffic and to respect the character and functions of historic districts.

1.2.6 External Constraints on Potential Solutions

The problems and issues cited above emphasize preservation and improvement of the "human" environment in the Gorham/Portland corridor. As potential solutions were expressed and evaluated by the Advisory Committee, it was important to recognize the need to balance these human goals (which deal with safety, mobility, and a balance between land use and transportation) with the need to preserve, and where possible protect, the physical environment. Specific concerns were raised over any actions which could affect the region's air quality (both regionwide and at the individual site-level), noise levels (especially near residential areas and other sensitive receptors), and water quality in the corridor.

It is clearly recognized that the program of actions recommended in this study will need to compete for funding and priority with other worthy projects in the region and throughout the state. Therefore, capital and operating costs (and indirect costs and benefits) were estimated for each option under consideration. The ability of an action to be funded and its cost-effectiveness are also critical criteria which were used to evaluate potential solutions.

1.3 SCREENING AND SELECTION PROCESS

1.3.1 Decision-Making Process

A schematic of the decision-making process used in this study is presented in Figure 2. After the Advisory Committee identified mobility needs and problems in the study corridor, a Purpose and Need Statement for transportation issues in the corridor was developed. This statement framed the development of evaluation measures and criteria which were used to screen alternatives and to ultimately select a Locally-Preferred Strategy.

A list of potential alternative concepts was compiled by the Advisory Committee based in part on public forums. The evaluation of specific alternatives and the recommendation of a Locally Preferred Strategy were accomplished by a three-step screening process:

Screen One: Fatal Flaw Analysis -- The major purpose of the Fatal Flaw screen was to identify likely environmental, cost, operational and physical impacts which are so severe that implementation of a particular alternative would ultimately be precluded. The initial screen concentrated on environmental, community impact, and cost factors, such as impacts on historic or cultural resources, disruption to the desired character of a community, and order of magnitude costs. Based upon this evaluation, the number of conceptual alternatives was reduced to twelve from several dozen potential concepts.

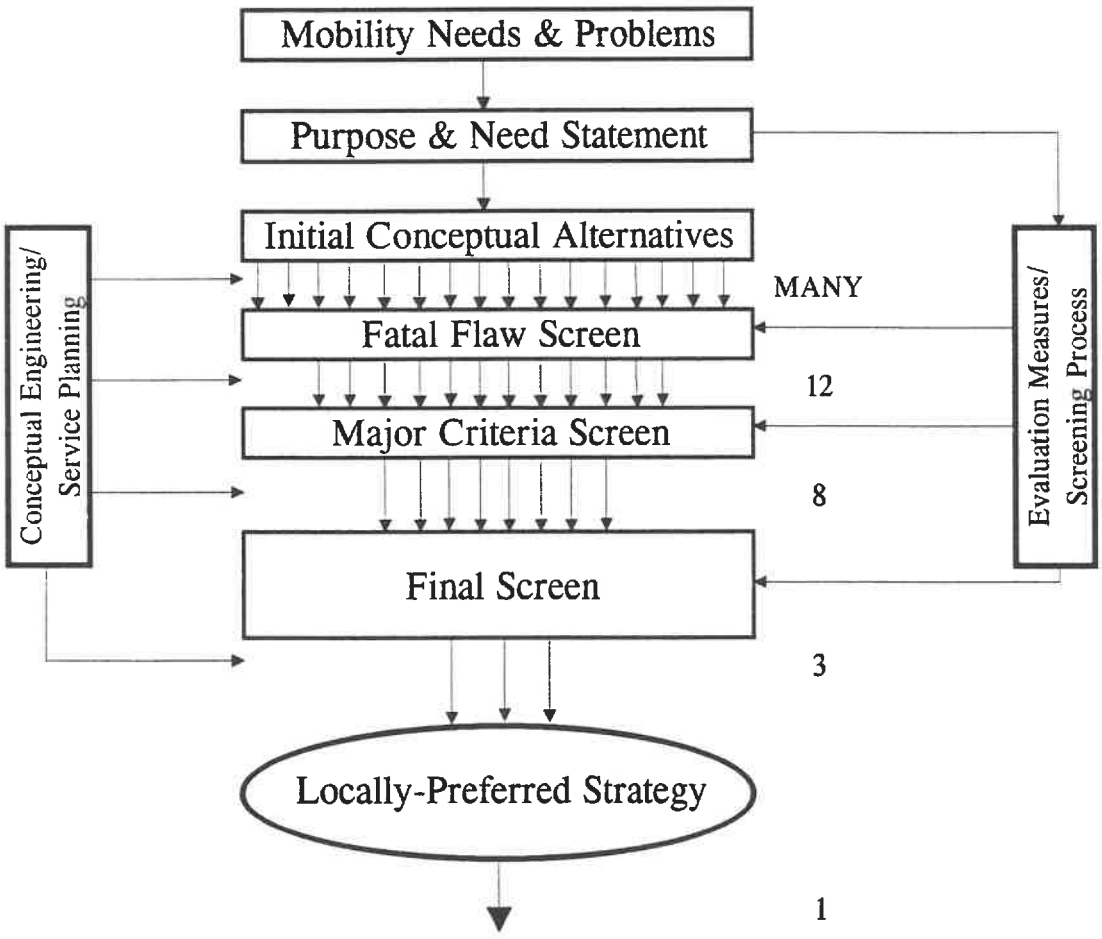
Screen Two: Major Criteria -- The alternatives that survived the fatal flaw analysis were refined and redefined to include combinations of transportation modes that were then evaluated in Screen Two. This evaluation focused on travel demand and capacity of the transportation system and the benefits of the conceptual alternative toward the achievement of overall transportation system goals in the study corridor. Based upon this evaluation, the twelve alternatives were reduced to eight alternatives for further refinement and analysis.

Screen Three: Selection of Locally Preferred Strategy (LPS) -- Building on the findings of the two previous screenings, the alternatives remaining after Screen Two were again refined and combined to form eight multi-modal alternatives. The remaining alternatives were evaluated at a level of detail necessary to draw comparisons among the different alternatives. The evaluation was structured to provide a point of departure for more detailed environmental evaluation that will be conducted as part of the preparation of future environmental documentation for federal review and approval. The product of this final screen was the identification of a Locally Preferred Strategy (as described in Chapter Seven).

1.3.2 Public Participation Process

Opportunities for public participation were provided throughout the Gorham/Portland Corridor Alternatives Analysis and at key decision points. The goal of the public participation program was to ensure that each step of the study included extensive input by the general public, interested groups, and government agencies. Public involvement activities were scheduled to ensure timely consideration of public input with respect to the technical work.

Figure 2: Decision-Making Process for Gorham-Portland Corridor Alternatives Analysis



T.Y. Lin International

Figure2.xls

The program for public participation addressed several kinds of audiences, including the general public, residents and businesses in the Corridor, elected and appointed representatives, and government agencies. The PACTS' public participation objectives were to disseminate information about the study to the general community and to directly affected communities; to obtain full continuous open and fair public participation throughout the entire program; to respond to local desires; and to comply with Maine Sensible Transportation Policy Act and federal MIS requirements for public participation.

A Gorham-Portland Corridor Advisory Committee was formed with representatives from each of the corridor communities and from several public bodies. The Committee had three representatives from Gorham, three from Westbrook, two from Portland, and one each from Scarborough, Buxton, Standish, Windham, and South Portland. The Committee also had representation from the Greater Portland Transit District, the University of Southern Maine, Southern Maine Regional Planning Commission, the Maine Turnpike Authority, and the Maine Department of Transportation. A citizen also served as a "spokesperson for alternative modes of travel."

The following specific efforts were also undertaken as part of the public participation process:

- a mailing list which ultimately grew to 280;
- a dozen articles printed in five newspapers;
- a December 1995 door-to-door survey of Gorham Village businesses;
- public forums in Gorham and Westbrook in January and April 1996;
- news releases regarding the public forums;
- notices of public meetings shown on public access TV in six communities;
- three study videos shown by public access TV stations in six communities;
- advertisements in the Gorham Times and American Journal;
- six presentations to Town/City Councils in Gorham, Westbrook and Standish, and to the Portland City Manager;
- November 1996 public forums in Westbrook and North Scarborough/South Gorham (for which 1,800 notices were mailed to property owners);
- three October 1996 "business roundtables" (for which 590 notices were mailed to businesses);
- one-on-one interviews with a dozen businesses in the corridor in early 1996;

- distribution of a study newsletter in early 1996;
- personal interviews of 173 shoppers in Westbrook, Gorham and Standish on two days in November 1996; and
- mail distribution of the Advisory Committee's November 1996 recommendations to the complete study mailing list.

1.3.3 Agency Involvement

Efforts were made to inform appropriate federal and state agencies of project activities throughout the study process. The project mailing list included the Federal Highway Administration (Maine Division); Federal Transit Administration (Region One); U.S. Army Corps of Engineers (Maine Division); and Maine DOT Office of Environmental Services.

At the project outset, a kick-off meeting was held with representatives of the FHWA Region and Division offices and of the Federal Transit Administration to notify them of the intent of this project to be considered a Major Investment Study. Progress meetings were held throughout the project with state and federal environmental agency representatives at regular Maine DOT inter-agency coordination meetings.

1.3.4 Project Evaluation Criteria

The criteria used to evaluate alternative concepts were based on issues and concerns voiced in the Purpose and Need Statement.

Mobility for Motorists -- The ability of study alternatives to address traffic congestion in the Gorham/Portland Corridor was one of the fundamental measures of effectiveness. The key measures used by the Advisory Committee were travel time savings (door-to-door travel times between representative origin-destination pairs were estimated for the weekday afternoon peak commuting period) and levels of congestion (measured, in terms of volume-to-capacity ratio, at key signalized intersections.

Mobility for Alternative Travel Modes -- The ability of study alternatives to increase the availability of alternative travel modes in the Gorham/Portland Corridor was defined in several ways: transit ridership (the number of transit boardings during the afternoon peak hour was estimated for the fixed-route bus service open to the general public) and convenience of transit service (the convenience of transit as a travel mode was assessed by measuring the number of activity centers/developments served).

Transportation System Safety -- Alternative concepts were evaluated for their potential effect on safety for motorists, transit patrons, pedestrians, and bicyclists. The two measures were (1) the number of High Accident Locations expected to be improved by planned actions and (2) the extent of pedestrian safety improvement in two key problem areas (Gorham Village and downtown Westbrook).

Goods Movement -- Alternative concepts were evaluated for their impact on the movement of goods in the corridor via both truck and rail. Measures included compatibility of the planned action with the designation of sections of Routes 25 and 202 as part of the National Highway System through Gorham Village; truck travel time between representative points in the corridor; and continuation of availability of rail freight service between Westbrook and Portland.

Land Use Compatibility -- Three key questions were answered for each alternative concept:

- Does the alternative advance specific land use or transportation objectives identified in local plans?
- Does the alternative encourage a pattern of residential development that is consistent with local and regional goals?
- Does the alternative support the sound development of commercial and industrial uses consistent with local and regional goals?

Environmental -- The alternative concepts were evaluated to understand their potential environmental impacts. An important function of this screening process was to coordinate with the conceptual engineering process so that environmental conflicts could be identified and resolved as the alternatives were refined. The screening process was designed to ensure that legislative requirements regarding consideration of alternatives to avoid stream or river crossings, wetlands, significant wildlife habitat, threatened/endangered species, Section 4(f) properties (parks, historic properties), and aquifers were satisfied.

The environmental evaluation focused on those environmental factors which are likely to affect decision-making (i.e., factors which are critical to distinguishing among alternatives, such as adjacent land use impacts, the aquatic ecosystem, public parks and recreation areas, and historic and archaeological sites).

Cost and Cost-Effectiveness -- The costs of implementing alternatives is a major consideration, as the financial feasibility of the proposed investment plays a major role in the decision-making process. The cost considerations addressed both total capital costs and the annual operating and maintenance costs for the alternatives.

Capital costs were developed from unit costs for individual project elements (i.e., civil, structural, vehicle and systems). The capital cost estimates also included soft costs associated with design, right-of-way acquisition, wetland mitigation, construction management and construction contingency. An estimate of operating and maintenance costs and of indirect costs and benefits associated with each alternative were also developed.

The analysis made use of recently-released FHWA procedures which quantify direct and indirect user benefits, direct and indirect costs to public agencies, and other external costs (such as those attributable to increased or decreased levels of air pollution).

Effectiveness Given Funding and Implementation Constraints -- The ability of an alternative to be broken down into increments which offer short-term improvement in the corridor was a key evaluation criterion. A preferred solution should involve a series of phased, interrelated actions, each of which results in some improvement and the sum of which fit together into a long-term solution. The Advisory Committee therefore made the effort to understand the implications of the pieces as well as the whole and the implementation sequencing implications.

The reasonableness of funding assumptions was likewise a key, qualitative criterion. The likelihood of obtaining timely and sufficient funding from potential sources (i.e., federal, state, local, and private sources) was openly discussed and was a key criterion in the project screening process.

1.4 PURPOSE OF THIS REPORT

This report documents the efforts and results of a study commissioned by PACTS and conducted with the aid of an Advisory Committee. This first chapter presents an overview of the purpose and need for transportation improvements in the Gorham-Portland corridor and describes the screening and selection process.

Chapter Two describes the corridor, including its population and employment (current and forecast), the transportation system conditions (traffic volumes, traffic congestion, travel time, and safety), and typical environmental features.

Chapter Three describes the results of the first two screens, and the alternatives evaluated in Screen Three.

Chapter Four presents the transportation impacts of the Screen Three alternatives. Chapter Five presents the environmental and land use impacts of the Screen Three alternatives. Chapter Six presents the cost implications of the Screen Three alternatives.

Chapter Seven describes the Preferred Investment Strategy and includes a program of short-term, mid-term, and long-term recommendations.

A separate Summary Report documenting the key findings, conclusions, and recommendations of the study has been prepared and is available at PACTS (tel 207-774-9891).

EXISTING CONDITIONS AND FORECASTS

Chapter Two

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2.1 POPULATION AND EMPLOYMENT

The population and employment forecasts used in this study were derived from econometric forecasts for Cumberland County and statewide which were prepared by the University Center at the University of Southern Maine (USM). The county and statewide forecasts are used by several state agencies and are updated annually. The University Center program is funded by the Economic Development Administration to assist the five Economic Development Districts in Maine. MDOT also participates financially in the forecasting process so that these forecasts can be used in their statewide travel demand forecasting program.

2.1.1 Current and Forecast Population

Table 1 presents the current and forecast population for the thirteen municipalities in the PACTS model area. Regionwide, there is projected to be over a twelve percent increase in population between the years 1990 and 2015. This represents an increase of approximately 23,200 over the year 1990 population of 187,681.

Table 1. Population Forecast for PACTS Model Area

Municipality	Year 1990 Population	Year 2015 Population	Population Change
Cape Elizabeth	8,870	9,910	11.7%
Cumberland	5,867	6,692	14.1%
Falmouth	7,610	9,410	23.7%
Gorham	11,856	15,275	28.8%
Portland	63,267	66,693	5.4%
Scarborough	12,142	15,903	31.0%
South Portland	23,121	23,398	1.2%
Standish	7,878	10,155	28.9%
Westbrook	16,121	16,622	3.1%
Windham	13,020	15,450	18.7%
Yarmouth	7,862	9,259	17.8%
Buxton	6,494	7,793	20.0%
Hollis	3,573	4,288	20.0%
TOTAL	187,681	210,846	12.3%

Note: GPCOG derived this table from econometric forecasts prepared by the USM University Center.

Two of the top three Portland Region municipalities with the highest growth rates are in the study corridor (i.e., Gorham and Standish). It should be noted that these population growth forecasts are substantially less than those assumed in the 1993 MDOT Route 25 Corridor Study. In that study, regionwide population was forecast to grow 30 percent over a 25-year period (from 1985 through 2010).

2.1.2 Current and Forecast Employment

Table 2 presents the current and forecast employment for the thirteen municipalities in the PACTS model area. Employment is projected to increase at a slightly higher rate than will population, 15.4 percent. This represents an increase of approximately 23,200 jobs over the year 1990 figure of 150,936. In terms of municipalities within the study corridor, the highest rates of employment growth are found in Scarborough and Gorham. It should be noted that these employment growth forecasts are substantially less than those assumed in the 1993 MDOT Route 25 Corridor Study. In that study, regionwide employment was forecast to grow 53 percent over a 25-year period (from 1985 through 2010).

Table 2. Employment Forecast for PACTS Model Area

Municipality	Year 1990 Employment	Year 2015 Employment	Employment Change
Cape Elizabeth	1,884	2,274	20.7%
Cumberland	1,072	1,382	28.9%
Falmouth	4,453	5,638	26.6%
Gorham	5,653	6,949	22.9%
Portland	82,032	91,017	11.0%
Scarborough	9,653	13,213	36.9%
South Portland	24,020	27,769	15.6%
Standish	1,736	1,961	13.0%
Westbrook	10,222	11,351	11.0%
Windham	5,554	7,127	28.3%
Yarmouth	3,430	4,064	18.5%
Buxton	838	950	13.4%
Hollis	388	438	13.1%
TOTAL	150,936	174,132	15.4%

Source: GPCOG derived these forecasts from econometric forecasts prepared by the University Center at the University of Southern Maine.

2.1.3 Trip-Making in Gorham-Portland Corridor

Current Trip-Making -- The 1990 Census compiled information which linked place of residence with place of employment. Table 3 presents this commuter flow data for trips which are expected to pass through at least a portion of the Gorham-Portland corridor. The highest commuter flows in the study corridor are for the following trips:

- 3,269 Westbrook residents work in Portland
- 2,616 Westbrook residents work in Westbrook
- 1,917 Gorham residents work in Portland
- 1,459 Portland residents work in Westbrook
- 1,397 Gorham residents work in Gorham
- 1,076 Westbrook residents work in South Portland
- 969 Standish residents work in Portland
- 966 Buxton residents work in Portland

Forecast Trip-Making -- The growth in population and employment in the region will also produce growth in trips being made in the region whether by auto, by transit, or by foot. The forecast growth in evening peak hour vehicle-trips made within, to, from, and through the modelled Portland region is 22 percent (over the 25-year period between the years 1990 and 2015).

Forecast growth in evening peak hour trips from the corridor communities is presented in Table 4. Most of the corridor communities are not generating growth in trips from their community (i.e., predominantly growth in trips from work) as fast as the overall region.

The communities with the greatest forecast growth rates in the region are Scarborough (32 percent), Standish (24 percent), and Gorham (20 percent). The communities with the greatest absolute growth in trips during the evening peak hour are Portland (an increase of 2,000 trips), Scarborough (an increase of 1,200 trips), and South Portland (an increase of 800 trips).

Table 3. Commuter Flows in Portland Region as Reported in the 1990 Census

Place of Work	Place of Residence									
	Buxton	Gorham	Hollis	Portland	Scarborough	S. Portland	Standish	Westbrook	Windham	Total
Buxton	433	50	124	30	13	7	94	25	26	802
Gorham	300	**1,397**	102	254	91	119	159	172	146	2,740
Hollis	8	7	101	33	0	0	12	0	20	181
Portland	**966**	**1,917**	372	21,703	2,595	5,738	**969**	**3,269**	1,950	39,479
Scarborough	257	182	88	801	1,717	621	84	211	191	4,152
So. Portland	320	639	198	3,246	1,058	3,690	396	**1,076**	509	11,132
Standish	94	0	45	0	0	0	759	0	79	977
Westbrook	358	679	226	**1,459**	306	504	509	**2,616**	772	7,429
Windham	35	167	40	171	27	50	420	82	1,913	2,905
Total	2,771	5,038	1,296	27,697	5,807	10,729	3,402	7,451	5,606	69,797

Note: The largest commuter flows within or through the Gorham-Portland corridor are highlighted in **bold**.

Table 4. Evening Peak Hour Vehicle-Trips from Communities in the Portland Region

Jurisdiction/Area	Vehicle-Trips in 1990	Vehicle-Trips in 2015	Forecast 25-Year Growth
Portland	29,200	31,200	7%
South Portland	10,300	11,100	8%
Westbrook	3,700	4,200	14%
Scarborough	4,100	5,300	32%
Falmouth	2,200	2,700	19%
Gorham	2,600	3,200	20%
Cape Elizabeth	1,300	1,400	9%
Yarmouth	1,600	1,800	9%
Cumberland	790	850	8%
Windham	2,900	3,500	19%
Standish	1,000	1,200	24%
Hollis	410	460	12%
Buxton	800	850	6%
External	8,000	16,000	101%
Modelled Region	68,800	83,600	22%

Forecast growth in evening peak hour trips to the corridor communities is presented in Table 5. As should be expected, for many of the corridor communities these trips grow faster than the overall region values because of the forecast residential growth in the corridor over the next 25 years.

The largest proportionate growth in trips to communities in the region is found in Scarborough, Standish, Gorham, and Windham (between 30 and 41 percent growth over the 25-year forecast period). Actual numeric growth in trips to communities in the region are highest in Portland, Scarborough, South Portland, and Windham (all with at least 1,000 more peak hour trips in the year 2015 than in the year 1990).

Table 5. Evening Peak Hour Vehicle-Trips to Communities in the Portland Region

Jurisdiction/Area	Vehicle-Trips in 1990	Vehicle-Trips in 2015	Forecast 25-Year Growth
Portland	22,100	25,700	17%
South Portland	10,100	11,400	14%
Westbrook	4,300	4,900	13%
Scarborough	3,800	5,400	41%
Falmouth	2,400	3,100	29%
Gorham	2,800	3,600	31%
Cape Elizabeth	1,700	2,000	14%
Yarmouth	1,900	2,300	21%
Cumberland	1,100	1,200	14%
Windham	3,500	4,500	30%
Standish	1,400	2,000	38%
Hollis	640	790	23%
Buxton	1,300	1,500	17%
External	11,800	15,200	29%
Modelled Region	68,800	83,600	22%

2.2 CONDITIONS FOR USERS OF THE TRANSPORTATION SYSTEM

2.2.1 Evening Peak Hour Traffic Volumes

Current and forecast evening peak hour traffic volumes are listed in Table 6 for 24 key locations throughout the corridor. The year 2015 forecast corresponds to a base condition which represents only those changes to the current transportation system which have been programmed for implementation by MDOT, by GPCOG or PACTS, or by the Greater Portland Transit District. In general, Route 25 peak hour traffic is forecast to grow 7 - 51 percent by the year 2015 (with higher growth forecast in Westbrook and Gorham).

Route 22 is forecast, in general, to grow a little more rapidly than Route 25 (between 12 and 53 percent). The higher growth rates are in Portland where Congress Street/Route 22 was recently widened

and where a new Turnpike interchange is planned. The lower growth rates along Routes 25 and 22 are all at locations where the current traffic congestion and limited roadway capacity is constraining traffic growth (i.e., along Brighton Avenue/Route 25 in Portland and along County Road/Route 22 in South Gorham and Scarborough).

Table 6. Current and Forecast Evening Peak Hour Traffic Volumes

Location	Current Evening Peak Hour Volume	2015 Base Evening Peak Hour Volume	% Growth
Main Street/Route 25 east of South Street/ Route 114 (Gorham)	1,620	1,920	19 %
Bill Clarke Drive/Route 25 east of Saco Street (Westbrook)	1,340	2,020	51 %
Bill Clarke Drive/Route 25 east of Spring Street (Westbrook)	1,530	2,160	41 %
Main Street west of Larrabee Road (Westbrook)	1,750	2,020	15 %
Brighton Avenue/Route 25 west of Riverside Street (Portland)	1,920	2,060	7 %
Brighton Avenue/Route 25 east of Woodford Street (Portland)	1,350	1,630	21 %
Brighton Avenue/Route 25 east of Stevens Avenue (Portland)	1,620	1,740	8 %
County Road/Route 22 west of South Street/Route 114 (Gorham)	970	1,100	13 %
County Road/Route 22 east of South Street/Route 114 (Gorham)	1,910	2,140	12 %
County Road/Route 22 west of Spring Street (Westbrook)	900	1,080	20 %
County Road/Route 22 east of Spring Street (Westbrook)	920	1,150	25 %
Congress Street/Route 22 east of Johnson Road (Portland)	2,330	2,900	24 %

Table 6. Current and Forecast Evening Peak Hour Volumes (continued)

Location	Current Evening Peak Hour Volume	2015 Base Evening Peak Hour Volume	% Growth
Congress Street/Route 22 east of Westbrook Street (Portland)	2,290	3,380	48 %
Congress Street/Route 22 west of Stevens Avenue (Portland)	1,670	2,560	53 %
Congress Street/Route 22 east of Stevens Avenue (Portland)	2,420	3,050	26 %
Gorham Road/Route 114 north of Payne Road (Scarborough)	940	1,160	23 %
Gorham Road/Route 114 south of County Road (Scarborough)	1,260	1,420	13 %
South Street/Route 114 north of County Road/Route 22 (Gorham)	1,050	1,200	14 %
Stevens Avenue/Route 9 north of Brighton Avenue/Route 25 (Portland)	1,090	1,330	22 %
Stevens Avenue/Route 9 south of Brighton Avenue/Route 25 (Portland)	1,050	1,290	23 %
School Street/Route 114 north of Main Street/Route 25 (Gorham)	540	690	28 %
New Portland Road east of Main Street/Route 25 (Gorham)	610	800	31 %
Stroudwater Street south of Bill Clarke Drive/Route 25 (Westbrook)	590	850	44 %
Saco Street south of Bill Clarke Drive/Route 25 (Westbrook)	1,340	2,020	51 %

2.2.2 Mobility for Motorists

Mobility for motorists in the Gorham/Portland corridor is assessed below with the aid of two evaluation measures: travel time between representative origin-destination pairs, and levels of congestion at signalized intersections in the corridor.

Travel Time -- To illustrate typical travel time conditions in the corridor, a set of five key origins of afternoon peak hour trips (e.g., employment locations) were identified: Maine Medical Center in downtown Portland; the Maine Mall area in South Portland; S.D. Warren in Westbrook; the intersection of Route 22 and Spring Street (near Portland Glass) in Westbrook; and the USM campus in Gorham.

These afternoon peak period trip origins were matched with six representative evening trip destinations (e.g., residential areas): Downtown Gorham; South Gorham near the overlap of Routes 22 and 114; Standish Corner; Sebago Lake Village; Buxton; and downtown Westbrook. Locations for each of these origins and destinations are mapped in Figure 3.

These origin-destination pairs were selected to be representative of typical evening peak hour trips in the Gorham-Portland corridor. Some of these pairs naturally represent greater travel demand than do others. In particular, the downtown Portland to downtown Gorham and to downtown Westbrook and the Maine Mall area to downtown Gorham and to downtown Westbrook represent auto travel demand on the order of five times the other travel demand pairs.

For each origin-destination pair, an auto travel time during the evening peak hour was estimated using the PACTS travel demand forecasting model. Table 7 lists the model-estimated auto travel time in the year 1990 and under year 2015 base conditions. Throughout the list of origin-destination travel times, increases of 20-30 percent between current and year 2015 base conditions are common.

Three of the most significant travel demand pairs, as noted above, are forecast to have substantial increases in evening peak hour travel times:

- 27 percent increase in travel time for trips from downtown Portland to Gorham Village;
- 21 percent increase in travel time for trips from the Maine Mall area to Gorham Village; and
- 25 percent increase in travel time for trips from downtown Portland to downtown Westbrook.

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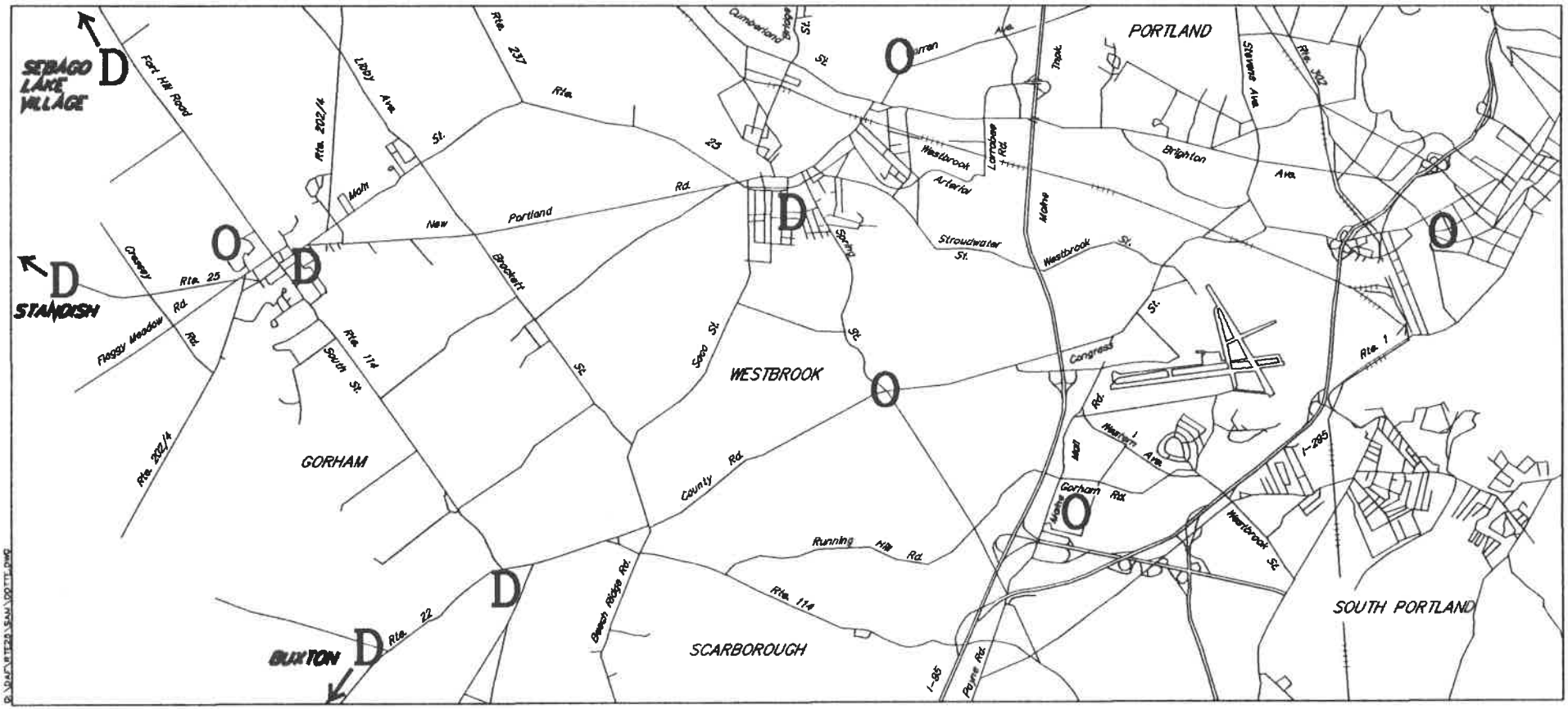

Figure 3: Origins and Destinations for Travel Time Estimates

Legend

O Representative Origins of Evening Peak Hour Trips

D Representative Destinations of Evening Peak Hour Trips

0 2000 4000 Feet

Table 7. Estimated Auto Travel Times During Evening Peak Period

FROM	TO	Year 1990	Year 2015	Increase (# / %)
Downtown Portland (Maine Med)	Downtown Gorham	22.4 min	28.5 min	6.1 min / 27%
	South Gorham	25.1	30.0	4.9 / 20%
	Standish Corner	38.6	44.1	5.5 / 14%
	Sebago Lake Village	31.8	38.1	6.3 / 20%
	Buxton	34.1	41.8	7.7 / 23%
	Downtown Westbrook	11.5	14.4	2.9 / 25%
Maine Mall (South Portland)	Downtown Gorham	21.1	25.5	4.4 / 21%
	South Gorham	18.8	25.1	6.3 / 34%
	Standish Corner	37.2	41.0	3.8 / 10%
	Sebago Lake Village	30.4	35.1	4.7 / 15%
	Buxton	31.9	38.8	6.9 / 22%
	Downtown Westbrook	11.4	11.7	0.3 / 3%
S.D. Warren (Westbrook)	Downtown Gorham	15.5	19.1	3.6 / 23%
	South Gorham	18.5	23.7	5.2 / 28%
	Standish Corner	31.3	34.8	3.5 / 11%
	Sebago Lake Village	24.6	28.8	4.2 / 17%
	Buxton	27.2	32.3	5.1 / 19%
	Downtown Westbrook	4.6	5.0	0.4 / 9%
Rt 22/ Spring St (Westbrook)	Downtown Gorham	17.0	22.1	5.1 / 30%
	South Gorham	14.9	20.1	5.2 / 35%
	Standish Corner	33.1	37.6	4.5 / 14%
	Sebago Lake Village	26.4	31.7	5.3 / 20%
	Buxton	28.0	35.3	7.3 / 26%
	Downtown Westbrook	6.5	6.8	0.3 / 5%
USM (Gorham)	Downtown Gorham	1.9	1.9	0 / 0%
	South Gorham	8.7	10.5	1.8 / 21%
	Standish Corner	18.6	19.6	1.0 / 5%
	Sebago Lake Village	15.5	17.5	2.0 / 13%
	Buxton	15.1	16.6	1.5 / 10%
	Downtown Westbrook	8.4	8.4	0 / 0%

Evening Peak Hour Levels of Congestion -- Levels of congestion in the corridor were evaluated at 18 signalized intersections (locations are illustrated in Figure 4). Current levels of congestion at these 18 intersections are presented in Table 8. Congestion was determined using the Highway Capacity Manual Planning Methodology. Under this approach, a volume-to-capacity ratio is computed (shown in the table) which is used to assess whether the conditions are either:

- under capacity (with a volume-to-capacity (V/C) ratio of less than or equal to 0.84),
- near capacity (with a V/C ratio of greater than or equal to 0.85 and less than or equal to 0.94),
- at capacity (with a V/C ratio of greater than or equal to 0.95 and less than or equal to 1.00), or
- over capacity (with a V/C ratio of greater than or equal to 1.01).

Fourteen of the eighteen intersections were estimated to currently be operating under capacity. **One of the 18 (i.e., the Gorham Village intersection) is currently operating at capacity**, resulting in significant traffic queues and vehicle delay. **Three other intersections are near capacity** (at County Road/Route 22 and Spring Street in Westbrook, at County Road/Route 22 and Gorham Road/Route 114 in Scarborough, and at Running Hill Road and Spring Street/Cummings Road in Scarborough).

Also listed in the table are the intersection volume/capacity ratios (and the indication of whether the intersection is operating under, near, at, or over capacity) for the base condition in the year 2015. The base future year assumptions yield **11 intersections operating near or over capacity** (nearly three times the current number of four) and seven of these are operating at or over capacity (in contrast with the current number of one).

Clearly, degradation of traffic mobility is expected to occur by the year 2015 in the Gorham/Portland corridor. In particular, significant capacity problems are forecast for Gorham Village, along Bill Clarke Drive in Westbrook, along Brighton Avenue/Route 25 in Portland, along Congress Street/Route 22 in Portland, and along County Road/Route 22 in Scarborough and Westbrook.

Table 8. Evening Peak Period Level of Congestion at Signalized Intersections

JURISDICTION	INTERSECTION	Year 1990	Year 2015 Base
Gorham	Route 25/202/114 (Village Center)	**At Capacity 0.96**	**Over Capacity 1.12**
	Route 25 and New Portland Road	Under Capacity 0.76	***Near Capacity 0.94***
	Route 22/114 (west)	Under Capacity 0.66	Under Capacity 0.74

Table 8. Evening Peak Period Level of Congestion at Signalized Intersections (continued)

JURISDICTION	INTERSECTION	Year 1990	Year 2015 Base
Westbrook	Route 25 (Bill Clarke Drive), New Gorham Road & Saco Street	Under Capacity 0.83	**Over Capacity 1.51**
	Route 25 (Bill Clarke Drive) & Spring Street	Under Capacity 0.64	***Near Capacity 0.94***
	Route 25 (Bill Clarke Drive) & Stroudwater Street	Under Capacity 0.51	Under Capacity 0.70
	Route 25 (Bill Clarke Drive) & Westbrook Arterial	Under Capacity 0.76	Under Capacity 0.71
	Route 25 (Main Street) & Larrabee Road	Under Capacity 0.74	Under Capacity 0.63
	Route 22 (County Road) & Spring Street	***Near Capacity 0.85***	**At Capacity 0.95**
Portland	Brighton Avenue (Route 25) & Riverside Street	Under Capacity 0.68	***Near Capacity 0.89***
	Brighton Avenue (Route 25) & Woodford Street	Under Capacity 0.53	Under Capacity 0.60
	Brighton Avenue (Route 22) & Stevens Avenue	Under Capacity 0.80	**Over Capacity 1.04**
	Congress Street (Route 22) & Johnson Road	Under Capacity 0.80	Under Capacity 0.68
	Congress Street (Route 22) and Westbrook Street	Under Capacity 0.71	***Near Capacity 0.94***
	Congress Street (Route 22) and Stevens Avenue	Under Capacity 0.79	**At Capacity 0.98**
Scarborough	Route 22 and Route 114 (east)	***Near Capacity 0.86***	**At Capacity 0.99**
	Route 114 and Payne Road	Under Capacity 0.37	Under Capacity 0.49
South Portland	Running Hill Road and Cummings Road	***Near Capacity 0.91***	**At Capacity 0.96**

Note: Intersections At or Above Capacity are shown in **bold** and bordered by a thick line.

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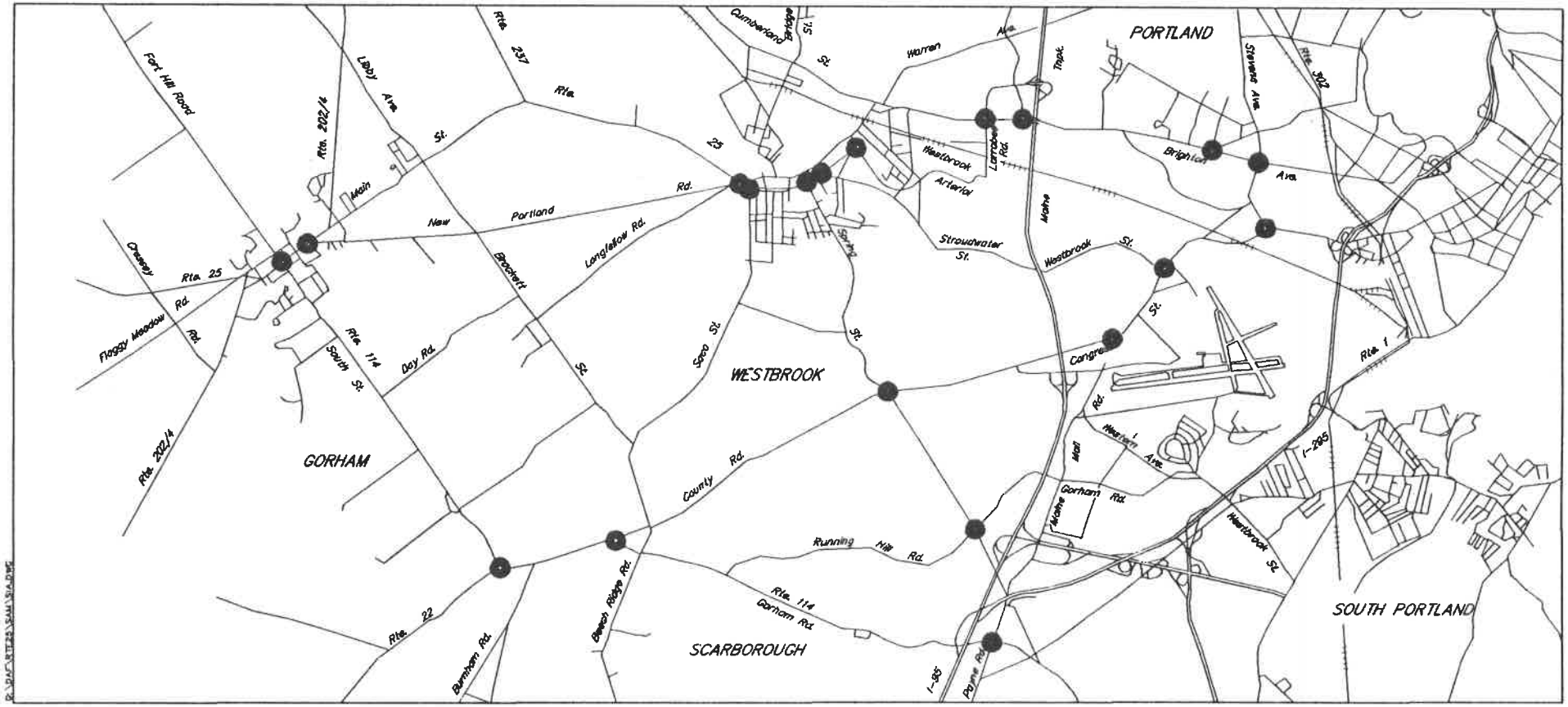

Figure 4: Signalized Intersections in the Corridor Which Were Analyzed

LEGEND

● Analyzed Intersection

0 2000 4000 Feet

2.2.3 Area Served by Transit

The corridor areas currently served by fixed-route transit are illustrated by the information in Table 9. The table uses the same evening trip origins and destinations as used previously for estimating auto travel time and identifies those pairs for which transit service is provided. Under the future base condition, the availability of transit service does not change.

Table 9. Current and Future Transit Availability in Gorham/Portland Corridor

FROM	TO	Current Availability and Assumed for Year 2015
Downtown Portland (Maine Med)	Downtown Gorham South Gorham Standish Corner Sebago Lake Village Buxton	No
	Downtown Westbrook	Yes
Maine Mall (South Portland)	Downtown Gorham South Gorham Standish Corner Sebago Lake Village Buxton	No
	Downtown Westbrook	Yes
S.D. Warren (Westbrook)	Downtown Gorham South Gorham Standish Corner Sebago Lake Village Buxton	No
	Downtown Westbrook	Yes
Route 22 @ Spring Street (Westbrook)	Downtown Gorham South Gorham Standish Corner Sebago Lake Village Buxton Downtown Westbrook	No
USM (Gorham)	Downtown Gorham South Gorham Standish Corner Sebago Lake Village Buxton Downtown Westbrook	No

2.2.4 Motorist Safety

There are 28 intersections and 8 segments within the immediate study area considered High Accident Locations (HAL) by MDOT. Safety in the corridor is expected to worsen over the forecast 20-year period with the increased congestion.

Figure 5 illustrates the locations of HAL (both segments and intersections) within the corridor. As shown in the figure, the greatest concentrations of HAL are in Gorham Village, in downtown Westbrook, and along Congress Street in Portland near I-295. Table 10 lists the 23 HAL intersections, indicating the number of reported accidents between the years 1992 and 1994 and the Critical Rate Factor (CRF) over that period. Table 11 presents the same data for the 8 HAL segments.

2.2.5 Freight Movement by Truck

Route 25 from the Maine Turnpike to Gorham Village and Route 4/202 from that point westward constitute an element of the National Highway System (NHS). With the forecast for increased traffic congestion in Gorham Village, truck travel via the National Highway System will become more congested and the effectiveness of the NHS through Maine will be diminished.

A quantitative estimate of travel time for vehicles passing through the corridor, along paths which carry a significant number of trucks, reveals the expected worsening of traffic congestion. A composite travel time from two industrial sectors of the corridor (S.D. Warren in Westbrook and the intersection of Route 22 and Spring Street in Westbrook) to two common destinations outside of the corridor (Route 25 in Standish and Route 22 in Buxton) was estimated. Under current conditions, a composite travel time was estimated to be roughly 30 minutes. Future base conditions produce an evening peak hour composite travel time of 35 minutes (or nearly 17 percent longer).

2.3 ENVIRONMENTAL FEATURES

2.3.1 Surficial Geology: Unstable Deposits

Much of the corridor lies in an area of unstable geologic deposits. The broadest expanses of unstable deposits occur north of Gorham Village and north of downtown Westbrook. Where these deposits occur in areas with steep slopes (along major rivers such as the Stroudwater and the Fore River estuary), geotechnical evaluations would be required to provide input to roadway structural design. All other factors being equal, bridge costs would be higher in these areas.

2.3.2 Steep Slopes/Erodible Soils

Moderate to steep slopes occur along most of the major streams and rivers in the study area. Principal areas of concern are the crossings of the Stroudwater River and its tributaries and the crossing of the Fore River estuary. A lengthy crossing of Tannery Brook north of Gorham Village would also be required for a close-in bypass of Gorham Village. With proper design and application of erosion and sedimentation controls, impacts could be minimized to an acceptable level.

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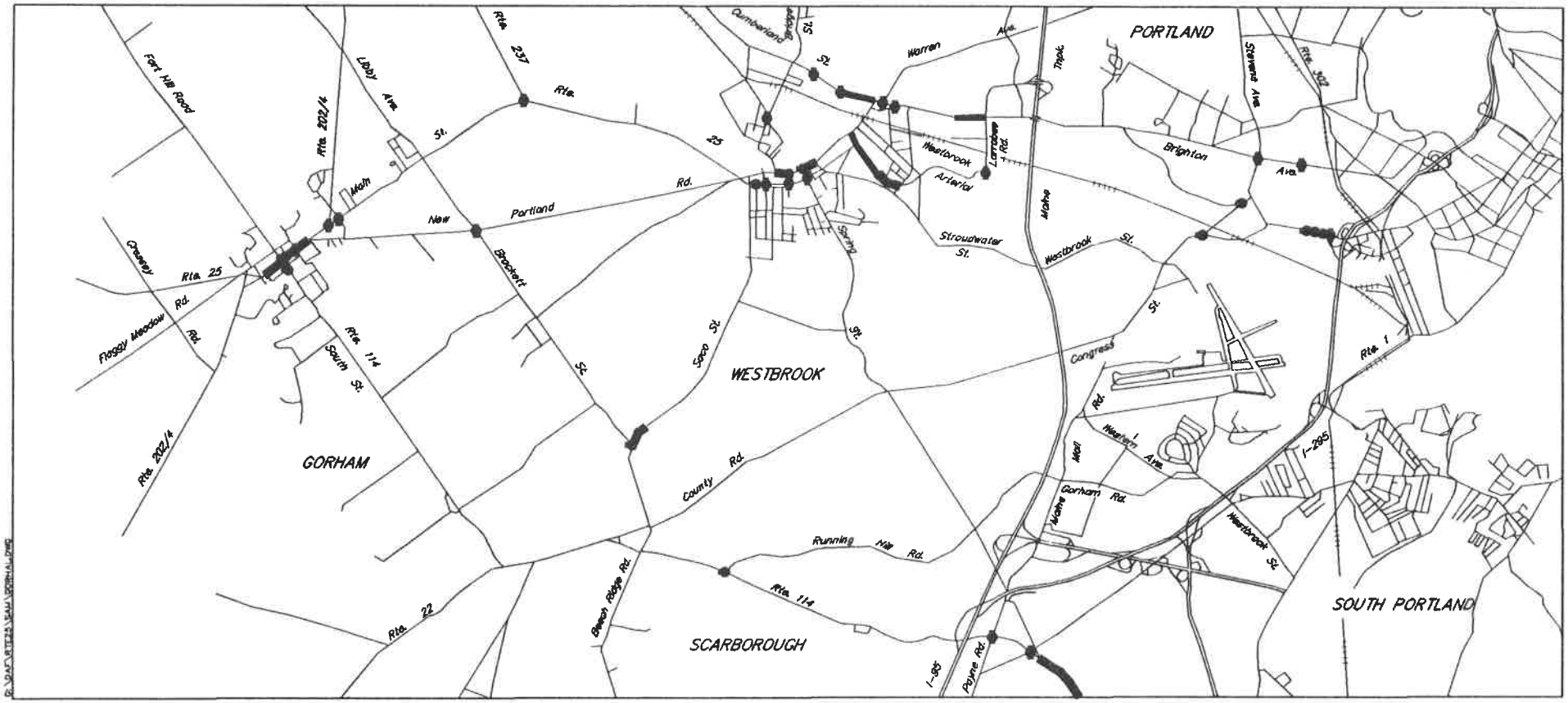

Figure 5: High Accident Locations (1992–1994)

LEGEND

- Segments
- Intersections

0 2000 4000 Feet

Table 10: High Accident Locations (Intersections) (1992-1994)

Route or Street Name	Town	Route or Street Intersections With	No of Accidents	CRF
Route 25	Gorham	Mosher Road	9	1.08
Saco Rd	Gorham	Brackett Road	8	3.28
New Portland Road	Gorham	Libby & Brackett	16***	4.64
Route 114	Gorham	Green Street	17	2.52
Route 4 *	Gorham	Route 237	18**	2.64
Route 4	Gorham	Water St/Elm St	13	1.11
Route 25	Gorham	Route 4 (Gray Rd)	10	1.12
Route 25	Gorham	Johnson Road	10	1.58
Route 25	Gorham	Cross Street	13	1.21
Route 25	Westbrook	Larrabee Road	53	1.17
Route 25	Westbrook	Lamb Street	16	1.20
Cumberland Street	Westbrook	Warren Avenue #1	28	2.26
Cumberland Street	Westbrook	Brown Street	9	1.16
Cumberland Street	Westbrook	Park Road	8	1.18
Bridge Street	Westbrook	Pierce Street	10	2.14
Route 302 *	Westbrook	Duck Pond/Hardy	13	2.47
Route 25 (Main St)	Westbrook	Church Street	10	1.15
Route 25 (Main St)	Westbrook	Spring Street	26**	2.78
Bill Clarke Drive	Westbrook	Mechanic Street	25***	3.46
Bill Clarke Drive	Westbrook	Church Street	10	1.46
Bill Clarke Drive	Westbrook	Spring Street	31	1.00
Bill Clarke Drive	Westbrook	Pleasant Street	10	1.50
Brighton Avenue	Portland	Beacon Street	11	1.16
Congress Street	Portland	Massachusetts Ave	23	1.44
Congress Street	Portland	Bolton Street	27	1.63
Congress Street	Portland	Edwards Street	16	1.00
Brighton Avenue	Portland	Stevens Ave	44	1.08
Capisic Street	Portland	Frost Street	25	3.21
Congress Street	Portland	Frost St **	15	1.05
Congress Street	Portland	I-295, Exit 5, Ramp 'D' (near Douglas Street)	20	1.52
Route 114	Scarborough	Mussey Road	17***	4.94
Route 114	Scarborough	Payne Road	34	1.35
Route 114	Scarborough	Running Hill Road	11	1.69

* Not on Map

** Recent Improvements are Expected to Reduce Accidents

*** Planned Improvements are Expected to Reduce Accidents

Source: Maine Department of Transportation High Accident Locations (1992-1994)

Table 11: High Accident Locations (Segments) (1992-1994)

Route	Town	From	To	No of Accidents	CRF
Saco Road	Gorham	Gorham/Scarborough T/L	Brackett Avenue	9	2.74
Route 114	Gorham	Preble Street	Main/School/State/South	20	3.57
Route 4	Gorham	Pine Street	Main/School/State/South	20	1.53
Route 4	Gorham	Route 114	Cross Street	9	1.7
Route 4	Gorham	Water Street/Elm Street	New Portland Road	25	2.21
Route 4	Gorham	Water Street/Elm Street	Cross Street	14	1.16
Route 25	Westbrook	Larrabee Road	Liza Harmon Road	28	2.78
Cumberland Street	Westbrook	Warren Avenue #2	Brown Street	15	1.02
Bridge Street	Westbrook	Winslow Street	Lincoln Street	13	2.43
Westbrook Arterial	Westbrook	Bill Clarke Drive	ramp from Wood Lawn Ave onto Westbrook Arterial	10	1.35
Route 25	Westbrook	Bridge Street	Church Street	18	3.62
Route 25	Westbrook	Foster Street	Stroudwater Street	9	2.59
Route 114	Scarborough	Spring Road	0.2 Back from Asslyn Road	14	1.45

Source: Maine Department of Transportation High Accident Locations (1992-1994)

2.3.3 Farmland Soils

For any new roadway alternatives, the loss of farmland containing Prime Farmland Soils and Additional Farmland Soils of Statewide Importance would be greatest in the area north of Gorham Village. Some alternatives could also impact large farms on Stroudwater Street/Westbrook Street with an associated loss of Prime Farmland soils.

2.3.4 Sand and Gravel Aquifers

Some of the undeveloped land southwest of Gorham Village near Narragansett Street/Route 202 and in South Gorham and North Scarborough contains moderate yield aquifer areas. In fact, two wells, each serving about 25 people, use the moderate yield aquifer in the South Gorham-North Scarborough area.

Two groundwater contamination sites, an auto junkyard and a sand excavation site are also found to the southwest of Gorham Village. There is another groundwater contamination site near the intersection of Libby Avenue and Gray Road/Route 202.

2.3.5 Surface Water Resources

Surface waters which could be affected by transportation changes in the corridor include:

- Presumpscot River watershed: Little River Brook, Brandy Brook, Tannery Brook, Mosher Brook, and the Presumpscot River;
- Stroudwater River watershed: Gully Brook, Indian Camp Brook, Beaver Pond Brook, South Branch, and the Stroudwater River;
- Nonesuch River watershed: unnamed tributaries to Nonesuch River in North Scarborough; and
- Coastal Basin Watershed: Red Brook, Long Creek, and Fore River.

Large crossings such as the Fore River in Portland and the Stroudwater River in Westbrook, would pose relatively greater engineering and environmental permitting efforts, compared to the narrower crossings. For all crossings, erosion and sedimentation controls during construction, drainage improvements, and the use of stormwater best management practices would minimize long term effects to surface waters.

2.3.6 Floodplains

The potential for new road crossings of the Stroudwater River and of the Fore River estuary constitute the most significant floodplain crossings. Any alternatives in these or other floodplain areas would need to be designed so they withstand flooding and do not increase 100-year flood elevations more than a minor amount.

2.3.7 Wetlands

There are multiple sites in the corridor which pose regulatory constraints with regard to wetland permitting. Structural engineering solutions and careful choice of crossing locations will minimize the impacts associated with any wetland crossings. Erosion and sedimentation controls and the use of stormwater best management practices will be required in order to minimize wetland impacts.

2.3.8 Vegetative Cover

Vegetation in areas surrounding Gorham Village is largely evergreen forest, with scattered tracts of deciduous forest, old field and pasture. The lands south and east of downtown Westbrook has a similar vegetative makeup, but the tracts are smaller and more highly interspersed with urban and suburban land uses. Any crossing of the Fore River estuary could impact a salt marsh.

2.3.9 Fish and Wildlife Resources

Throughout the study corridor in Gorham and Westbrook are a number of streams and rivers with state designated fisheries. The highest value designated fisheries occur along the Little, Presumpscot and Stroudwater Rivers. New roadway crossings of these rivers should have no significant impact on the fisheries with proper design and application of available engineering techniques.

The new crossings of the Fore River estuary also could pose concerns for fish and wildlife resources. This area includes intertidal salt marsh and mud flats, and is a designated Marine Wildlife Habitat and Shorebird Feeding/Roosting Area. Design of any new roadway crossing would need to avoid direct habitat loss and to maintain tidal flushing of the upper estuary where possible.

2.3.10 Cultural Resources

A key area in the study corridor with significant historic and cultural resources is the Stroudwater Historic District adjacent to Congress Street/Route 22 in Portland. The historical significance of these structures would require that efforts be taken to avoid and minimize any impacts of roadway construction. Opportunities to widen Congress Street/Route 22 would be limited, due to the proximity of the historic structures to the existing roadway.

Additional historic resources are located in Gorham Village, near Mosher's Corner in Gorham, in Westbrook, and along Brighton Avenue. In these locations, there appears to be some room available for minor roadway widening without significant direct adverse impacts. The Cumberland & Oxford Canal is also an important historic resource which could be affected by changes to the roadway or rail networks.

ALTERNATIVES CONSIDERED AND RESULTS OF SCREENS ONE AND TWO

Chapter Three

Table of Contents

3.1 SCREEN ONE CONCEPTUAL ALTERNATIVES

The sole purpose of this initial screen in the Gorham/Portland Corridor Alternatives Analysis was to eliminate from further consideration any action with likely environmental, community, or cost impacts that would render it infeasible. The Advisory Committee was emphatic that the strategy which is ultimately recommended in this study be realistically implementable over the next several decades. Therefore, it was critical to screen those actions with low potential for implementation.

Previous studies of the corridor were reviewed for potential solutions, a public forum was held to generate additional ideas from the general public, and the Advisory Committee spent several meetings discussing potential concepts for the corridor. The result was a list comprised of basically every generic class of action available to address corridor transportation issues.

The actions evaluated for potential applicability and effectiveness in the corridor included transportation system management (TSM) actions such as traffic signal retiming, travel demand management actions (TDM) such as rideshare promotion and preferential treatment for carpools and vanpools, new and expanded bus transit services, passenger rail, upgraded roadways (e.g., widened), and new roadways.

3.1.1 Definition of Screen One Alternatives

Alternative Concept 1-1: Base Case -- This alternative defines the "base conditions" of the corridor in the forecast year of 2015. These conditions form the base against which the performance associated with the other alternatives under consideration was measured. This alternative represents a continuation of current ongoing TDM and transit programs throughout the region. It includes numerous new traffic signals throughout the region as well as interconnection of some existing traffic signals. This alternative includes the addition of a two-way center left-turn lane on Riverside Street from Warren Avenue to Forest Avenue in Portland and includes the widening of Johnson Road/Western Avenue in Portland/South Portland. This alternative includes a new Maine Turnpike interchange at Congress Street in Portland. (note: for a complete list of transportation system improvements assumed for the base case, refer to the definition of Alternative 3-1 in Section 3.3.1 of this chapter)

Alternative Concept 1-2: Basic TSM/TDM Program -- This alternative seeks to address the existing and projected year 2015 peak period transportation system problems in the corridor (1) by improving the efficiency with which the transportation system is used and operated by means of TSM actions and (2) by shifting travel demand away from the congested locations and away from congested time periods by means of TDM actions.

The TSM actions included in this alternative concept constitute a series of systems management measures which would appear to be ripe for implementation in the corridor based on current levels of congestion and demand. They include (1) turn lanes at the intersection of County Road (Route 22) and South Street (Route 114) in South Gorham, (2) turn lanes at the intersection of County Road (Route 22) and Burnham Road in South Gorham, and (3) upgrading of traffic operations in Gorham Village and in Westbrook along the Route 25 corridor.

The TDM and transit actions included in this alternative concept represent a modest expansion of ongoing and planned TDM and transit programs for the region. In particular, they represent a logical series of demand management programs which would probably emerge from a concerted effort to define effective TDM and transit programs for the corridor.

Alternative Concept 1-3: Moderate TSM/TDM Program -- This alternative (1) improves the efficiency with which the transportation system is used and operated by means of more substantial TSM actions than contained in Alternative Concept 1-2 and (2) shifts travel demand away from congested locations and away from congested time periods by means of TDM actions, again with more effective measures than contained in Alternative Concept 1-2. The TDM measures in this Alternative Concept roughly correspond to the TDM-A Program evaluated in the GPCOG Greater Portland TDM Study (August 1994).

The TSM actions included in this alternative concept constitute an expansion of the systems management measures which could be readily implemented in the corridor. In other words, the TSM actions included here, although still focussed on improved efficiency in the operation of the existing system, would require substantially more coordination with adjacent property-owners during project implementation. The TSM actions include (1) improved access management along both Route 25 and Route 22 (e.g., eliminate some Main Street curb cuts in Gorham Village) and (2) redesign of parts of Gorham Village to provide frontage on side streets.

Alternative Concept 1-4: Aggressive TSM/TDM Program -- This alternative (1) aggressively improves the efficiency with which the transportation system is used and operated by means of TSM actions and (2) aggressively shifts travel demand away from congested locations and away from congested time periods by means of TDM actions.

The TSM actions included in this alternative concept constitute a significant step beyond the current perception of appropriate system management techniques for the corridor. They include reversible lanes along major commute corridors.

The TDM measures in this Alternative Concept roughly correspond to the TDM-B Program evaluated in the GPCOG Greater Portland TDM Study (August 1994). The TDM programs also represent movement toward measures which go well beyond what most members of the Study Advisory Committee would consider practical under current attitudes of the region's residents and workers (including changes in land use policies and financial participation by employers). However, some could certainly consider these more extensive TDM and multi-modal programs (necessitating both legal and social changes) as being more practicable in the long-term future than significant roadway capacity improvements. Therefore, the more extensive (in today's perspectives) TDM and transit programs were likewise evaluated for their potential effectiveness.

Alternative Concept 1-5: HOV Emphasis -- This alternative takes the TSM/TDM actions defined in Alternative Concept 1-3 and greatly enhances the carpool/vanpool travel mode (i.e., ridesharing in high occupancy vehicles (HOV)). The alternative includes a series of actions specifically targeted to encourage the use of carpools and vanpools by corridor commuters, namely:

- preferential parking for carpools and vanpools at all public parking facilities (in downtown Portland and downtown Westbrook) and at all private parking facilities for major corridor employers (e.g., in the Maine Mall/Jetport commercial area, at S.D. Warren, at USM in Gorham and Portland, at Maine Medical Center and other hospitals);
- queue bypass lanes at congested locations (e.g., along Route 25 as it enters Gorham Village);
- a public/private program of cash allowances for carpools/vanpools; and
- reduced tolls for carpools/vanpools on the Maine Turnpike.

Alternative Concept 1-6: Extend Local Bus Service to Gorham; Expand All Day Service in Westbrook -- This alternative takes the TSM/TDM actions defined in Alternative Concept 1-3 and implements a series of transit system improvements specifically targeted to encourage bus ridership in the corridor. The transit improvements focus on providing additional transit service along current routes and on extending METRO service to Gorham by way of Westbrook.

The alternative includes new express (limited stop) commuter bus service between Gorham, Westbrook, and Portland via Route 25 and between Gorham and the Maine Mall area via Route 22 and Route 114; direct (no downtown Portland transfer) METRO bus service from downtown Westbrook to Maine Mall area; and park-and-ride lots at express bus stops in Gorham and Westbrook.

Alternative Concept 1-7: 1-6 plus Express Bus Service to Westbrook, Gorham and Beyond -- This alternative takes the TSM/TDM actions defined in Alternative Concept 1-3 and the transit service expansion included in Alternative Concept 1-6 and adds express bus service to Buxton and Standish. In addition, this alternative includes some of the HOV preferential treatment measures (but for bus use only) which are included in Alternative Concept 1-5.

Alternative Concept 1-8: 1-7 plus Make Use of the Mountain Division for Rail or Bus -- This alternative takes the TSM/TDM actions defined in Alternative Concept 1-3 and the transit service expansion included in Alternative Concept 1-7 and adds transit service (either rail or bus transit) along the Mountain Division rail corridor and perhaps along other exclusive rights-of-way in the corridor.

Alternative Concept 1-9: Upgrade/Widen Existing Roadways (Outside Gorham Village) -- This alternative takes the TSM/TDM actions defined in Alternative Concept 1-3 and also provides additional capacity in the corridor through the widening of existing roadways. The roadway widenings included the following:

- Widen Route 25 to four lanes between Route 237 (Mosher's Corner in Gorham) and Bill Clarke Drive (Westbrook) or
  Widen New Portland Road in Gorham and New Gorham Road in Westbrook to four lanes.

- Widen Bill Clarke Drive to six lanes between Main Street and Stroudwater Street, including intersection improvements at Bill Clarke Drive/Stroudwater Street, at Bill Clarke Drive/Westbrook Arterial, and at Main Street/Spring Street.

- Widen South Street (Route 114) in Gorham to four lanes.

- Widen Cumberland Street (and Main Street) in Westbrook to four lanes.

- Widen County Road (Route 22) to a four-lane divided roadway with controlled access and increased operating speed between Saco Street (in Scarborough) and the Westbrook-Portland City Line or
  Widen County Road to four lanes between Spring Street and the Portland City Line.

- Widen Route 22 in South Gorham to four lanes (or to three lanes with one lane being reversible during peak commuting periods) between South Street (Route 114 in Gorham) and Gorham Road (Route 114 in Scarborough).

- Widen Brighton Avenue to six lanes between Rand Road and Capisic Street.

- Widen Brighton Avenue between Woodford Street and Deering Avenue to four lanes. Provide additional through and turn lanes at the intersection with Stevens Avenue.

- Widen Gorham Road (Route 114) between County Road (Route 22) and Payne Road in Scarborough to four through travel lanes.

- Widen Congress Street (Route 22) between Johnson Road and Frost Street and between Stevens Avenue and I-295.

Alternative Concept 1-10: Widen Route 25 Through Gorham Village -- This alternative takes the TSM/TDM actions defined in Alternative Concept 1-3 and then provides additional capacity on Main Street (Route 25) through Gorham Village. Widening of State Street (Route 25) between Narragansett Street (Route 202/4) and South/School Street (Route 114) would be to four lanes. Widening of Main Street (Route 25) between South/School Street (Route 114) and Gray Road (Route 202/4) would be to four or five lanes.

New Roadway Concepts -- The remaining 13 alternative concepts comprise new roadway segments as illustrated in Figure 6. These sub-concepts represent "build-highway" solutions in various sectors of the corridor.

Sub-Concept A. North Bypass around Gorham Village -- a new roadway around the north side of Gorham Village with approximate endpoints along Route 202/4 west of the village and near the intersection of Routes 25 and 237 east of the village (Mosher's Corner). Access to the new roadway would be provided at Route 202/4 (both locations), Route 25 (both east and west), and Route 114.

Sub-Concept C. South Bypass around Gorham Village -- a new roadway around the south side of Gorham Village between (1) Route 25 west of the village and (2) New Portland Road, Route 202/4, or Libby Avenue east of the village. Access to the new roadway would be provided at Route 25, Route 202/4 (west of the village), Route 114, New Portland Road, Route 25 (Main Street), and Route 202/4 east of the village.

Sub-Concept D. New Road from Mosher's Corner to Cumberland Street in Westbrook -- a new roadway which connects the intersection of Routes 25 and 237 in Gorham to an upgraded Cumberland Street west of Bridge Street in Westbrook.

Sub-Concept F. New Roadway from east of Gorham Village, around downtown Westbrook, to the Westbrook Arterial -- a southerly bypass of downtown Westbrook between Mosher's Corner and the intersection of the Westbrook Arterial and Larrabee Road. Access to the new roadway would be provided at Mosher's Corner, New Portland Road, Saco Street, Spring Street, Stroudwater Street, and the Westbrook Arterial.

Sub-Concept G. New Roadway from east of Gorham Village, around downtown Westbrook, to the Maine Turnpike -- a southerly bypass of downtown Westbrook between Mosher's Corner and the Maine Turnpike near the proposed Congress Street interchange. Access to the bypass is provided at Mosher's Corner, New Portland Road, Saco Street, Spring Street, and Congress Street.

Sub-Concept I. New Roadway from south of Gorham Village along an alignment south of current Route 22 corridor -- a new road connecting Route 25 west of Gorham Village to I-295 at its junction with the Maine Turnpike. The corridor alignment passes west of Gorham Village and runs roughly parallel to Route 114. South of Route 22, the new roadway turns easterly, crosses Route 114 and connects with I-295 at the Turnpike.

Sub-Concept L. New Roadway which bypasses the Route 22/114 Overlap -- a bypass of Route 22 between South Street (Route 114) in Gorham and Gorham Road (Route 114) in Scarborough.

Sub-Concept N. New Roadway along Maine Central Railroad Corridor from I-295 to Maine Turnpike -- a new roadway parallel to Brighton Avenue between I-295 and the proposed Turnpike interchange at the Westbrook Arterial. Access is provided only at the Turnpike interchange, at Congress Street west of Stevens Avenue, and at I-295.

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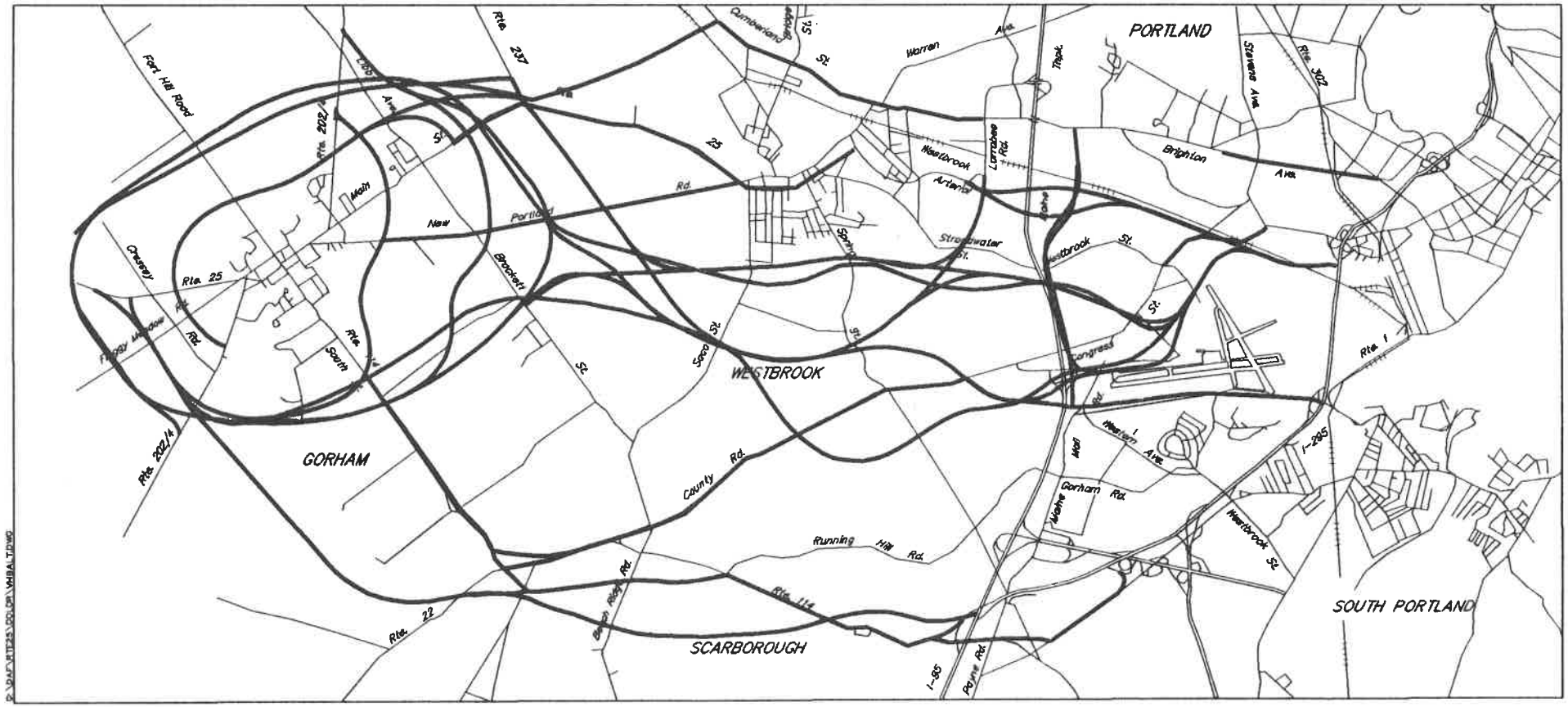

Figure 6 – Screen One New Roadway Concepts

LEGEND

New Roadways

0 2000 4000 Feet

Original Base Map Developed
by Vanasse Hangen Brustlin, Inc.
Watertown, Massachusetts

Sub-Concept P. New Roadway along Stroudwater River corridor from Maine Turnpike to I-295 -- The corridor alignment passes north of the proposed Turnpike interchange at Congress Street, and parallel to Congress Street between Johnson Road and I-295. There could also be a north-south spur parallel to the Turnpike connecting the new roadway to a new interchange at the Westbrook Arterial interchange south of Brighton Avenue.

Sub-Concept Q. New Roadway south of and parallel to Congress St (Route 22) from Maine Turnpike at proposed Congress Street interchange to I-295

or **New Roadway south of the Jetport from the proposed Congress St interchange with the Maine Turnpike to I-295**

Sub-Concept S. Interchange between I-95/I-295 and east-west roadway network near Exit 6A -- Connect southbound I-295 at Exit 6A to Route 114. Also provide a ramp to northbound I-295 directly from the Route 114 overpass of the Turnpike or directly from Payne Road immediately north of the Walmart site.

Sub-Concept T. New Roadway from Route 22 near Babb Corner to Saco Street in Westbrook -- This corridor provides a bypass of the South Gorham overlap of Routes 22 and 114 and provides a connection to the Westbrook roadway network at Saco Street (and potentially to a southerly Westbrook Bypass as described in Sub-Concepts F and G).

Sub-Concept U. Extend Westbrook Arterial from its Current Terminus to Gorham -- Continue the Westbrook Arterial from its current terminus from Main Street across the Presumpscot River, with a grade separation at Brown Street, along the Mountain Division rail right-of-way to Pierce Street, then overland to another crossing of the Presumpscot River into Gorham and on to Mosher's Corner.

3.1.2 Screen One Results

The major purpose of the Fatal Flaw screen was to identify likely environmental, cost, operational and physical impacts which could be so severe that implementation of a particular alternative would ultimately be precluded because of regulatory considerations, because of resource agency positions, because of public opinion, or because of sheer magnitude of impact. The initial screen concentrated on impacts on historic or cultural resources, disruption to the desired character of a community, and order of magnitude costs.

This section is organized into three parts. The first two parts identify the Alternative Concepts for which there is potentially significant adverse impacts (1) on environmental resources and (2) on historic areas and village/community character. The third part presents an assessment of which Alternative Concepts (and which combinations of Alternative Concepts) could be implemented within a 20-year timeframe given current estimates of future funding availability. Section 3.1.3, which follows, summarizes the Alternative Concepts which were eliminated in Screen One.

Environmental -- The MDOT Route 25 Corridor Study conducted an investigation of potential environmental impacts associated with various new and upgraded roadway alternatives. That analysis found that any potential adverse environmental impacts could probably be mitigated through the design process and therefore would satisfy the "fatal flaw" test in Screen One. These conclusions were based on the roadway centerlines as depicted in the MDOT Route 25 Corridor Study. The comparative order of magnitude significance of the environmental impact and the potential to avoid or minimize potential impacts during future project planning was evaluated later in Screen Three.

Historic/Cultural Resources and Community Impacts -- Under this criterion, a qualitative assessment was made as to whether the alternative would have a significant negative impact on (1) an historic district or structure or (2) the character of a village (e.g., Gorham Village) or of a community (e.g., the Stroudwater neighborhood).

Any changes to the roadways within Gorham Village must take into account the restrictions and limitations imposed by the presence of an Historic District. Any significant widening of Main Street/Route 25 or of South Street/Route 114 within the Village would not be physically practical without taking buildings currently situated at the intersection of Routes 25 and 114. This level of disruption to the commercial district and to the historic district would not be acceptable.

Widening of Congress Street through Stroudwater between Johnson Road and Frost Street (beyond what was recently constructed), because of the physical constraints imposed by the historic district, would likewise not be possible.

The widening of Brighton Avenue between Stevens Avenue and Deering Avenue could have significant impacts on the adjacent residential communities. As the Sub-Concept was further refined in subsequent screens, the issue of community impact was closely monitored.

It appeared to the Gorham-Portland Corridor Advisory Committee that a new roadway along the Stroudwater River corridor from the Maine Turnpike to I-295 would be perceived to have a significant adverse impact on the existing Stroudwater neighborhood.

Extension of the Westbrook Arterial from its current terminus at Main Street across the Presumpscot River, with a grade separation at Brown Street, along the Mountain Division rail right-of-way to Pierce Street, then overland to another crossing of the Presumpscot River into Gorham and on to Mosher's Corner would displace an estimated ten residential dwelling units and a baseball field.

A potential historic site is located just northeast of Mosher's Corner. For new roadway concepts in this area, there appears to be potential paths which would avoid the site.

Design and implementation of the TSM actions (i.e., upgrade traffic operations along Main Street in Gorham Village and in Westbrook along Bill Clarke Drive) must be done with sensitivity to pedestrian needs and to the needs of adjacent property owners for safe and efficient access. At this stage in the screening process, it was assumed that TSM projects will be acceptable in terms of community impacts.

Capital and Operating Costs -- Order of magnitude capital costs and operating and capital costs were developed at a coarse level (and are not at the same level of precision as those presented in the Screen Three analysis). Right-of-way costs were not included in this estimate. Unit costs were based upon similar projects or improvements constructed in the region or nationally.

The principal issue at this screen was whether the alternative will "cost too much." It is difficult to make this assessment without also reviewing the potential economic benefits of an alternative. Nevertheless, the "too costly" alternatives were screened at this stage. The threshold cost criteria were based upon realistic estimates of future funding availability from federal, state, and local resources.

Table 12 presents a listing of current and anticipated sources of funds available for transportation projects in the PACTS area specifically and for southern Maine in general.

Table 12. Potential Sources and Limits of Funds for Transportation Projects in Maine and the PACTS Area

Source of Funds	Estimate of Available Funds*
Federal Highway Administration (FHWA)	PACTS** Area: $2.5 million annually
	RTAC** Area: MDOT allocates on a statewide basis
	Congestion Mitigation and Air Quality (CMAQ) funds: $4 million per year for area south of Bangor
	"Demonstration" funds from U.S. Congress
Federal Transit Administration (FTA)	PACTS: $0.7 million per year (operating and capital assistance)
	"Demonstration" funds from U.S. Congress
Maine Turnpike Authority (MTA)	Recently has supported the promotion of alternative transportation modes; also has financed construction of new connections to the Turnpike
Private Investment	Impact fees
Tax Increment Finance (TIF) District	Unknown

* *includes the 20 percent match (typically from a municipality and MDOT)*

** *The PACTS area is comprised of Cape Elizabeth, South Portland, Portland, Westbrook, and parts of Falmouth, Gorham and Scarborough. The RTAC area is the balance of Cumberland County.*

Given the available funding sources and limits as outlined in Table 12, it was necessary to develop an estimate of available funds for projects in the Gorham-Portland corridor. Table 13 presents the available funds estimates developed in conjunction with MDOT staff and which were reviewed and approved by the Advisory Committee as appropriate for this study. The estimates in the table indicate that some of the funds are limited in terms of eligible projects (e.g., Congestion Mitigation and Air Quality (CMAQ) funds can be used for transit operating assistance and other transportation system management measures such as traffic signal upgrades; however, these funds cannot be used for new roadways).

Table 13. Estimates of Funds Available for Significant Transportation Projects in the Gorham-Portland Corridor

Source of Funds	Estimate of Available Funds
Federal Highway Administration (FHWA)*	PACTS: $20 million over the next 20 years
	RTAC/MDOT: $10 million over next 20 years
	CMAQ funds: $10 million over next 20 years**
	"Demonstration" funds: None (if demonstration funds are ever obtained, Maine's bridges will probably come first)
Federal Transit Administration (FTA)	PACTS: None; existing funds do not meet existing needs
	"Demonstration" funds: None
Maine Turnpike Authority (MTA)	$18 million toll road linked to the Turnpike (assumes 10,000 vehicles pay $0.50 per day; only one toll plaza along new roadway; and one-third of revenue goes to debt retirement)
Private Investment	No estimates developed
Tax Increment Finance (TIF) District	No estimates developed

* *FHWA funds can also be used to finance capital investments for public transportation.*

** *These funds can also be used to subsidize public transportation operating deficits (for new services) for a three-year period. Future Congressional support for these funds is uncertain.*

Based on the funding estimates presented in Table 13, the assumed funding limitations for Gorham-Portland Corridor transportation projects were as follows:

- **$30 million for roadway projects** ($20 million from PACTS and $10 million from MDOT/RTAC);
- **$40 million for transit projects** ($20 million from PACTS; $10 million from MDOT/RTAC; and $10 million from CMAQ);
- **$40 million for a combination of highway and transit projects** (as long as the roadway projects do not exceed $30 million);
- **$48 million for roadway projects which involve a toll facility** ($20 million from PACTS; $10 million from MDOT/RTAC; and $18 million from net toll revenues); and
- **$58 million for a combination of roadway and transit projects which involve a toll facility** (as long as the toll highway costs do not exceed $48 million).

Both Gorham Bypasses (Sub-Concepts A and C) and both Westbrook Bypasses (Sub-Concepts F and G) have estimated costs which are within the $30 million threshold. It was decided that Sub-Concepts A, C, F, and G should be retained for evaluation as stand-alone, two-lane at-grade (or grade-separated) roadways or in combination with other roadway upgrade sub-concepts.

Sub-Concepts A or C could be combined with Sub-Concepts F or G to produce a new roadway which bypasses both Gorham Village and downtown Westbrook. The cost estimate would be just within the $30 million threshold (but only if both links are constructed at-grade). A grade-separated roadway (i.e., with interchanges) would work only if built as a toll road between the Turnpike and Gorham Village).

Sub-Concept I (which must be done in combination with Sub-Concept S) has a total estimated cost of $43-49 million. However if the new roadway along the Sub-Concept I alignment is assumed to extend only between Maine Turnpike and County Road/Route 22 in South Gorham, the total estimated cost (with the Sub-Concept S interchange) is within the threshold.

The estimated cost for Sub-Concept N was $18-21 million. Within the $30 million "free road" limitation, Sub-Concept N would work in combination with local road upgrades (e.g., widening of Route 25) or in combination with a two-lane at-grade northerly bypass of Gorham. If Sub-Concept N is constructed as a toll roadway, it would need to tie directly into another limited-access facility which extends further to the west of Maine Turnpike (i.e., Sub-Concepts F or G). As a two-lane limited-access toll road, the estimated cost barely fits within the threshold.

The estimated construction cost for both Sub-Concept P and Sub-Concept Q exceeded even the threshold for a toll facility. Both were, therefore, dropped from further consideration.

Sub-Concept T could be built as a four-lane roadway only if built as a stand-alone project. However, Sub-Concept T could be built as a two-lane roadway either as a stand-alone project or in combination with two-lane Sub-Concepts F and G (the complementary Westbrook bypass roadway network).

Sub-Concept U could be built within the funding availability threshold as a two-lane facility.

3.1.3 Alternatives Eliminated in Screen One

A recommendation for a particular Conceptual Alternative to be eliminated from further consideration should not be construed to mean that the alternative does not have merit. A Conceptual Alternative may serve other regional or local transportation goals which would make it appropriate to pursue, but not for the Gorham-Portland corridor and the specific objectives of this study as defined by the Advisory Committee.

The Alternative Concepts eliminated in Screen One from further consideration were as follows (and are illustrated in Figure 7):

- the widening of Main Street/Route 25 and of South Street/Route 114 through Gorham Village because of disruption to an historic district and to the community character;
- the widening of Congress Street/Route 22 through the Stroudwater neighborhood because of disruption to an historic district and to the community character;
- the aggressive TDM program because of anticipated economic and political infeasibility by the Portland business community, local governments, and general public; and
- new roadways east of the Turnpike along the Stroudwater River and skirting the Portland Jetport to the north or south (because of anticipated funding limitations).

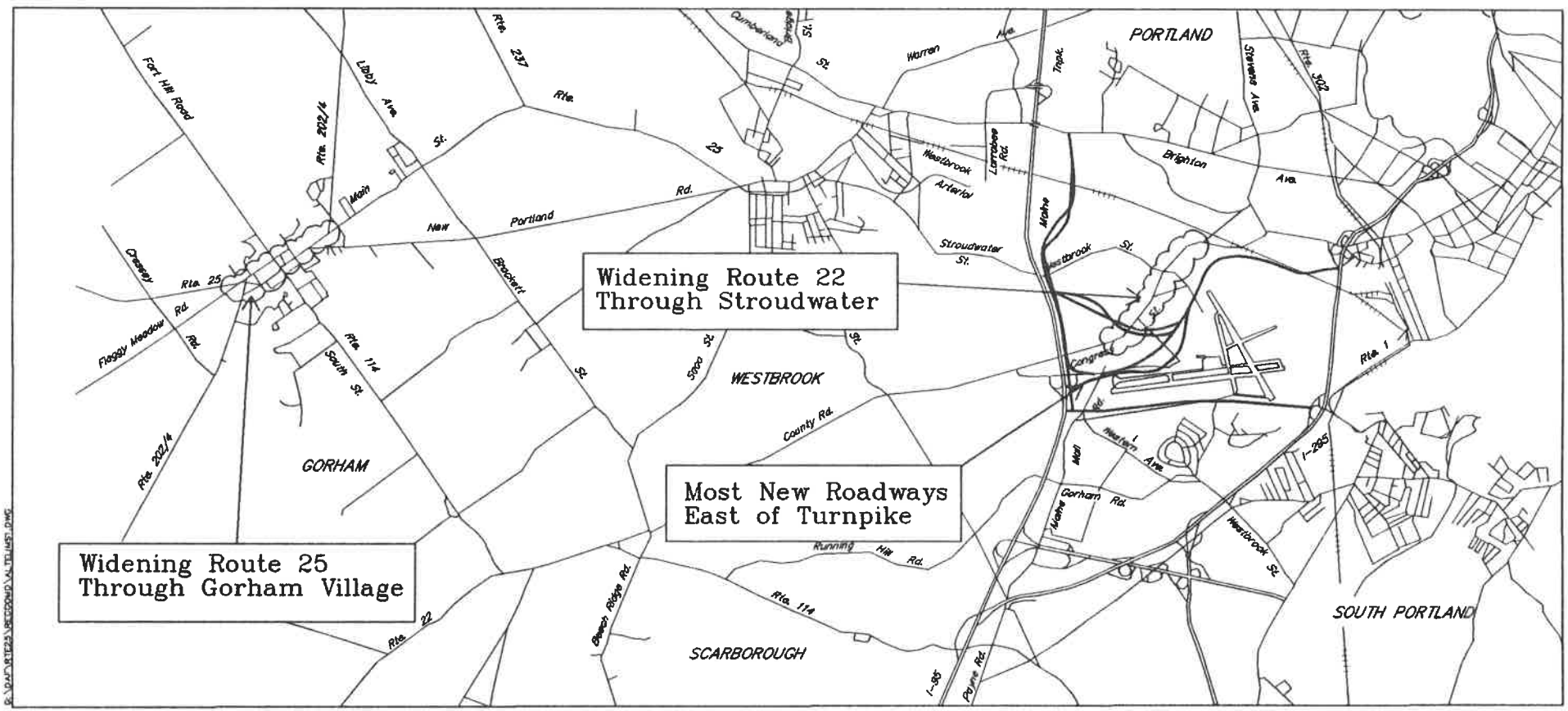

Figure 7: Alternatives Eliminated in Screen One

3.2 SCREEN TWO CONCEPTUAL ALTERNATIVES

The second screen focused on travel demand and capacity of the transportation system and the benefits of the conceptual alternative toward the achievement of overall transportation system goals in the study corridor. In short, this second screen answered the questions: does the alternative have merit? does it provide benefits in the corridor?

The criteria and measures of effectiveness used for this evaluation included the following:

- Mobility for Motorists
  - travel time savings between key and representative pre-defined points in corridor
  - volume-to-capacity ratio at key points in corridor
- Mobility for Non-Auto Travel Modes
  - transit ridership
  - area served by transit
- Transportation Safety for Motorists and for Pedestrians
- Freight Movement through Corridor
  - effect on National Highway System
  - rail freight service -- the economic viability of many businesses in the corridor is dependent on the availability and continuation of rail freight service along the Mountain Division between Portland and Westbrook; any action which could jeopardize the continued movement of freight over the rail corridor could be considered to have a potential adverse impact.
- Compatibility between Corridor Land Use and Transportation System
  - accessibility of corridor land uses
  - land uses which facilitate achievement of the other goals
- Industry Standards -- an assessment was made as to whether the alternative meets industry effectiveness standards in terms of transit patronage, toll revenue, etc.; if not, could it be considered complementary and fundable/affordable in conjunction with other alternative concepts?

The following twelve conceptual alternatives represent the full-range of actions which survived the Screen One evaluation process. They are the conceptual alternatives which were fully evaluated in this screen. Illustrations of the key features of each alternative are included in Figures 8 through 17.

3.2.1 Alternative Concept 2-1: Baseline Scenario -- For the analysis, a set of "base conditions" were defined for the forecast year of 2015. These conditions form the base against which the performance associated with the alternatives was measured. These base conditions represent a continuation of current ongoing TDM and transit programs in the region. They also represent a program of actions intended to improve the efficiency and safety of the existing transportation system.

> *It was recommended that Alternative 2-1 be retained as a benchmark against which to measure the effectiveness of the other alternatives.*

3.2.2 Alternative Concept 2-2: Enhanced Baseline Scenario -- This alternative sought to address the existing and projected year 2015 peak period transportation system problems in the corridor (1) by improving the efficiency with which the transportation system is used and operated by means of TSM actions and (2) by shifting travel demand away from congested locations and away from congested time periods by means of TDM actions.

The TSM actions included in this alternative concept constitute a series of systems management measures which would appear to be ripe for implementation in the corridor based on current levels of congestion and demand. Intersection improvements, such as new traffic signals and additional approach lanes, are included here.

The TDM and transit actions included in this alternative concept represent a modest expansion of ongoing and planned TDM and transit programs for the region. In particular, they represent a logical series of demand management programs which would probably emerge from a concerted effort to define effective TDM and transit programs for the corridor.

> *Alternative 2-2 has insufficient benefits on its own. It produced only a very small improvement in travel time in the corridor and no effective change in traffic congestion. Nevertheless, this alternative provided direct mobility benefits for non-auto travel modes and should be retained. Therefore, it was decided to incorporate the TSM/TDM program elements of this alternative into all Screen Three conceptual alternatives.*

3.2.3 Alternative Concept 2-3: Bus Service Expansion -- This alternative implemented a series of transit system improvements specifically targeted to encourage bus ridership in the corridor. Proposed new bus routes are illustrated in Figure 8. The concept included:

- park-and-ride lots at proposed express bus stops in Standish, Buxton, Gorham, and Westbrook;
- direct (no downtown Portland transfer) METRO bus service from downtown Westbrook to Maine Mall area (with $1 fare per trip and a peak hour headway of 30 minutes); and
- new express (limited stop) commuter bus service:
  - between Gorham, Westbrook, and Portland via Route 25 (with $1.50 fare per trip and a peak hour headway of 30 minutes);
  - between Gorham and the Maine Mall area via Route 22 and Route 114 (with $1.50 fare per trip and a peak hour headway of 30 minutes);
  - between Buxton, Gorham, and Portland (with $2.50 fare per trip and a peak hour headway of 60 minutes);
  - between Buxton and the Maine Mall area (with $2.50 fare per trip and a peak hour headway of 60 minutes);
  - between Standish, Gorham, Westbrook, and Portland via Route 25 (with $2.50 fare per trip and a peak hour headway of 60 minutes); and
  - between Standish, Gorham, and the Maine Mall area via Route 22 and Route 114 (with $2.50 fare per trip and a peak hour headway of 60 minutes).

This alternative had insufficient benefits on its own. The bus patronage forecasts for Alternative 2-3 were well below national averages. The additional bus patrons generated with the bus service expansion were estimated to be between 50 and 100 in the evening peak hour. This patronage estimate can be translated into two other performance indicators:

- 0.7 - 1.4 passengers per vehicle revenue-mile (the national average for urban bus systems is 2.94 passengers per daily vehicle revenue-mile); and
- 12 - 25 passengers per vehicle revenue-hour (the national average for urban bus systems is 37.8 passengers per daily vehicle revenue-hour).

It was decided to: (1) restructure the bus routes developed for Alternative 2-3 before any additional analysis of the potential effectiveness bus service options, (2) incorporate the refined transit program elements in all Screen Three conceptual alternatives, and (3) delete the Bus Service Expansion alternative as a stand-alone concept.

3.2.4 Alternative Concept 2-4: Mountain Division Rail -- This alternative took the transit service expansion included in Alternative Concept 2-3 and added transit service (either rail or bus transit) along the Mountain Division rail corridor (as illustrated in Figure 9). Service would extend beyond Westbrook to a station in or near South Windham. The alternative included local "feeder" bus service from Gorham via Route 25 to Westbrook and from North Windham via Route 4/202 to South Windham.

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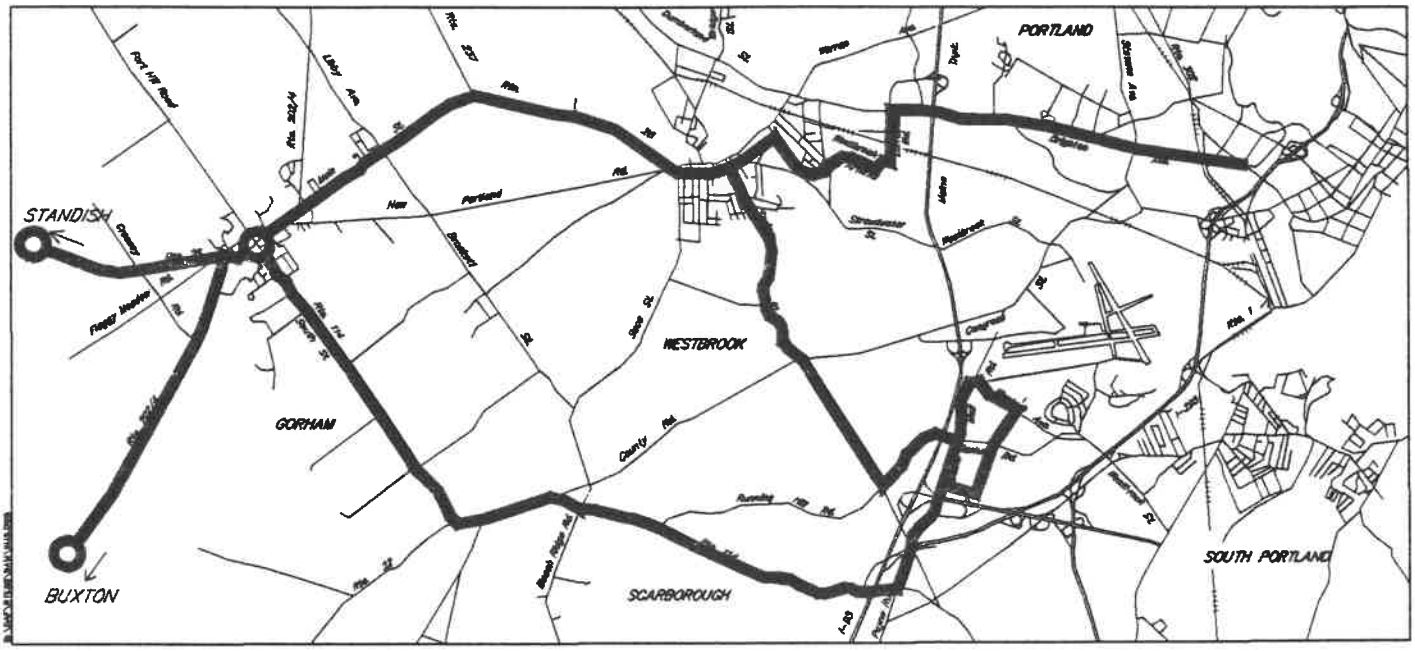

Figure 8: Bus Service Expansion Assumed in Alternative 2-3

New Fixed Route Bus Transit Service

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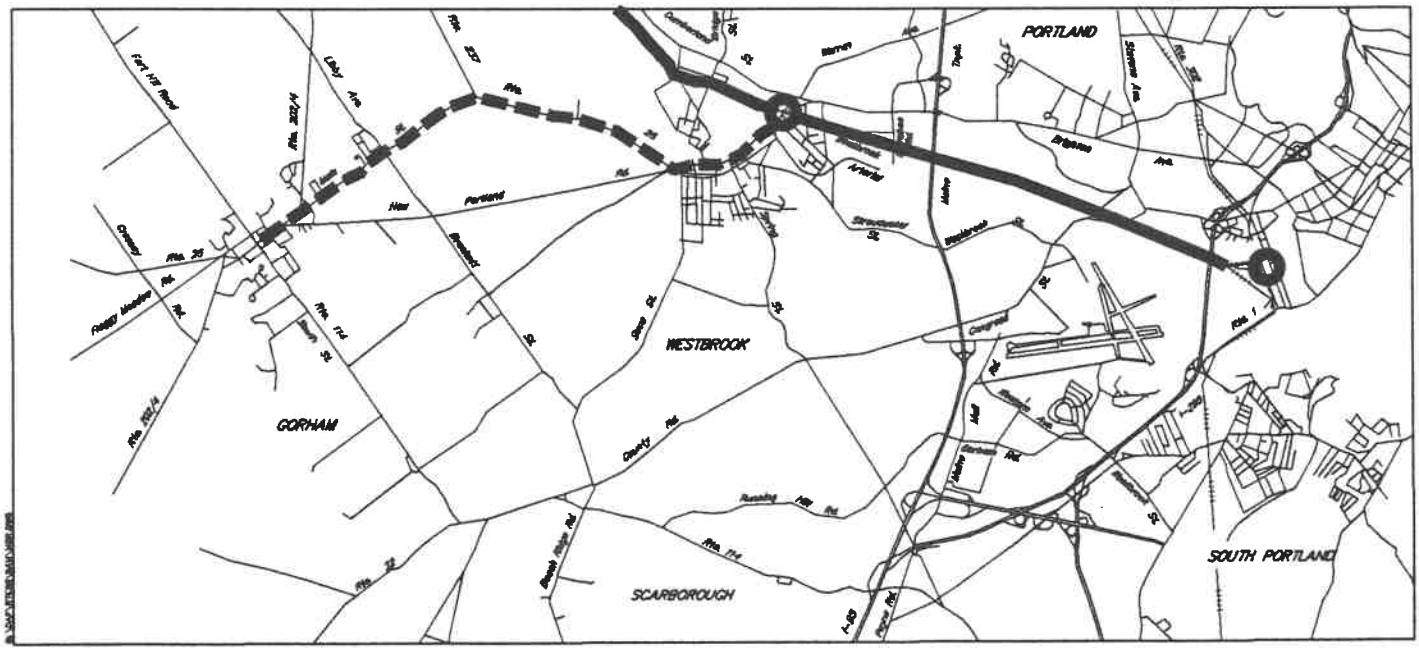

Figure 9: Alternative 2-4 Mountain Division Rail

Legend

Commuter Rail Service Along Mountain Division

Feeder Bus Service

Commuter Rail Station

The additional transit patrons generated with the passenger rail service included in Alternative 2-4 were estimated to be as high as 64 during the evening peak hour. This patronage estimate can be translated into two other performance indicators:

- 1.8 passengers per peak hour vehicle revenue-mile (national average for commuter rail systems is 1.6 passengers per daily vehicle revenue-mile); and

- 64 passengers per peak hour vehicle revenue-hour (national average for commuter rail systems is 53.4 passengers per daily vehicle revenue-hour).

The rail patronage forecasts for Alternative 2-4 were for the evening peak hour and therefore represent the high point of demand during a typical weekday. The national averages derived from Federal Transit Administration Section 15 data represent patronage throughout a complete day (which would therefore be lower than a typical peak hour).

This alternative produced very small improvement in travel time for motorists, improved mobility for some potential transit patrons in the corridor, and caused a minor (but measurable) improvement in downtown Westbrook traffic congestion.

GPCOG prepared a memorandum on the subject of the potential cost-effectiveness of rail passenger service in the corridor. The summary recommendation from that cost-effectiveness analysis was as follows:

> The transportation benefits of a Mountain Division commuter rail service alone to the Gorham-Portland corridor, in terms of traffic reduction and mobility improvement, are limited. Study staff recommends: (1) removal of the Mountain Division Commuter Rail Service as a stand-alone Gorham-Portland Study alternative and (2) further study by GPCOG of the potential demand for this service as part of a regional network.
>
> *The Advisory Committee decided to eliminate Alternative Concept 2-4 from further consideration. The Advisory Committee also decided to make a clear statement in support of the need to preserve rights-of-way (for example, along the Mountain Division) for subsequent use as a transportation corridor, whatever mode is ultimately selected.*

3.2.5 Alternative Concept 2-5: Toll Road Bypass of Gorham and Westbrook Centers -- This concept included a new toll road from the Maine Turnpike, bypassing the Westbrook and Gorham Business Districts (as illustrated in Figure 10). The alternative included a new Turnpike interchange at the Westbrook Arterial with a connection to Rand Road and Brighton Avenue. The new toll road (posted at 50 mph) would include at-grade intersections at Route 202 west of Gorham Village and at the Westbrook Arterial. As shown in Figure 10, the toll road would pass Gorham Village around either its north side or south side, then follow one of several alignments to the south of downtown Westbrook.

The principal intent of this alternative was to assess feasibility of toll road financing in the corridor and not the specific alignment of a new toll road. The new road would have the same entry toll as the Turnpike, except there will be a free interchange between the Turnpike and the new toll road.

This alternative addressed most auto mobility and safety issues. Traffic would move better in Gorham Village, in downtown Westbrook, near Exit 8, and along Route 22.

> *The estimate of funding availability for a toll road in the Gorham-Portland corridor (as described previously in Table 13) assumed daily usage of 10,000. The evening peak hour forecasts for Alternative 2-5 (Toll Road) indicate that in the year 2015, daily usage would likely not reach 10,000. Therefore, a toll road between the Maine Turnpike and Gorham Village would not generate sufficient revenue to justify its construction within the self-sustaining criteria established by the Maine Turnpike Authority.*

3.2.6 Alternative Concept 2-6: New Arterial Roadway Bypass of Gorham and Westbrook Centers -- This concept included a new controlled-access roadway from the Turnpike, bypassing the Westbrook and Gorham Business Districts. Several alternative alignments were proffered for a Gorham bypass (both northerly and southerly of Gorham Village) as illustrated in Figure 11.

The alternative included a new Turnpike interchange at the Westbrook Arterial with a connection to Rand Road and Brighton Avenue. The new roadway (posted at 45 mph) would include at-grade intersections at Route 202 west of Gorham Village; Route 25 west of Gorham Village; Route 114 north of Gorham Village; Route 202 east of Gorham Village; Route 25 east of Gorham Village; Spring Street in Westbrook; Saco Street in Westbrook; Stroudwater/Westbrook Street; and at the Westbrook Arterial.

> *Alternative 2-6 produced significant improvement in most mobility and safety issues in the corridor Travel time was improved to points within and west of Gorham Village. Traffic congestion would be reduced in Gorham Village and along Main Street near Exit 8. It was therefore decided to retain the arterial roadway concept (with both northerly and southerly bypasses of Gorham Village).*

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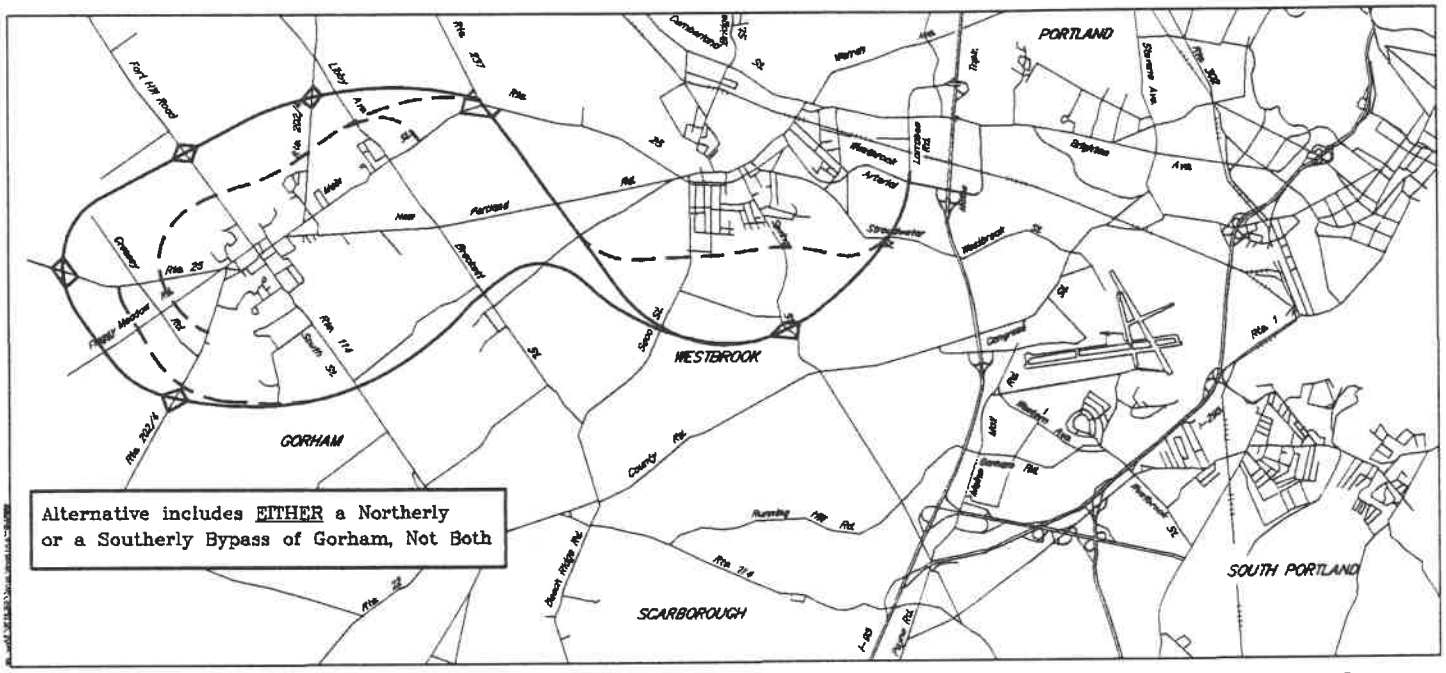

Figure 10: Alternative 2-5 Toll Road Bypass of Gorham and Westbrook Centers

Legend

——— New 2-Lane, Limited Access Toll Road

– – – Optional Paths for Toll Road

0 2000 4000 Feet

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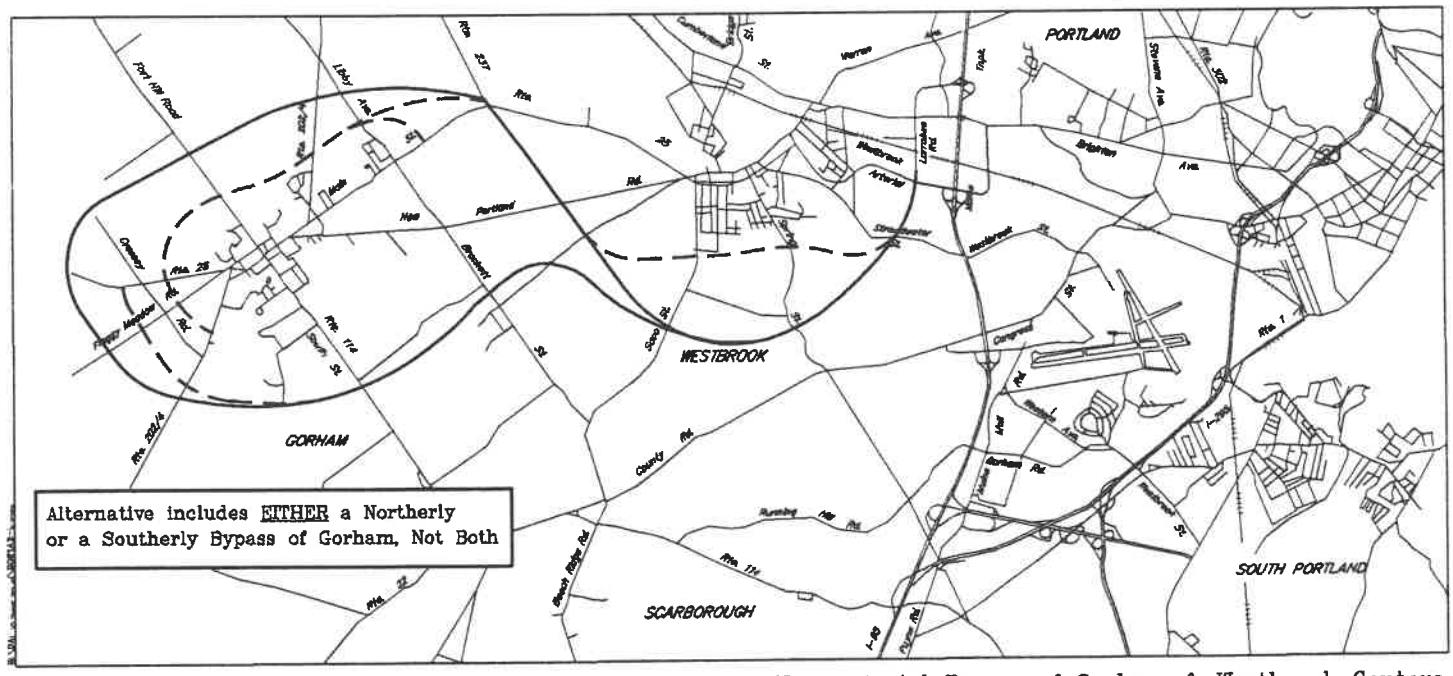

Figure 11: Alternative 2-6 New Arterial Bypass of Gorham & Westbrook Centers

Legend

——— New 2-Lane, Controlled Access Roadway

– – – Optional Paths for Arterial Roadway

0 2000 4000 Feet

3.2.7 Alternative Concept 2-7: New Roadway along the Mountain Division/Portland Terminal and a Gorham Bypass -- This concept (as illustrated in Figure 12) included both an arterial bypass of Gorham Village and a new road along the Mountain Division rail corridor from Congress Street to the Maine Turnpike. The Mountain Division roadway would run parallel to Brighton Avenue between Congress Street (east of Frost Street) and a new Turnpike interchange at the Westbrook Arterial. Access would be provided only at the Turnpike interchange, at Frost Street, and at Congress Street west of Stevens Avenue.

Alternative 2-7 produced a modest improvement in traffic congestion in Gorham Village. However, Alternative 2-7 was rejected by the Advisory Committee because a new roadway could not be accommodated within the current available rail right-of-way (and maintain current rail freight operations). Widening of the existing right-of-way to fit a new roadway would not be practical given environmental constraints, in particular the potential for significant disruption to the wetland environment along the corridor.

3.2.8 Alternative Concept 2-8: Gorham Bypass plus Several New Roadways -- This concept included an arterial bypass of Gorham Village (as assumed in previous alternatives) and several new roadways in the corridor (as illustrated in Figure 13):

- a new Turnpike interchange at an extended Westbrook Arterial;
- extension of Larrabee Road to Stroudwater Street and then to Spring Street near Eisenhower Drive;
- extension of Route 114 south from its westerly intersection with Route 22 and curve to the east to end at or near its current intersection with Running Hill Road;
- widen Route 114 to four lanes between the new roadway described above to I-95; and
- provide a direction connection between Maine Turnpike Exit 6A and Route 114
  - connect southbound I-295 at Exit 6A to Route 114
  - provide a ramp to northbound I-295 directly from the Route 114 overpass of the Turnpike or directly from Payne Road immediately north of the Walmart site

Alternative 2-8 produced significant benefits on all issues of concern (including traffic congestion relief along County Road). It was therefore decided to retain the alternative for further consideration.

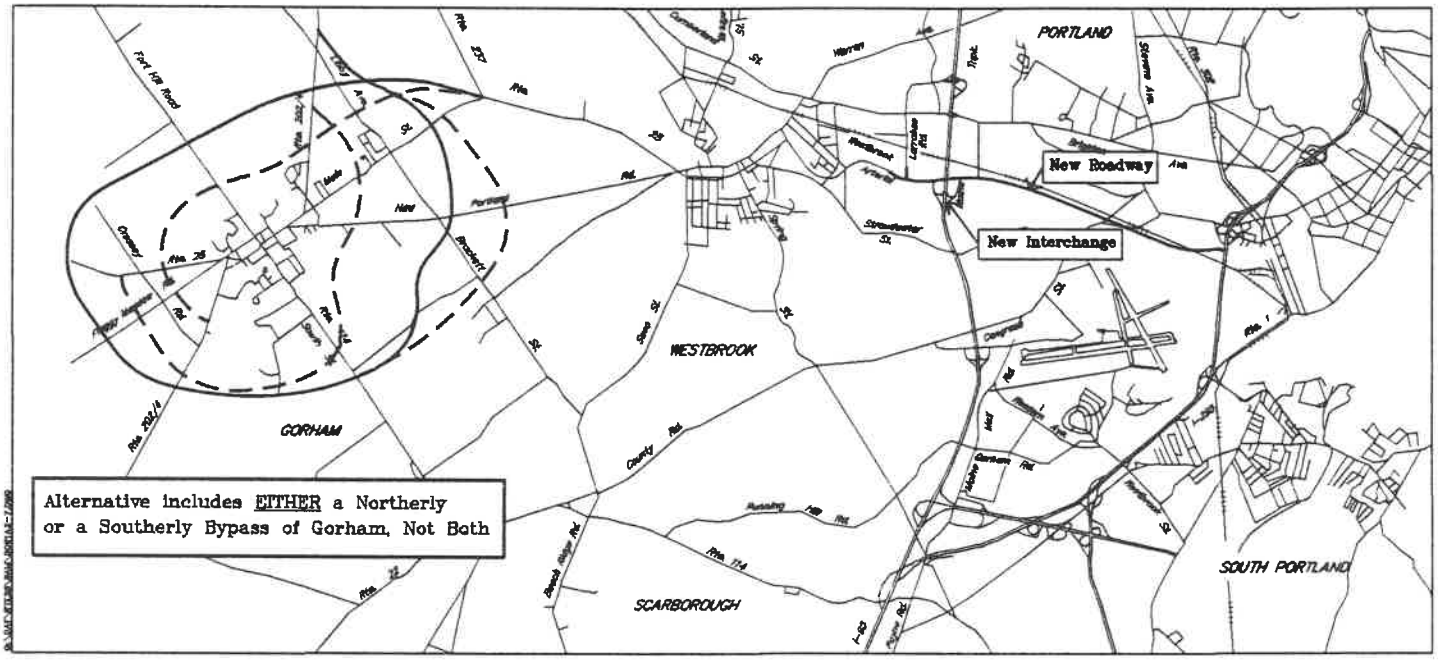

Figure 12: Alternative 2-7 New Roadway Along the Mountain Division Railroad plus Gorham Bypass

Legend

——— New 2-Lane, Controlled-Access Roadway

– — – Optional Paths for Arterial Roadway

0 2000 4000 Feet

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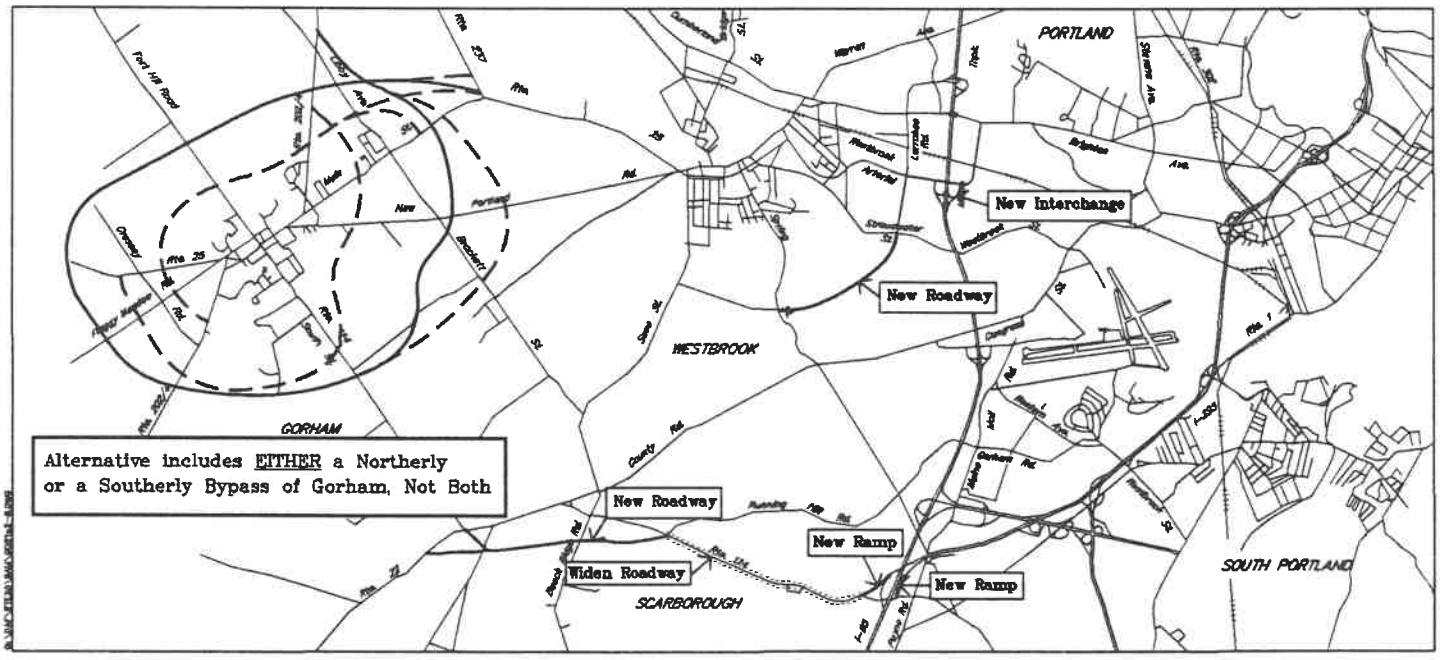

Figure 13: Alternative 2-8 Gorham Bypass plus New Roadways

Legend

——— New 2-Lane, Controlled Access Roadway

– — – Optional Paths for Arterial Roadway

..... Roadway Widening

0 2000 4000 Feet

3.2.9 Alternative Concept 2-9: Gorham Bypass plus Upgraded Roadways -- This alternative sought to address the existing and projected year 2015 peak period transportation system problems in the corridor by providing additional capacity in the corridor through the widening of existing roadways in addition to a Gorham Bypass (as illustrated in Figure 14). The roadway upgrades are described below:

- widen Route 25 to four lanes between Route 237 in Gorham (Mosher's Corner) and Main Street/Bill Clarke Drive in Westbrook;
- upgrade Bill Clarke Drive in Westbrook to five lanes between Main Street and Stroudwater Street, including intersection improvements at Stroudwater Street, at the Westbrook Arterial, and at Spring Street;
- upgrade Route 114 in Gorham (South Street) to four lanes from south of Gorham Village to the County Road/Route 22 corridor;
- upgrade the Route 22/114 overlap and County Road/Route 22 to four lanes;
- upgrade Brighton Avenue to five lanes between Rand Road and Capisic Street; widen Brighton Avenue between Woodford Street and Deering Avenue to four lanes; provide additional turn lanes at the intersection with Stevens Avenue;
- upgrade Congress Street to five lanes between Westbrook Street and Stevens Avenue;
- provide a new Turnpike interchange at an extension of the Westbrook Arterial; and
- provide ramps to and from I-295 at Route 114 in Scarborough.

Alternative 2-9 produced modest improvements in the corridor and should be retained for further consideration.

3.2.10 Alternative Concept 2-10: Roadway Upgrade Only -- This concept had all of the same roadway improvements as Alternative 2-9 except for a bypass of Gorham Village and the I-295 ramps to and from Route 114 in Scarborough (as illustrated in Figure 15). This concept also included a widening of Route 25 through Gorham Village to four through travel lanes where physically practical.

Alternative 2-10 produced only minor improvements in the corridor (and even in Gorham Village). It was decided to retain elements of this alternative in a new Enhanced Baseline Alternative in Screen Three, but not as a stand-alone concept.

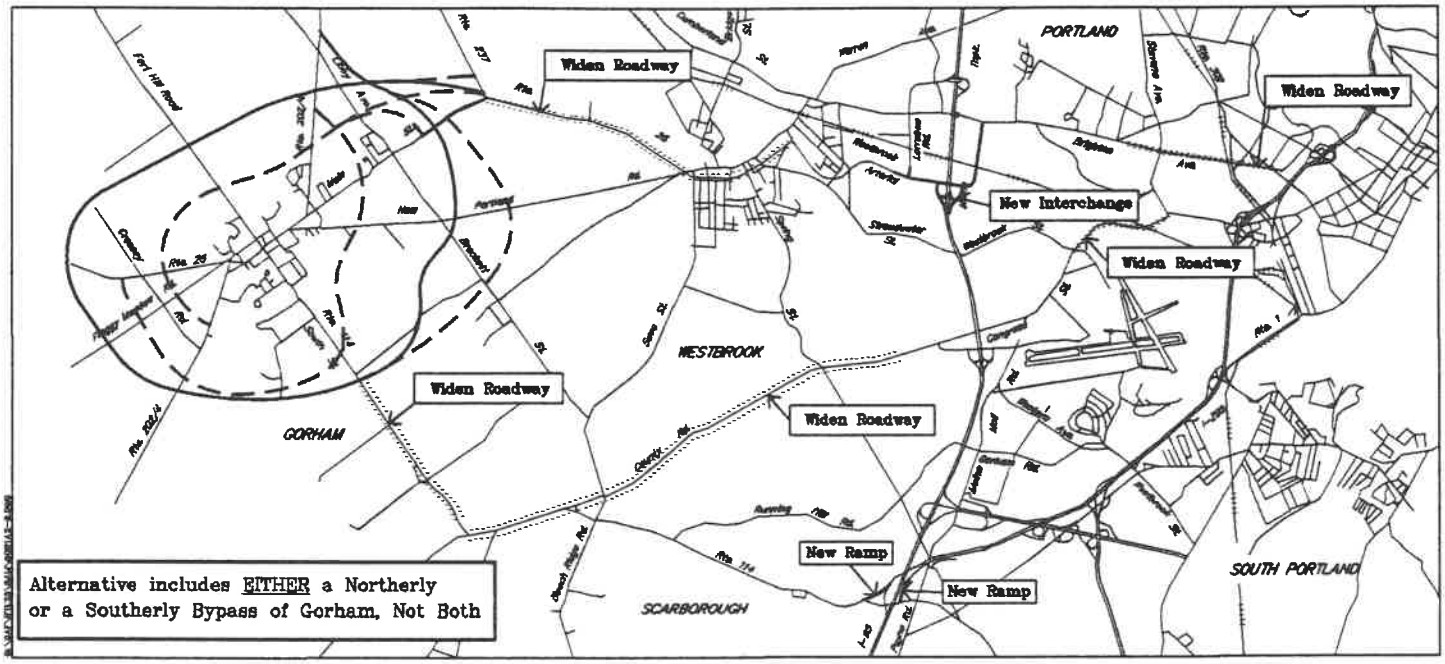

Figure 14: Alternative 2-9 Gorham Bypass plus Upgraded Roadways

Legend

- New 2-Lane, Controlled Access Roadway
- Optional Paths for Arterial Roadway
- Roadway Widening

0 2000 4000 Feet

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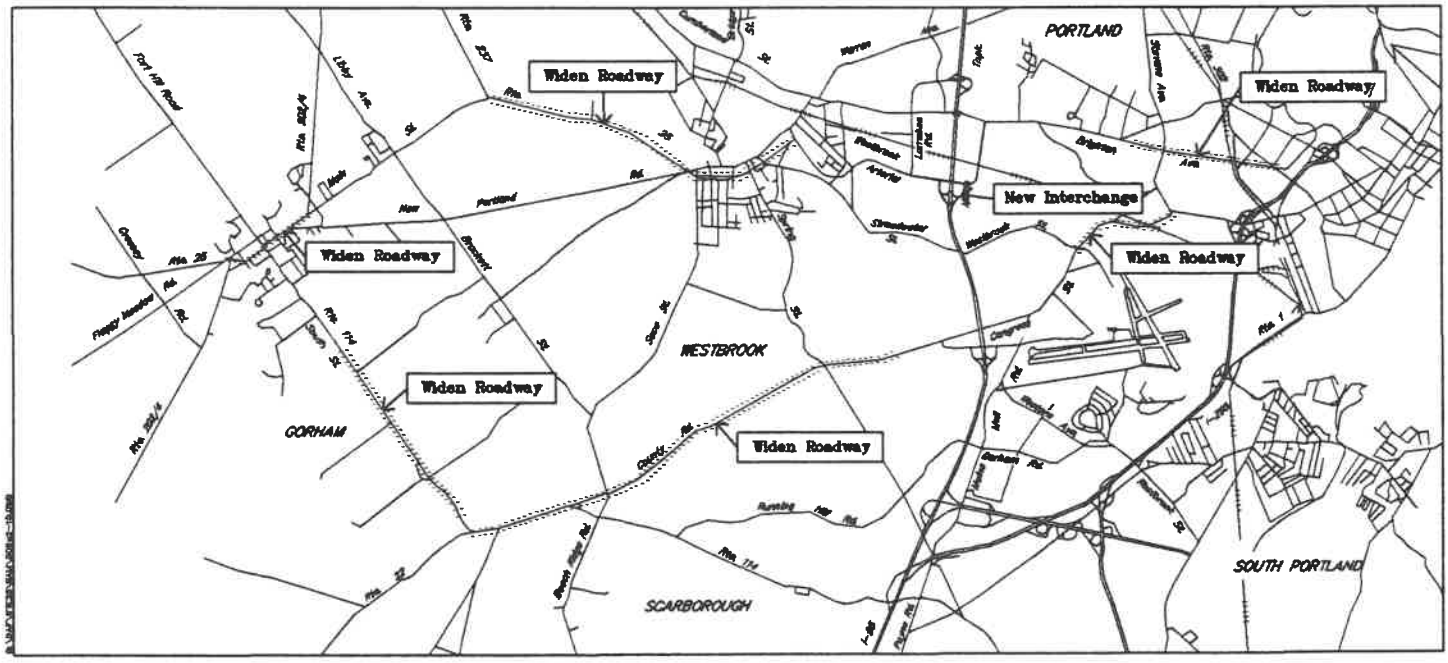

Figure 15: Alternative 2-10 Roadway Upgrades Only

Legend

- Roadway Widening
- New Roadway

0 2000 4000 Feet

3.2.11 Alternative Concept 2-11: Mountain Division/Portland Terminal Roadway plus Upgrades -- This concept (illustrated in Figure 16) included a new arterial roadway along the Mountain Division between Congress Street and a new Turnpike interchange at the Westbrook Arterial (as described previously in Alternative 2-7). The roadway upgrades listed in Alternative 2-10 were likewise included in this alternative.

Alternative 2-11 had insufficient mobility benefits in the corridor. In addition, Alternative 2-11 was rejected by the Advisory Committee because a new roadway could not be accommodated within the current available rail right-of-way (and maintain current rail freight operations). Widening of the existing right-of-way to fit a new roadway would not be practical given environmental constraints, in particular the potential for significant disruption to the wetland environment along the corridor.

3.2.12 Alternative Concept 2-12: Roadway along the Mountain Division -- This concept included a new Turnpike interchange at the Westbrook Arterial and a new road extending from the Westbrook Arterial westerly over the Presumpscot River to the Mountain Division rail corridor, then extending along a new alignment across the Presumpscot River to Gorham and the intersection of Routes 25 and 237 (as illustrated in Figure 17).

Alternative 2-12 had insufficient benefits for motorists in the corridor (especially Gorham Village). The usage of the Mountain Division rail right-of-way for a new roadway was rejected as a potential concept because its cost would consume too much of the projected available funding in the region to enable implementation of the necessary feeder/connector roadway system to address traffic congestion in Gorham, Scarborough, and Westbrook.

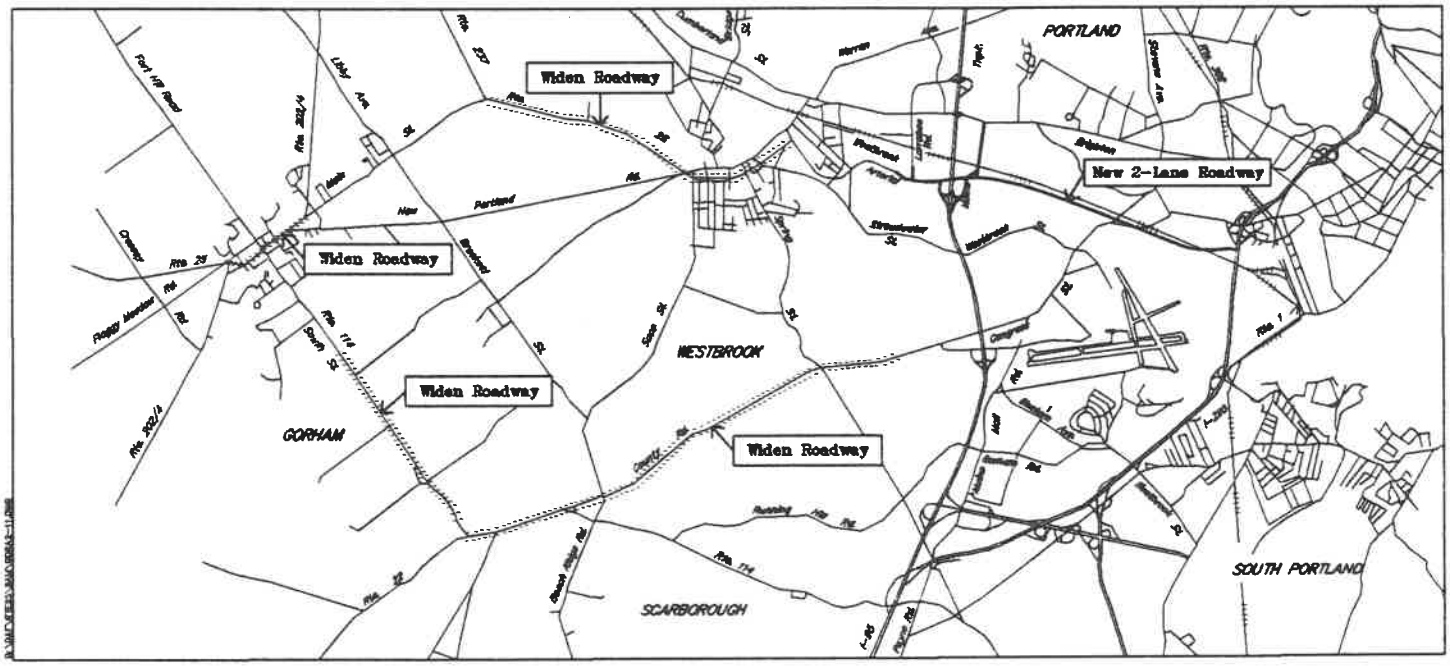

Figure 16: Alternative 2-11 Mountain Division Roadway plus Upgrades

Legend

Roadway Widening

New Roadway

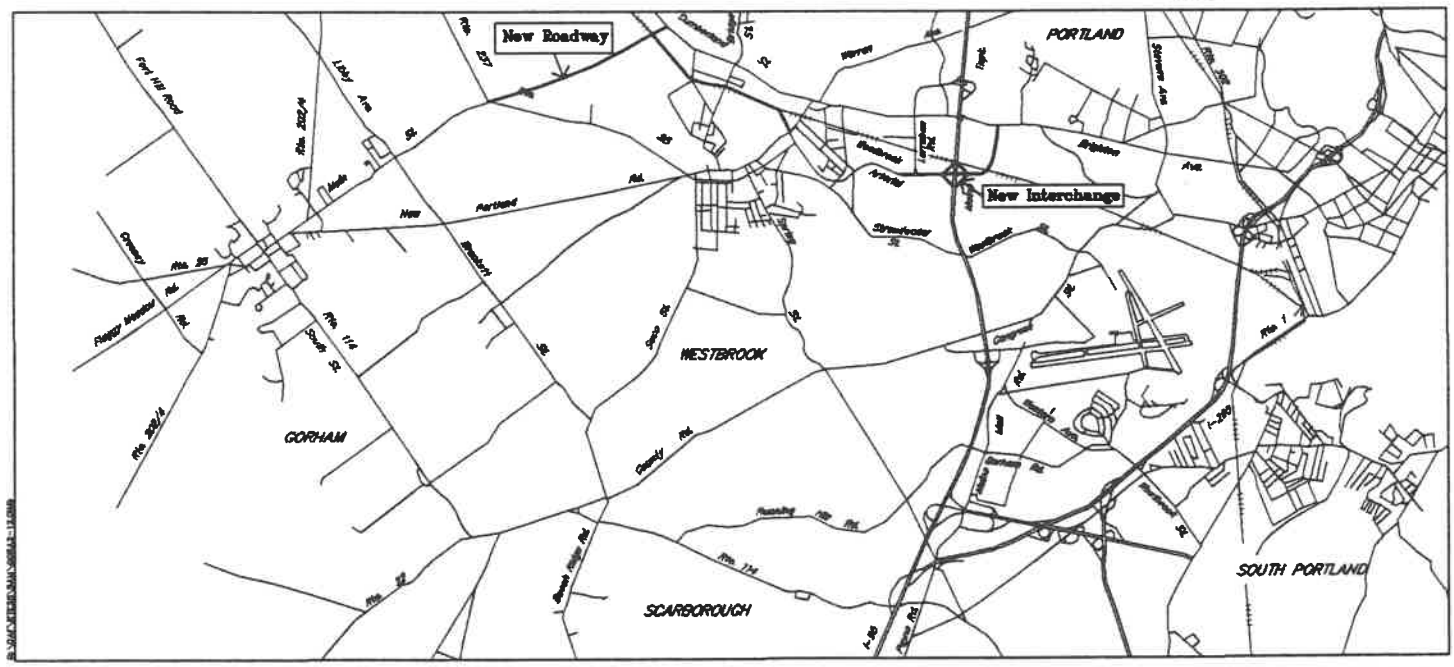

Figure 17: Alternative 2-12 Mountain Division Roadway to Gorham

Legend

Roadway Widening

New Roadway

3.3 SCREEN THREE CONCEPTUAL ALTERNATIVES

The evaluation of Screen Three alternatives was based on the same criteria employed in Screen Two, supplemented by four additional measures: local commitment for funds, ability to be staged incrementally, environmental issues, and program costs and benefits.

The following eight alternatives represent the full-range of actions which survived the Screen Two evaluation process. They represent the alternatives that were fully evaluated in Screen Three. A summary matrix describing the elements of each alternative is presented in Table 14. On the following pages, the location of TSM measures are shown in Figure 18 and new transit service routes are shown in Figure 19. Figures 20 through 25 illustrate the major roadway elements of Alternatives 3-3 through 3-8, respectively.

Table 14. Summary Characteristics of Screen Three Alternatives

Key Components of Screen Three Alternatives	Alt 3-1	Alt 3-2	Alt 3-3	Alt 3-4	Alt 3-5	Alt 3-6	Alt 3-7	Alt 3-8
Transit Service to Gorham/Buxton/ Standish/Westbrook		✓	✓	✓	✓	✓	✓	✓
Maine Turnpike/Westbrook Arterial Interchange (Portland & Westbrook)			✓	✓	✓	✓	✓	✓
Gorham Bypass (Gorham)								
• West [South Street to Gray Road]								✓
• North [Narragansett Street to Route 237]				✓	✓			
• South [Ossipee Trail to South Street]			✓			✓	✓	
Westbrook Bypass (Westbrook)								
• Moshers Corner to Spring Street				✓	✓			
• Spring Street to Larrabee Road				✓		✓		
• Spring Street to County Road					✓		✓	
• South Street to Spring Street						✓	✓	
Widen Route 22 from South St to Turnpike (Scarborough, Westbrook, Portland)			✓					
Relocate Route 114 in South Gorham and North Scarborough								✓
Provide Route 114 Ramps to/from I-295 (Scarborough)			✓					✓
Westgate Bypass (Portland)			✓		✓		✓	
Widen Brighton Avenue (Portland)			✓	✓		✓		

3.3.1 Alternative 3-1. Baseline Scenario

For the analysis, a set of "base conditions" were defined for the forecast year of 2015. These conditions were the base against which the performance associated with the alternatives was measured. These base conditions represent a continuation of current ongoing Travel Demand Management (TDM) and transit programs in the region. They also represent a program of actions intended to improve the efficiency and safety of the existing transportation system. The complete list of projects/actions assumed in the Base Case is presented below.

Transportation System Management (TSM) Actions

- new traffic signals at:
  - Cumberland Street and Park Street in Westbrook;
  - Cumberland Street and Warren Avenue in Westbrook;
  - Route 25 and Bartlett Road in Gorham;
  - Route 1 and Wallace Avenue in South Portland;
  - Stevens Avenue and Walton Street in Portland;
  - Forest Avenue and Bell Street in Portland;
  - Park Street and Commercial Street in Portland;
  - Ocean Avenue and Read Street in Portland;
  - Congress Street/Route 22 and the new Jetport Access Road in Portland;
  - Forest Avenue/Route 302 and Riverside Industrial Parkway in Portland; and
  - Congress Street/Route 22 and Hutchins Drive in Portland.
- upgrade traffic operations along Brighton Avenue
  - interconnect traffic signals between Riverside Street and Capisic Street in Portland
- new two-way traffic circulation pattern in Millcreek area of South Portland
- Maine Turnpike electronic toll collection system

Travel Demand Management Measures

- Status Quo: RideShare; PACTS/GPCOG Bicycle/Pedestrian Coordinator (part-time); and METRO Transit Voucher Program (CMAQ-funded) for Westbrook and Portland

Transit Services

- Status Quo: Metro fixed-route (Westbrook and Portland); USM Shuttle; and RTP paratransit

Upgrade Existing Roadways

- the addition of a center, two-way left-turn lane on Riverside Street between Warren Avenue and Forest Avenue/Route 302 in Portland;
- widen Johnson Road/Western Avenue to a four-lane cross-section between Congress Street/Route 22 and Maine Mall Road in Portland/South Portland;
- widen Western Avenue to a four-lane cross-section between Foden Road and Gorham Road in South Portland; and
- widen Western Avenue to a five-lane cross-section (including a center two-way left-turn lane) between Maine Mall Road and Foden Road in South Portland.

New Roadways

- a new Maine Turnpike interchange at Congress Street/Route 22 in Portland;
- a new Portland/South Portland Bridge across the Fore River;
- Methodist Road to Hardy Road Connector in Westbrook;
- new Jetport connector roadway to Congress Street/Route 22 and dead ending of Westbrook Street in Portland; and
- extension of Jetport Plaza Road from Western Avenue to Westbrook Street in South Portland.

3.3.2 Alternative 3-2. Enhanced Baseline Scenario

This alternative sought to address the existing and projected year 2015 peak period transportation system problems in the corridor (1) by improving the efficiency with which the transportation system is used and operated by means of TSM actions and (2) by shifting travel demand away from congested locations and away from congested time periods by means of TDM actions.

The TSM actions included in this alternative concept constituted a series of systems management measures which would appear to be ripe for implementation in the corridor based on current levels of congestion and demand. Intersection improvements, such as new traffic signals and additional approach lanes, were included here.

The TDM and transit actions included in this alternative concept represented a modest expansion of ongoing and planned TDM and transit programs for the region. In particular, they represented a logical series of demand management programs which would probably emerge from a concerted effort to define effective TDM and transit programs for the corridor.

Transportation System Management Measures

The locations of TSM actions for this alternative are illustrated in Figure 18.

- optimize signal timing optimization at all traffic signals (current and planned) in the corridor

- upgrade traffic operations in Gorham Village
  - coordinate traffic signals at the Main/New Portland and Main/School/South intersections;
  - improve geometrics at Mechanic/New Portland intersection;
  - improve signal operations at Main/School/South intersection to provide protected left turns for northbound Route 114 traffic;
  - consider installation of traffic signals as needed at Route 25 intersections with Libby Avenue and with Route 237 at Mosher's Corner;
  - provide separate left-turn lanes at key driveways and side streets (or a center two-way left-turn lane) on Route 25 from Route 114 east to New Portland Road;
  - improve access management along Route 25 (e.g., eliminate some Main Street curb cuts); and
  - redesign some Gorham Village parcels to provide frontage on side streets.

- upgrade traffic operations at the intersection of County Road (Route 22) and South Street (Route 114) in South Gorham
  - a separate left-turn lane and a protected left-turn traffic signal phase for left turns from eastbound County Road onto northbound South Street

- upgrade traffic operations at the intersection of County Road (Route 22) and Burnham Road in South Gorham
  - westbound slip lane to enable bypass of westbound left-turning traffic queue

- upgrade traffic operations at the easterly intersection of Routes 22 and 114
  - reconfigure intersections and roadway approaches to enable two smooth-flowing lanes from both northbound Route 114 and westbound Route 22

- identify intersection-level improvements for intersection of Route 22 and Spring Street

- upgrade traffic operations in Westbrook along the Route 25 corridor
  - resolve traffic mobility and pedestrian safety problems at Cumberland Mills Triangle;
  - improve traffic flow at intersection of Bridge Street and Main Street;
  - improve geometrics at intersection of Bill Clarke Drive and the Westbrook Arterial to enable trucks to make turns smoothly; and
  - consider extension of Bridge Street through to Bill Clarke Drive.

- realign eastern terminus of Westbrook Arterial (Route 25) to tie directly and smoothly with Larrabee Road (i.e., remove existing S-curve)

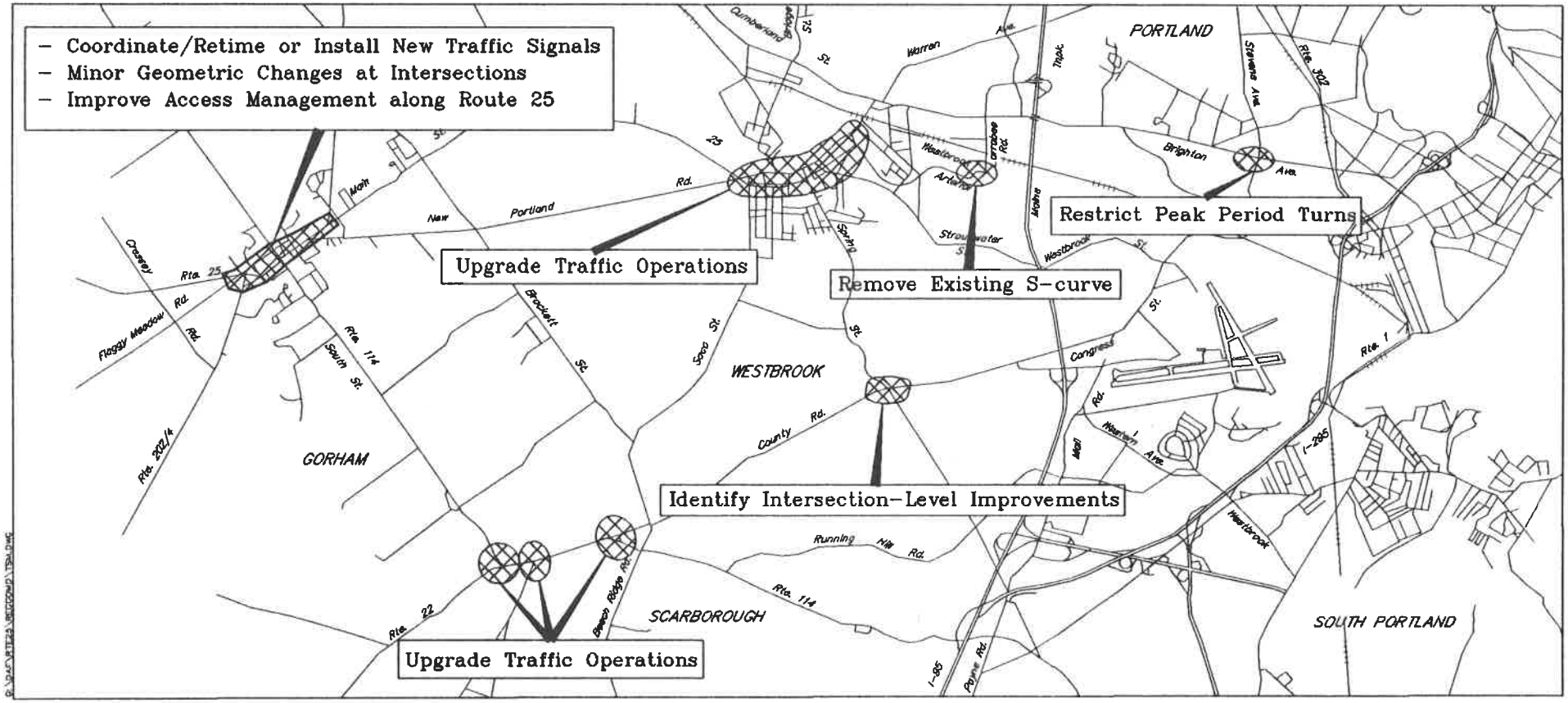

Figure 18 – TSM Actions in Alternative 3-2

Corrridor-Wide Actions: 1. Optimize Signal Timing at Current and Planned Traffic Signals
2. Initiate Motorist Information Systems

- upgrade intersection of Brighton Avenue and Stevens Avenue in Portland within the existing right-of-way (e.g., prohibit peak period left turns for eastbound and westbound Brighton Avenue)

- initiate motorist information systems in the corridor which will provide real-time information on traffic accidents and traffic congestion.

Travel Demand Management Measures

- operate VanShare (a RideShare program) vans from Standish and Gorham to downtown Portland via Route 25;

- operate VanShare vans from Standish and Gorham to the Maine Mall/Jetport area via Route 22 and Route 114;

- provide park-ride lots throughout the corridor (potential sites include South Gorham (e.g., at Route 22/114 overlap); west of Gorham Village (e.g., at West Gorham Church); in South Buxton on Broad Turn Road; at race track in Gorham; at USM in Gorham; in Standish Corner)

- promote active participation by employers in the corridor and in downtown Portland in the facilitation of carpooling and other ways to reduce single-occupant vehicle travel (e.g., the presence of on-site transportation coordinators; alternative work schedules such as flextime, compressed work weeks, and telecommuting; a regionwide guaranteed ride home program)

- provide bikeways within major commute corridors (e.g., Routes 22, 25, 114, and 237)

- conduct a thorough review and refinement, in light of corridor travel demand management objectives, of current class schedules at USM at both the Gorham and Portland campuses

- initiate congestion pricing and reduced tolls for buses, carpools, and vanpools along the Maine Turnpike

- provide new bus shelters in Gorham and Westbrook and "smart kiosks" (ATM-like electronic traveler information installations) at USM-Gorham, in downtown Westbrook, and at the METRO transfer center (Pulse) in downtown Portland

- institute preferential parking for carpools and vanpools at all public parking facilities (in downtown Portland and downtown Westbrook) and at all private parking facilities for major corridor employers (e.g., in the Maine Mall/Jetport commercial area, at S.D. Warren, at USM in Gorham and Portland, at Maine Medical Center and other hospitals)

- give consideration to a significant change in land use policies such that residential growth in the corridor is effectively altered to enable/encourage the use of walking, bicycling, and transit as viable alternatives to the automobile (e.g., through mixed-use zoning; higher densities)

Bus Transit Measures

New and expanded bus service is provided, as illustrated in Figure 19 and listed below:

- direct (no downtown Portland transfer) METRO bus service from downtown Westbrook to Maine Mall area (with $1 fare per trip and a peak hour headway of 15 minutes);
- new express (limited stop) commuter bus service: Gorham-Westbrook-Portland via Route 25 (with $1.50 fare per trip and a peak hour headway of 15 minutes);
- new express (limited stop) commuter bus service: Gorham-Maine Mall area via Route 22 and Route 114 (with $1.50 fare per trip and a peak hour headway of 15 minutes);
- new express (limited stop) commuter bus service: Buxton-Gorham-Portland (with $2.50 fare per trip and a peak hour headway of 30 minutes);
- new express (limited stop) commuter bus service: Buxton-Maine Mall area (with $2.50 fare per trip and a peak hour headway of 30 minutes);
- new express (limited stop) commuter bus service: Standish-Gorham-Westbrook-Portland via Route 25 (with $2.50 fare per trip and a peak hour headway of 30 minutes);
- new express (limited stop) commuter bus service: Standish-Gorham-Maine Mall area via Route 22 and Route 114 (with $2.50 fare per trip and a peak hour headway of 30 minutes); and
- park-and-ride lots at express bus stops in Standish, Buxton, Gorham, and Westbrook.

Land Use Measures

Modification of the long-term land development pattern was assumed to be pursued in this alternative. The municipalities within the corridor (Scarborough, Westbrook, Gorham, Standish, Buxton, and Hollis) will develop a subregional approach for managing development sprawl in the western quadrant of the Greater Portland Region. This approach will be designed to insure that transportation investments do not encourage a more dispersed development pattern, but rather encourage concentrated patterns of development that reduce the need for automobile travel and/or increase the viability of alternative modes of travel. This program could allow the following:

- expansion of existing centers such as Gorham Village, Little Falls/South Windham, and North Scarborough/South Gorham as higher density mixed-use villages;
- higher density residential and nonresidential development in the area east of Westbrook and Gorham; and
- increased restriction of low-density, scattered residential development in the areas west of Gorham.

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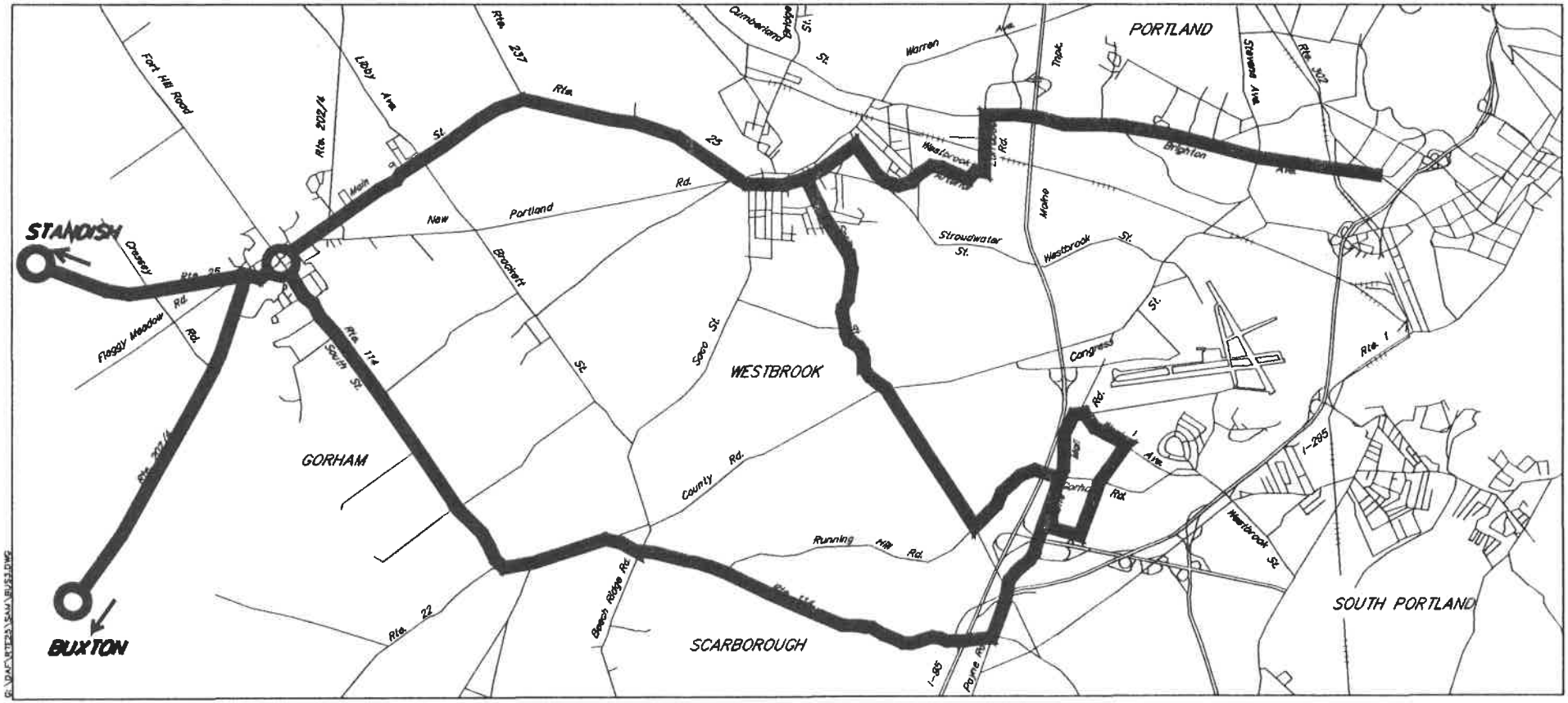

Figure 19: Bus Service Expansion Assumed in Alternatives 3-2 through 3-8

New Fixed Route Bus Transit Service

0 2000 4000 Feet

3.3.3 Alternative 3-3. Patch Problems

This alternative included the Travel Demand Management, Bus Transit, and Land Use Measures from Alternative 3-2 (Enhanced Baseline), plus the following actions (as illustrated in Figure 20):

- construct a limited-access, two-lane, southwesterly bypass of Gorham Village connecting Ossipee Trail/Route 25 and South Street/Route 114

- widen Route 22/County Road to four through-travel lanes from South Street/Route 114 east to the Portland City Limits (where Route 22 has sufficient cross-section to be marked as four lanes)
  - includes traffic operations improvements at the intersections of County Road/Route 22 with South Street/Route 114, Burnham Road, Gorham Road/Route 114, and Spring Street

- upgrade traffic operations in Gorham Village
  - coordinate traffic signals at the Main/New Portland and Main/School/South intersections;
  - improve geometrics at Mechanic/New Portland intersection;
  - consider installation of traffic signals as needed at Route 25 intersections with Libby Avenue and with Route 237 at Mosher's Corner;
  - provide separate left-turn lanes at key driveways and side streets (or a center two-way left-turn lane) on Route 25 from Route 114 east to New Portland Road;
  - improve access management along Route 25 (e.g., eliminate some curb cuts); and
  - redesign some Gorham Village parcels to provide frontage on side streets.

- upgrade traffic operations in Westbrook along the Route 25 corridor
  - resolve traffic mobility and pedestrian safety problems at Cumberland Mills Triangle;
  - improve traffic flow at intersection of Bridge Street and Main Street; and
  - improve geometrics at intersection of Bill Clarke Drive and the Westbrook Arterial to enable trucks to make turns smoothly

- construct a new interchange between the Westbrook Arterial/Route 25 and the Maine Turnpike and a roadway connection to Brighton Avenue/Route 25 east of the Turnpike via Rand Road

- provide four lanes on Brighton Avenue between Woodford Street and Deering Avenue

- provide a new, direct connection between Route 114 and I-295 at Maine Turnpike Exit 6A

- provide a new road parallel to (and south of) Congress Street behind Westgate Shopping Plaza connecting Congress Street near Hobart Street with a rebuilt interchange with I-295

- optimize signal timing at all currently operating and planned traffic signals in the corridor

- initiate motorist information systems in the corridor which will provide real-time information on traffic accidents and traffic congestion

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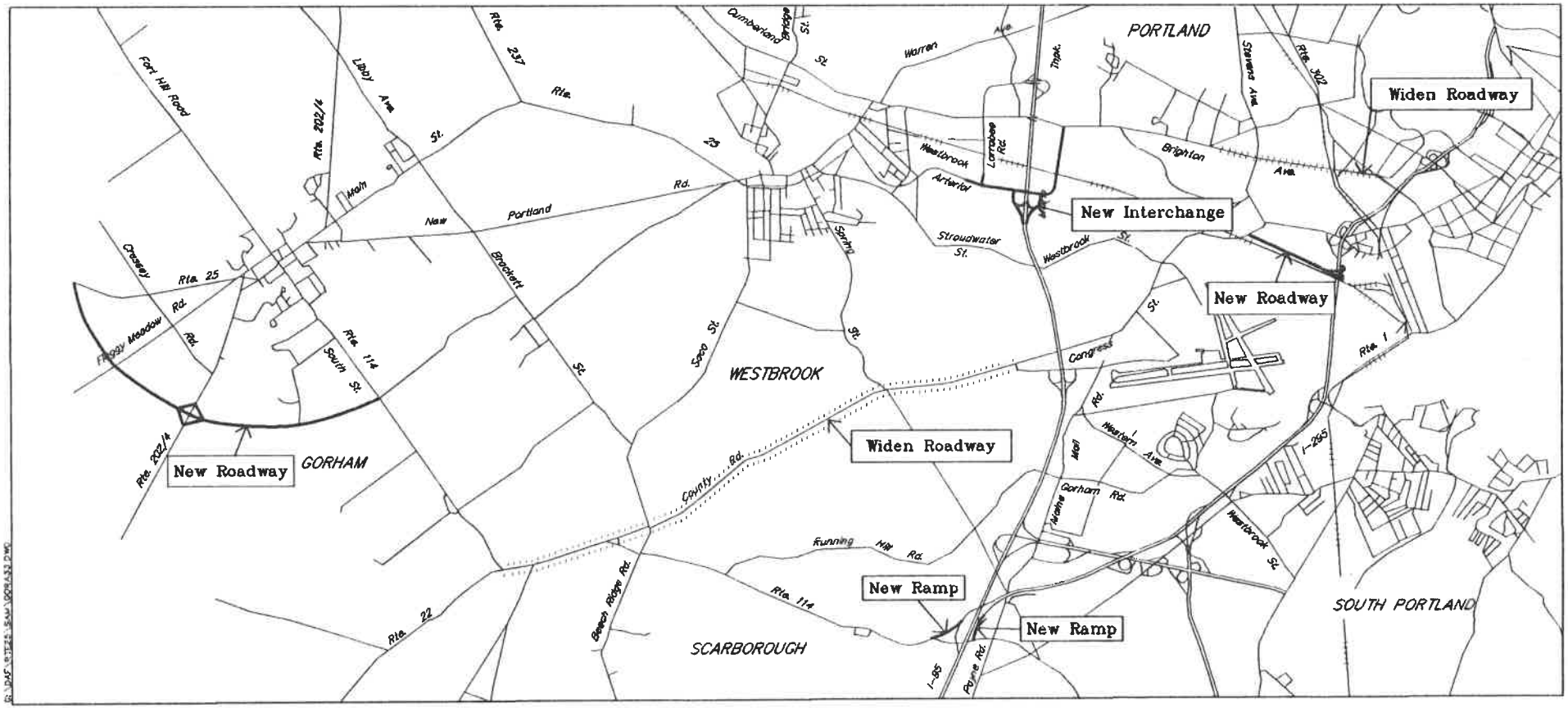

Figure 20: Alternative 3-3 Patch Problems

Legend

New 2-Lane, Controlled Access Roadway

Roadway Widening

0 2000 4000 Feet

3.3.4 Alternative 3-4. Northerly Gorham Bypass with Westbrook Bypass to New Westbrook Arterial Interchange

This alternative included the Travel Demand Management, Bus Transit and Land Use Measures from Alternative 3-2 (Enhanced Baseline), plus the following actions (as illustrated in Figure 21):

- construct a new limited- or controlled-access roadway from the Turnpike, bypassing downtown Westbrook to the south and the Gorham Business District to the north (options include providing a Longfellow Drive/Day Road connection; a Larrabee Road/Eisenhower Drive Connector; a Hutchins Drive connection to the Larrabee/Eisenhower connection; and at least two variations on a new road from Eisenhower Drive to Mosher's Corner)
  - includes at-grade intersections at Narragansett Street/Route 202 west of Gorham Village and at the Westbrook Arterial/Route 25
  - includes grade-separated interchanges at the following crossings (all other crossings will be grade-separated with no interchange):
    - Ossipee Trail/Route 25 west of Gorham Village
    - Fort Hill Road/Route 114 north of Gorham Village
    - Gray Road/Route 202 east of Gorham Village
    - Route 25 east of Gorham Village
    - Spring Street in Westbrook
- construct a new Turnpike interchange at the Westbrook Arterial/Route 25 with a connection to Rand Road and Brighton Avenue/Route 25
- provide four lanes on Brighton Avenue between Woodford Street and Deering Avenue
- upgrade traffic operations at the intersection of County Road (Route 22) and South Street (Route 114) in South Gorham (e.g., a separate left-turn lane and a protected left-turn traffic signal phase for left turns from eastbound County Road onto northbound South Street)
- upgrade traffic operations at intersection of County Road (Route 22) and Burnham Road in South Gorham (e.g., westbound slip lane to enable bypass of westbound left-turning traffic queue)
- upgrade traffic operations at the easterly intersection of Routes 22 and 114
  - reconfigure intersections and roadway approaches to enable two smooth-flowing lanes from both northbound Route 114 and westbound Route 22
- identify intersection-level improvements for intersection of Route 22 and Spring Street
- optimize signal timing at all currently operating and planned traffic signals in the corridor
- initiate motorist information systems in the corridor which will provide real-time information on traffic accidents and traffic congestion.

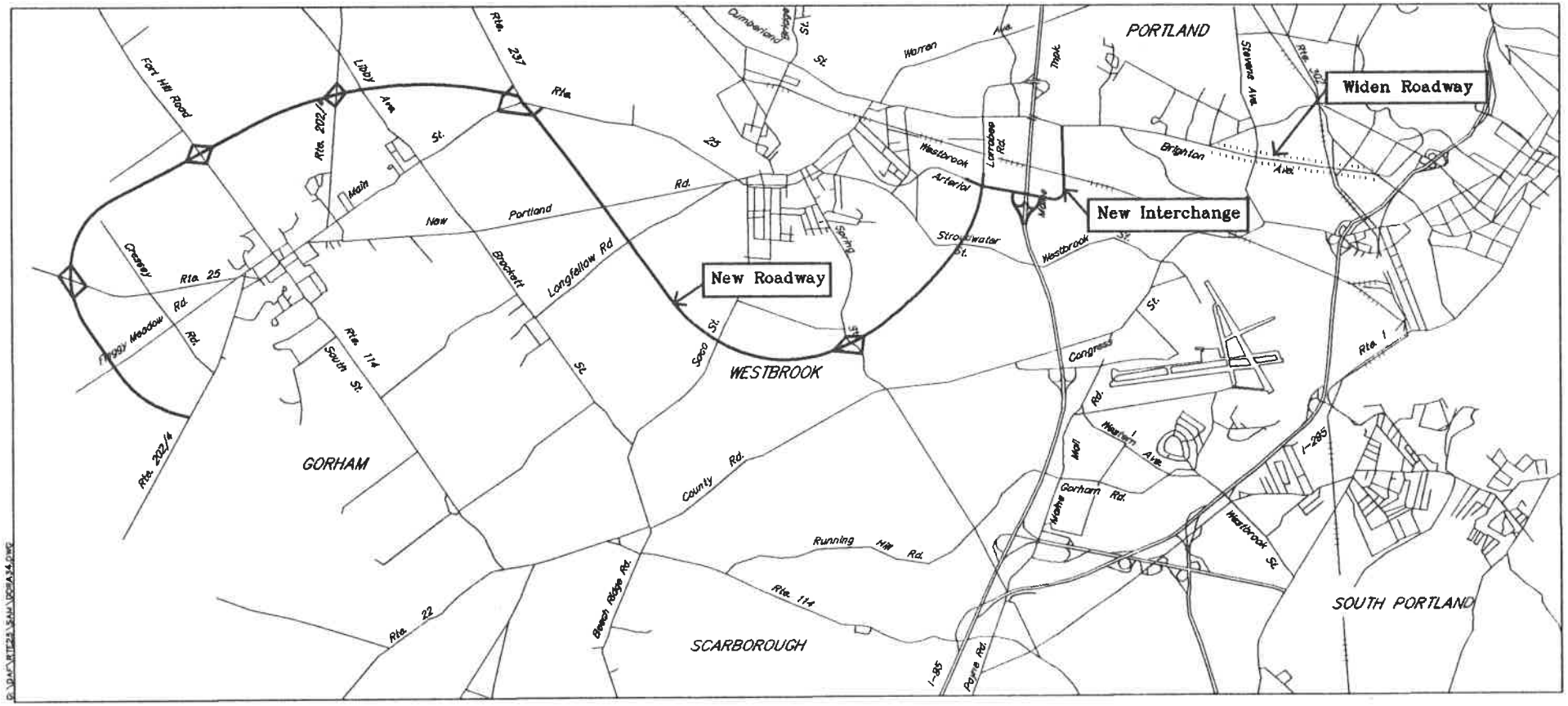

Figure 21: Alternative 3–4 Northerly Gorham Bypass with Westbrook Bypass to new Westbrook Arterial Interchange

3.3.5 Alternative 3-5. Northerly Gorham Bypass with Westbrook Bypass to Outer Congress Street

This alternative included the Travel Demand Management, Bus Transit, and Land Use Measures from Alternative 3-2 (Enhanced Baseline), plus the following actions (as illustrated in Figure 22):

- construct a new limited- or controlled-access roadway bypassing downtown Westbrook and the Gorham Business District (to the north) and with an eastern terminus at Outer Congress Street/Route 22; options include providing a Longfellow Drive/Day Road connection and at least two variations on a new road from Eisenhower Drive to Mosher's Corner
  - includes at-grade intersections at Narragansett Street/Route 202 west of Gorham Village and at Outer Congress Street/Route 22
  - includes grade-separated interchanges at the following crossings (all other crossings will be grade-separated with no interchange):
    - Ossipee Trail/Route 25 west of Gorham Village
    - Fort Hill Road/Route 114 north of Gorham Village
    - Gray Road/Route 202 east of Gorham Village
    - Route 25 east of Gorham Village
    - Spring Street in Westbrook
- construct a new Turnpike interchange at the Westbrook Arterial/Route 25 with a connection to Rand Road and Brighton Avenue/Route 25
- upgrade traffic operations at the intersection of County Road (Route 22) and South Street (Route 114) in South Gorham (e.g., a separate left-turn lane and a protected left-turn traffic signal phase for left turns from eastbound County Road onto northbound South Street)
- upgrade traffic operations at intersection of County Road (Route 22) and Burnham Road in South Gorham (e.g., westbound slip lane to enable bypass of westbound left-turning traffic queue)
- upgrade operations at easterly intersection of Routes 22 and 114 (e.g., reconfigure both roadway approaches to enable two smooth-flowing lanes from Route 114 and westbound Route 22)
- upgrade the intersection of Brighton Avenue and Stevens Avenue in Portland within the existing right-of-way (e.g., prohibit peak period left turns for eastbound and westbound Brighton Avenue)
- construct a new road parallel to (and south of) Congress Street behind Westgate Shopping Plaza connecting Congress Street near Hobart Street with a rebuilt interchange with I-295
- optimize signal timing at all currently operating and planned traffic signals in the corridor
- initiate motorist information systems in the corridor which will provide real-time information on traffic accidents and traffic congestion

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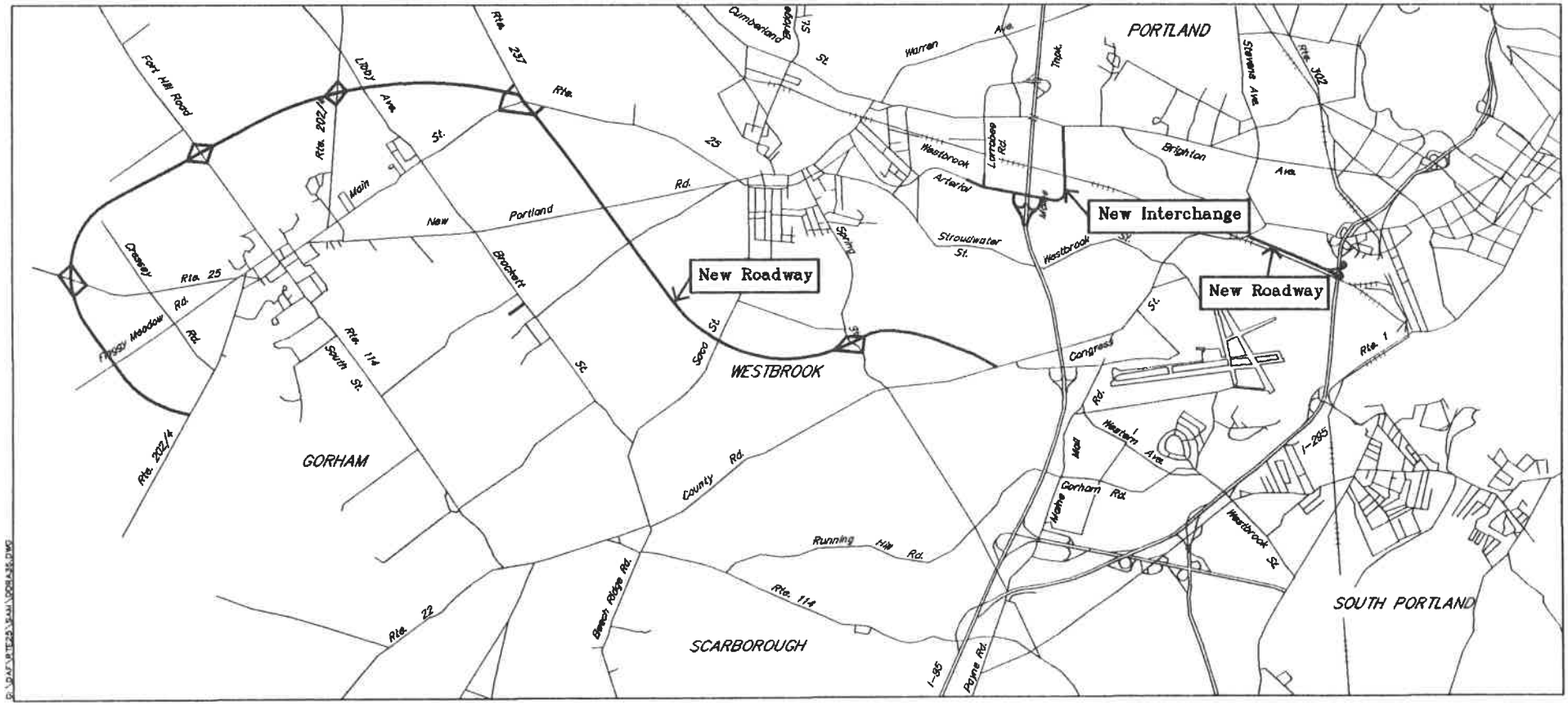

Figure 22: Alternative 3-5 Northerly Gorham Bypass with Westbrook Bypass to Outer Congress Street

Legend

New 2-Lane, Limited Access Road

0 2000 4000 Feet

3.3.6 Alternative 3-6. Southerly Gorham Bypass with Westbrook Bypass to New Westbrook Arterial Interchange

This alternative included the Travel Demand Management, Bus Transit, and Land Use Measures from Alternative 3-2 (Enhanced Baseline), plus the following actions (as illustrated in Figure 23):

- construct a new limited- or controlled-access roadway from the Turnpike, bypassing downtown Westbrook and the Gorham Business District (to the south)
  - includes at-grade intersections at Narragansett Street/Route 202 west of Gorham Village and at the Westbrook Arterial/Route 25
  - includes grade-separated interchanges at the following crossings (all other crossings will be grade-separated with no interchange):
    - Ossipee Trail/Route 25 west of Gorham Village
    - South Street/Route 114 south of Gorham Village
    - Spring Street in Westbrook

- construct a new Turnpike interchange at the Westbrook Arterial/Route 25 with a connection to Rand Road and Brighton Avenue/Route 25

- upgrade traffic operations at the intersection of County Road/Route 22 and South Street/Route 114 in South Gorham
  - a separate left-turn lane and a protected left-turn traffic signal phase for left turns from eastbound County Road onto northbound South Street

- upgrade traffic operations at the intersection of County Road/Route 22 and Burnham Road in South Gorham
  - westbound slip lane to enable bypass of westbound left-turning traffic queue

- upgrade traffic operations at the easterly intersection of Routes 22 and 114
  - reconfigure intersections and roadway approaches to enable two smooth-flowing lanes from both northbound Route 114 and westbound Route 22

- identify intersection-level improvements for intersection of Route 22 and Spring Street

- provide four through-travel lanes on Brighton Avenue/Route 25 between Woodford Street and Deering Avenue

- optimize signal timing at all currently operating and planned traffic signals in the corridor

- initiate motorist information systems in the corridor which will provide real-time information on traffic accidents and traffic congestion

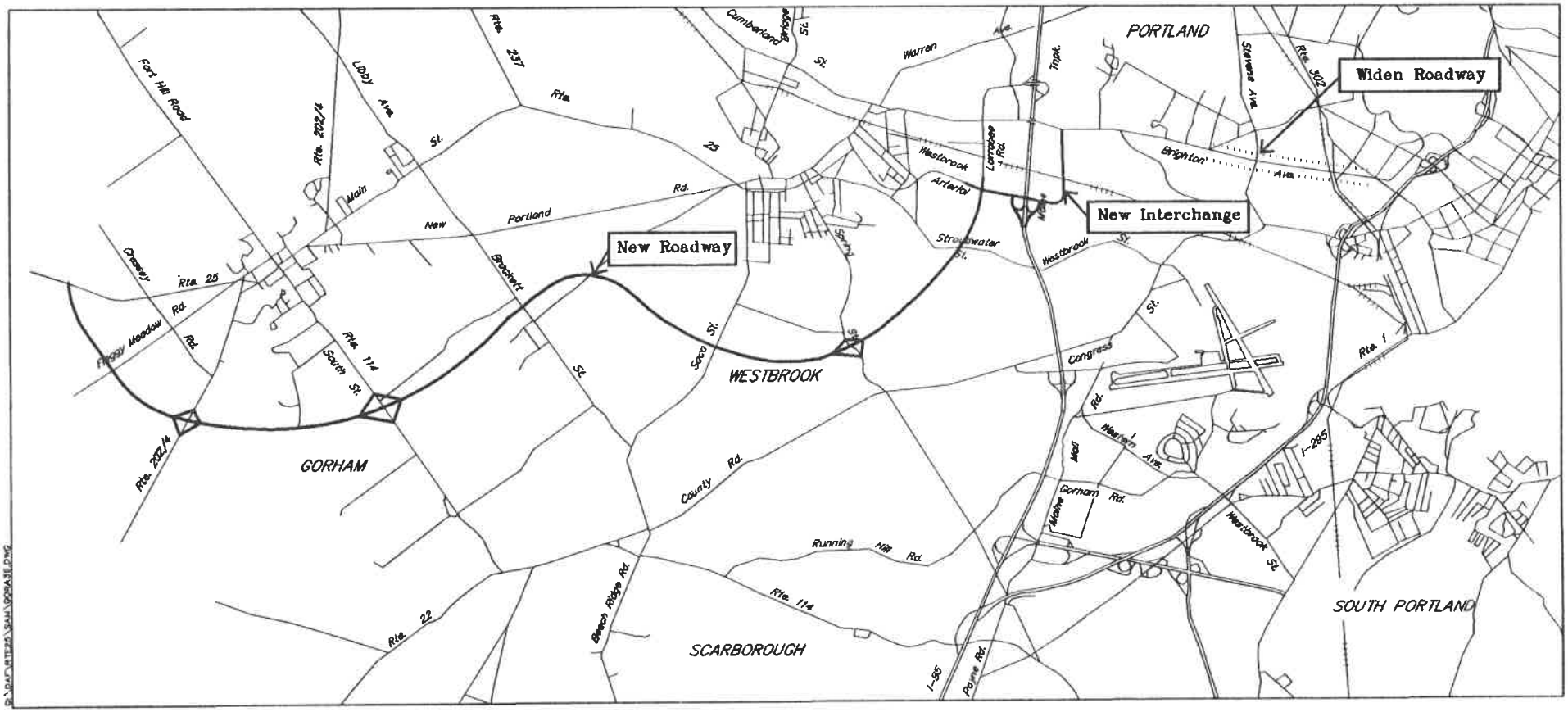

Figure 23: Alternative 3-6 Southerly Gorham Bypass with Westbrook Bypass to New Westbrook Arterial Interchange

Legend

New 2-Lane, Limited Access Road

Roadway Widening

0 2000 4000 Feet

3.3.7 Alternative 3-7. Southerly Gorham Bypass with Westbrook Bypass to Outer Congress Street

This alternative included the Travel Demand Management, Bus Transit, and Land Use Measures from Alternative 3-2 (Enhanced Baseline), plus the following actions (as illustrated in Figure 24):

- construct a new limited- or controlled-access roadway bypassing downtown Westbrook and the Gorham Business District (to the south) and with an eastern terminus at Outer Congress Street/Route 22
  - includes at-grade intersections at Narragansett Street/Route 202 west of Gorham Village and at Outer Congress Street/Route 22
  - includes grade-separated interchanges at the following crossings (all other crossings will be grade-separated with no interchange):
    - Ossipee Trail/Route 25 west of Gorham Village
    - South Street/Route 114 south of Gorham Village
    - Spring Street in Westbrook

- construct a new Turnpike interchange at the Westbrook Arterial/Route 25 with a connection to Rand Road and Brighton Avenue/Route 25

- upgrade traffic operations at the intersection of County Road/Route 22 and South Street/Route 114 in South Gorham (e.g., a separate left-turn lane and a protected left-turn traffic signal phase for left turns from eastbound County Road onto northbound South Street)

- upgrade traffic operations at the intersection of County Road/Route 22 and Burnham Road in South Gorham (e.g., westbound slip lane to enable bypass of westbound left-turning traffic queue)

- upgrade traffic operations at the easterly intersection of Routes 22 and 114 (e.g., reconfigure intersections and roadway approaches to enable two smooth-flowing lanes from both northbound Route 114 and westbound Route 22)

- upgrade intersection of Brighton Avenue and Stevens Avenue in Portland within the existing right-of-way (e.g., prohibit peak period left turns for eastbound and westbound Brighton Avenue)

- construct a new road parallel to (and south of) Congress Street/Route 22 behind Westgate Shopping Plaza connecting Congress Street near Hobart Street with a rebuilt interchange with I-295

- optimize signal timing at all currently operating and planned traffic signals in the corridor

- initiate motorist information systems in the corridor which will provide real-time information on traffic accidents and traffic congestion

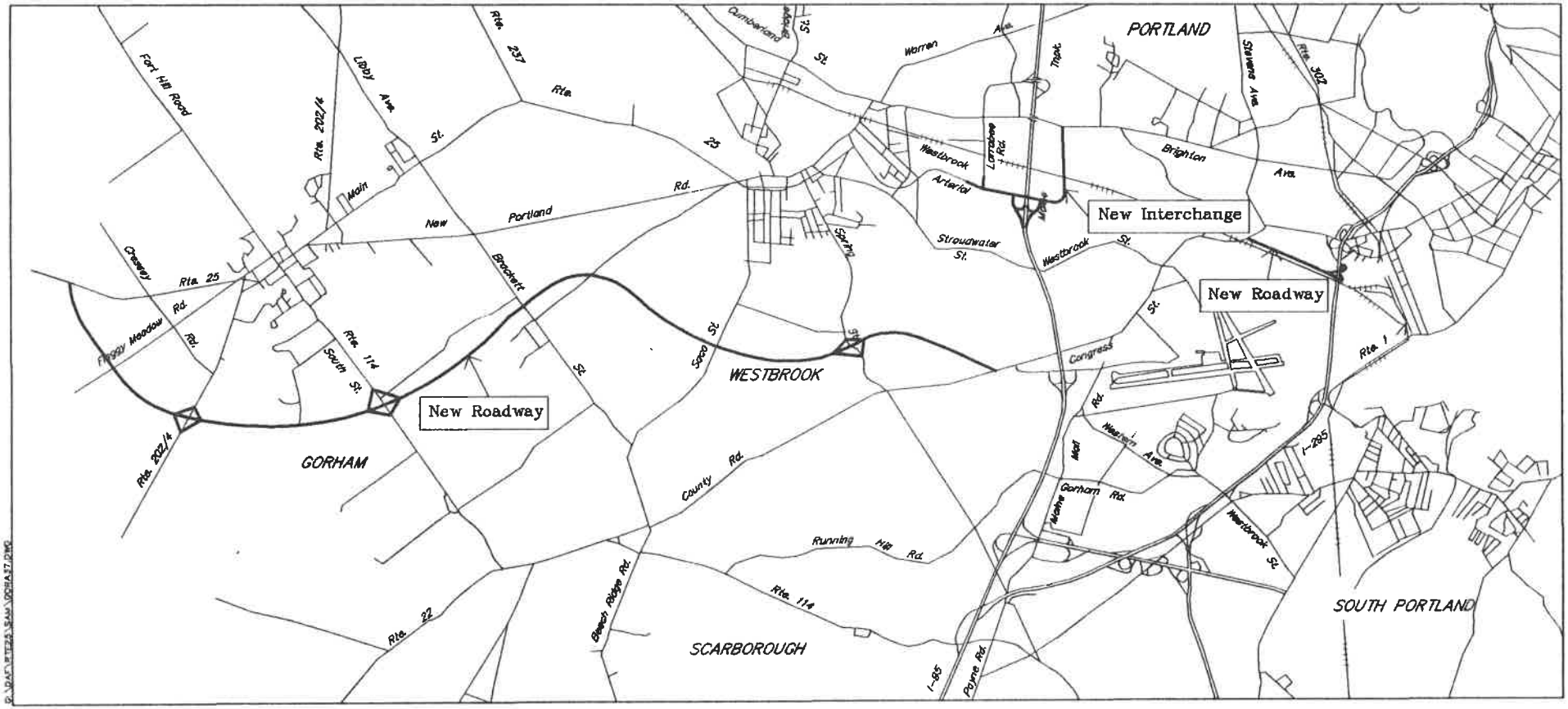

Figure 24: Alternative 3-7 Southerly Gorham Bypass with Westbrook Bypass to Outer Congress Street

Legend

——— New 2-Lane, Limited Access Road

0 2000 4000 Feet

3.3.8 Alternative 3-8. Westerly Gorham Bypass with Improvements to Route 114 Corridor

This alternative included the Travel Demand Management, Bus Transit, and Land Use Measures from Alternative 3-2 (Enhanced Baseline), plus the following actions (as illustrated in Figure 25):

- construct a limited-access, two-lane, southwesterly bypass of Gorham Village connecting Ossipee Trail/Route 25 and South Street/Route 114
- extend Route 114 south from its westerly intersection with County Road/Route 22 and curve to the east to end at or near its current intersection with Running Hill Road
- widen Gorham Road/Route 114 to four lanes in Scarborough between the new roadway described above and the I-95 overpass
- construct a new, direct connection between Gorham Road/Route 114 and I-295 at Maine Turnpike Exit 6A
  - connect southbound I-295 at Exit 6A to Route 114
  - provide a ramp to northbound I-295 directly from the Route 114 overpass of the Turnpike or directly from Payne Road immediately north of the Walmart site
- upgrade the intersection of Brighton Avenue/Route 25 and Stevens Avenue in Portland within the existing right-of-way (e.g., prohibit peak period left turns for eastbound and westbound Brighton Avenue)
- provide a new interchange between the Westbrook Arterial/Route 25 and the Maine Turnpike with a new roadway to Brighton Avenue/Route 25 via Rand Road
- extend Larrabee Road to Stroudwater Street and then to Spring Street near Eisenhower Drive
- upgrade traffic operations in Gorham Village
  - coordinate traffic signals at the Main/New Portland and Main/School/South intersections;
  - improve geometrics at Mechanic/New Portland intersection;
  - consider installation of traffic signals as needed at Route 25 intersections with Libby Avenue and with Route 237 at Mosher's Corner;
  - provide separate left-turn lanes at key driveways and side streets (or a center two-way left-turn lane) on Route 25 from Route 114 east to New Portland Road;
  - improve access management along Route 25 (e.g., eliminate some Main Street curb cuts); and
  - redesign some Gorham Village parcels to provide frontage on side streets.

- upgrade traffic operations in Westbrook along the Route 25 corridor
  - resolve traffic mobility and pedestrian safety problems at Cumberland Mills Triangle;
  - improve traffic flow at intersection of Bridge Street and Main Street;
  - improve geometrics at intersection of Bill Clarke Drive and the Westbrook Arterial to enable trucks to make turns smoothly; and
  - consider extension of Bridge Street through to Bill Clarke Drive.

- optimize signal timing at all currently operating and planned traffic signals in the corridor

- initiate motorist information systems in the corridor which will provide real-time information on traffic accidents and traffic congestion

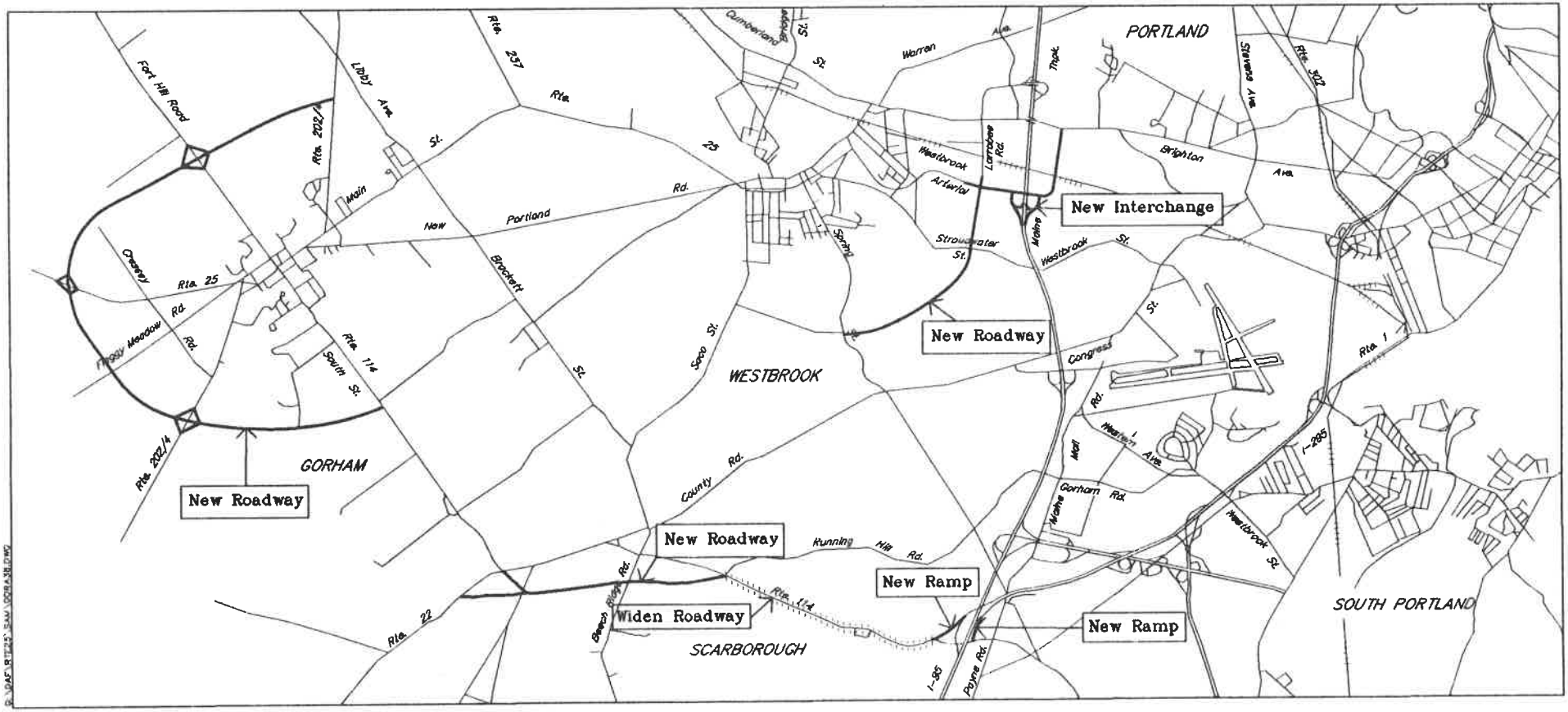

Figure 25: Alternative 3-8 Westerly Gorham Bypass with Improvements to Route 114 Corridor

TRANSPORTATION IMPACTS OF SCREEN THREE ALTERNATIVES

Chapter Four

Table of Contents

This chapter presents an evaluation of the transportation impacts of the Screen Three alternatives. It covers measures used to assess mobility for motorists, mobility for transit patrons, transportation system safety, and freight transport. The final analysis of these alternative program elements must also address their land use, environmental, and cost implications (as described in Chapters Five and Six).

4.1 SUMMARY OF TRANSPORTATION IMPACTS

This first section of Chapter Four summarizes the impacts of several improvement concepts upon key areas within the study corridor.

4.1.1 Gorham Village

There currently is, and is forecast to be, a significant level of traffic congestion through Gorham Village. Traffic queues back from the Main/South/School Street intersection along all four approaches. Vehicles making turns into and out of Main Street commercial driveways create additional congestion and their turns are made more difficult and unsafe by the Main Street traffic congestion. Several options were considered in the foregoing analysis. A summary of their implications is presented below.

Initiate Local and Commuter Bus Transit Service -- The transit travel forecasts, with the assumed levels of transit service described in Alternative 3-2, were not sufficient to reduce traffic congestion in Gorham Village to an acceptable level.

Provide a Center Two-Way Left Turn Lane (or a Median with Controlled Left-Turns) -- The addition of left-turn lanes along Main Street does not increase throughput capacity through Gorham Village (which is constrained by the Main/State/School/South Street intersection). Installation of a median (with controlled left-turn bays) would likely improve traffic safety but would also require consolidation of commercial driveways, construction of interparcel connections, and enhancement of the grid street network.

Widen Main Street/Route 25 through its Intersection with South Street/Route 114 -- Widening of Main Street/Route 25 is not physically practical without taking buildings currently situated at the corner. The Advisory Committee felt that disruption to the commercial district would not be acceptable. Elimination of the exclusive pedestrian phase at this signal would improve traffic flow but does not produce acceptable conditions in the year 2015.

Divert Traffic out of Gorham Village -- A new roadway around the north side or south side of Gorham Village when connected to a downtown Westbrook Bypass (as in Alternatives 3-3 through 3-8) would reduce traffic congestion to an acceptable level in Gorham Village.

4.1.2 Overlap of Routes 22 and 114 in North Scarborough/South Gorham

Initiate Local and Commuter Bus Transit Service -- The transit travel forecasts, with the assumed levels of transit service described in Alternative 3-2, were not sufficient to reduce congestion within the overlap of Routes 22 and 114 to an acceptable level.

Provide Slip Lane at Burnham Road and Left-Turn Lane at South Street/Route 114 -- Both projects reduced the current congestion problem but did not address future over-capacity conditions.

Divert Traffic from Route 22 Corridor (Build Alternative 3-4 through 3-7) -- Even with these new roadways in place, traffic congestion remained a problem in the future along County Road/Route 22 (except for Alternative 3-7 which connects Outer Congress Street/Route 22 with Ossipee Trail/Route 25 west of Gorham Village, via a southerly bypass of Gorham Village).

Widen Route 22 (Alternative 3-3) -- Widening of County Road (Route 22) resolved future traffic capacity problems in the corridor at the two intersections with Route 114. However, widening of County Road/Route 22 also causes a worsening in traffic congestion on Congress Street/Route 22 in Portland to undesirable levels without any apparent feasible means of relieving the congestion due to physical constraints imposed by historic buildings in the Stroudwater neighborhood.

Extend Route 114 Southward from County Road/Route 22 along a new alignment into Scarborough (Alternative 3-8) -- This project resolved traffic congestion along the overlap of Routes 22 and 114.

4.1.3 Downtown Westbrook

Expand Local and Commuter Bus Transit Service -- The transit travel forecasts, with the assumed levels of transit service described in Alternative 3-2, were not sufficient to reduce congestion in downtown Westbrook to an acceptable level.

Provide Additional Westbound Through Lane on Bill Clarke Drive at the Saco Street/New Gorham Road Intersections -- This level of improvement was needed under all of the alternatives, except for:

- Alternative 3-4 (which provides a parallel new roadway between the Westbrook Arterial/Route 25 and Gorham Village) and
- Alternative 3-7 (which provides a parallel new roadway between Outer Congress Street/Route 22 and Gorham Village)

Divert Traffic to New Roadway (Build Alternatives 3-4 through 3-7) -- A new roadway around downtown Westbrook relieved much of the traffic congestion problem in downtown Westbrook.

Provide New Turnpike Interchange at the Westbrook Arterial/Route 25 -- A new interchange produced significant reductions in traffic congestion in the vicinity of Exit 8 and (with an extension of the Westbrook Arterial to Rand Road and Brighton Avenue in Portland) along Brighton Avenue/Route 25 near Riverside Street.

4.1.4 Portland (Brighton Avenue/Route 25)

Expand Local and Commuter Bus Transit Service -- The transit travel forecasts, with the assumed levels of transit service described in Alternative 3-2, were not sufficient to reduce congestion along Brighton Avenue/Route 25 to an acceptable level.

Divert Traffic to Route 22 (Congress Street) -- Improvements that encouraged greater usage of the Route 22 corridor did not appear to have a significant beneficial impact on Brighton Avenue/Route 25 congestion at Stevens Avenue.

Widen Brighton Avenue/Route 25 at Stevens Avenue -- An additional eastbound and westbound lane on Brighton Avenue (in order to provide an exclusive left-turn lane) would reduce congestion, but would not eliminate the need for additional improvements in order to reduce congestion to desirable levels.

4.1.5 Portland (Congress Street/Route 22)

Expand Local and Commuter Bus Transit Service -- The transit travel forecasts, with the assumed levels of transit service described in Alternative 3-2, were not sufficient to reduce congestion along Congress Street/Route 22 to an acceptable level.

Divert Traffic to Route 25/Brighton Avenue Corridor -- Improvements that encouraged greater usage of the Route 25 corridor did not appear to have a significant beneficial impact on Congress Street/Route 22 congestion.

Westgate Bypass -- The construction of a new roadway behind Westgate Plaza would significantly reduce congestion at the intersection of Congress Street and Stevens Avenue. However it would, at the same time, attract more traffic to the overall Route 22 corridor, thereby adding to congestion west on Congress Street from Westbrook Street.

4.2 EVENING PEAK HOUR TRAFFIC VOLUMES

4.2.1 Existing Roads

Figure 26 presents both current year and year 2015 evening peak hour traffic forecasts for nine locations in the corridor. Forecasts are shown for the year 2015 base condition (Alternative 3-1) and for the seven other alternatives. In general, Alternative 3-2 had very little impact on traffic volumes in the corridor. In contrast, Alternatives 3-3 through 3-8 caused significant traffic shifts throughout the corridor.

Gorham Village -- The lowest volumes in Gorham Village occurred with Alternatives 3-6 and 3-7 (both of which included a complete southerly bypass of Gorham Village connected with a bypass of downtown Westbrook) and with Alternative 3-8 (which included a southwesterly bypass of Gorham Village). Significant volume reductions were also found with Alternatives 3-3, 3-4, and 3-5.

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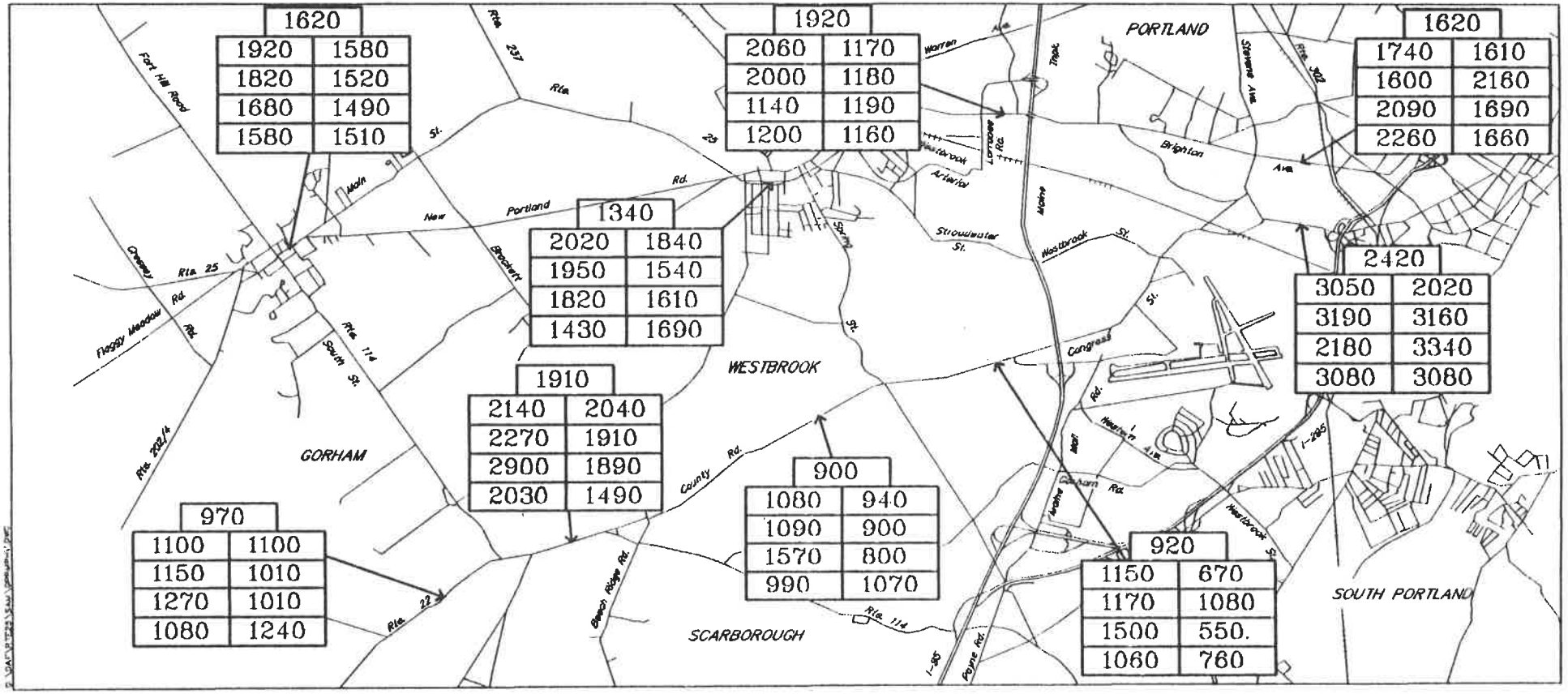

Figure 26: Evening Peak Hour Volumes in Gorham–Portland Corridor

Current Year | BASE

Year 2015 by Alternative

3–1	3–5
3–2	3–6
3–3	3–7
3–4	3–8

Evening Peak Hour Volumes

Downtown Westbrook -- The lowest volumes were found with Alternatives 3-4 and 3-6 (both of which included a new east-west roadway bypassing downtown Westbrook and extending to a new Turnpike interchange at the Westbrook Arterial). Alternatives 3-7 and 3-8 (both of which encouraged use of Route 22 and/or Route 114 for east-west travel) also produced traffic reductions in downtown Westbrook.

Exit 8 Area -- The evening peak hour volume on Route 25 (Brighton Avenue) near the Maine Turnpike dropped between 800 and 900 vehicles under Alternatives 3-3 through 3-8 as a result of a shift of east-west traffic to the assumed Westbrook Arterial extension to Rand Road and Brighton Avenue.

Brighton Avenue/Route 25 --- Brighton Avenue traffic near Stevens Avenue increased 300-500 vehicles under Alternatives 3-3, 3-4, and 3-6 due to their providing additional capacity with a widened Brighton Avenue (and therefore, reduced delay).

Congress Street/Route 22 --- Peak hour traffic volumes under Alternatives 3-3 and 3-5 decreased 900-1000 on Congress Street near Stevens Avenue as a result of traffic shifting to the new roadway behind Westgate Shopping Center.

County Road/Route 22 --- Under Alternative 3-3, traffic increased between 350 and 750 vehicles during the peak hour on Outer Congress Street and County Road as a result of the proposed new southwest Gorham bypass, the proposed widening of Route 22, and the new Turnpike interchange at Congress Street. For Alternatives 3-4 through 3-8 (all of which contained new roadways parallel to County Road) the future peak hour traffic volumes on County Road decreased to roughly current levels.

4.2.2 Evening Peak Hour Volumes on New Roadways

Figures 27 through 32 present the evening peak hour volumes on new roadways associated with each of the Screen Three alternatives (and supplements the evening peak hour volume data shown previously in Figure 26 for existing roadways).

A roadway around Gorham Village to the southwest had an evening peak hour volume of 870 west of South Street/Route 114 when only connecting Route 114 with Route 25 (Alternative 3-3). A peak hour volume of 1,300 was reached when the new roadway was also tied to a Westbrook Bypass.

A roadway around Gorham Village to the north had an evening peak hour volume of only 220 west of Fort Hill Road if the relief road extended to Gray Road/Route 202 (Alternative 3-8). The volume in this section was as much as 370 if connected to a roadway to Westbrook (Alternatives 3-4 and 3-5). East of Fort Hill Road, the peak hour volume was 700 when the new roadway only connected Gray Road/Route 202 (north) and Fort Hill Road/Route 114 (Alternative 3-8) and 1,150 when connected with a Westbrook Bypass (Alternatives 3-4 and 3-5).

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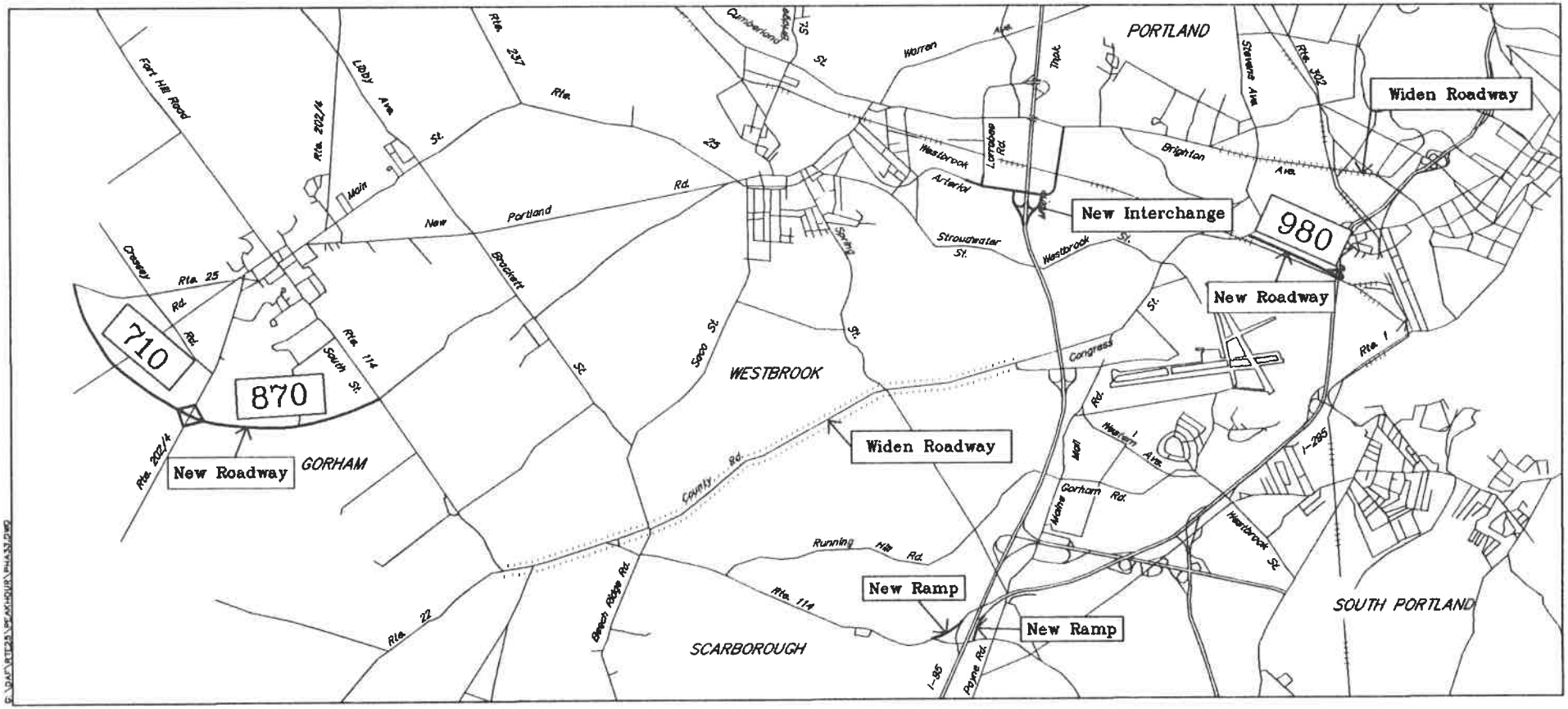

Figure 27: Evening Peak Hour Volume on New Roadways (Alternative 3-3)

Legend

——— New 2-Lane, Controlled Access Roadway

:::::::::::: Roadway Widening

Evening Peak Hour Volume

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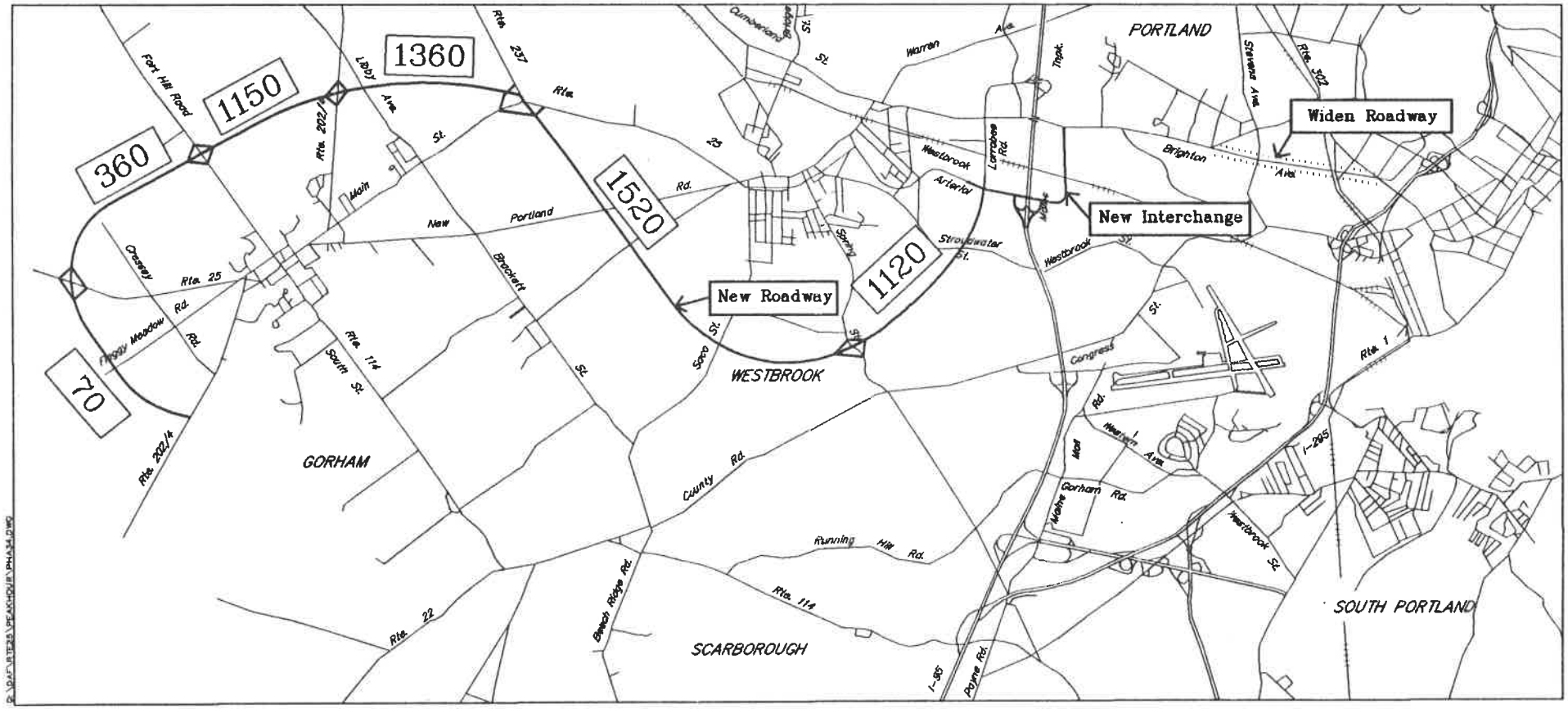

Figure 28: Evening Peak Hour Volume on New Roadways (Alternative 3-4)

Legend

——— New 2-Lane, Limited Access Road

Roadway Widening

Evening Peak Hour Volume

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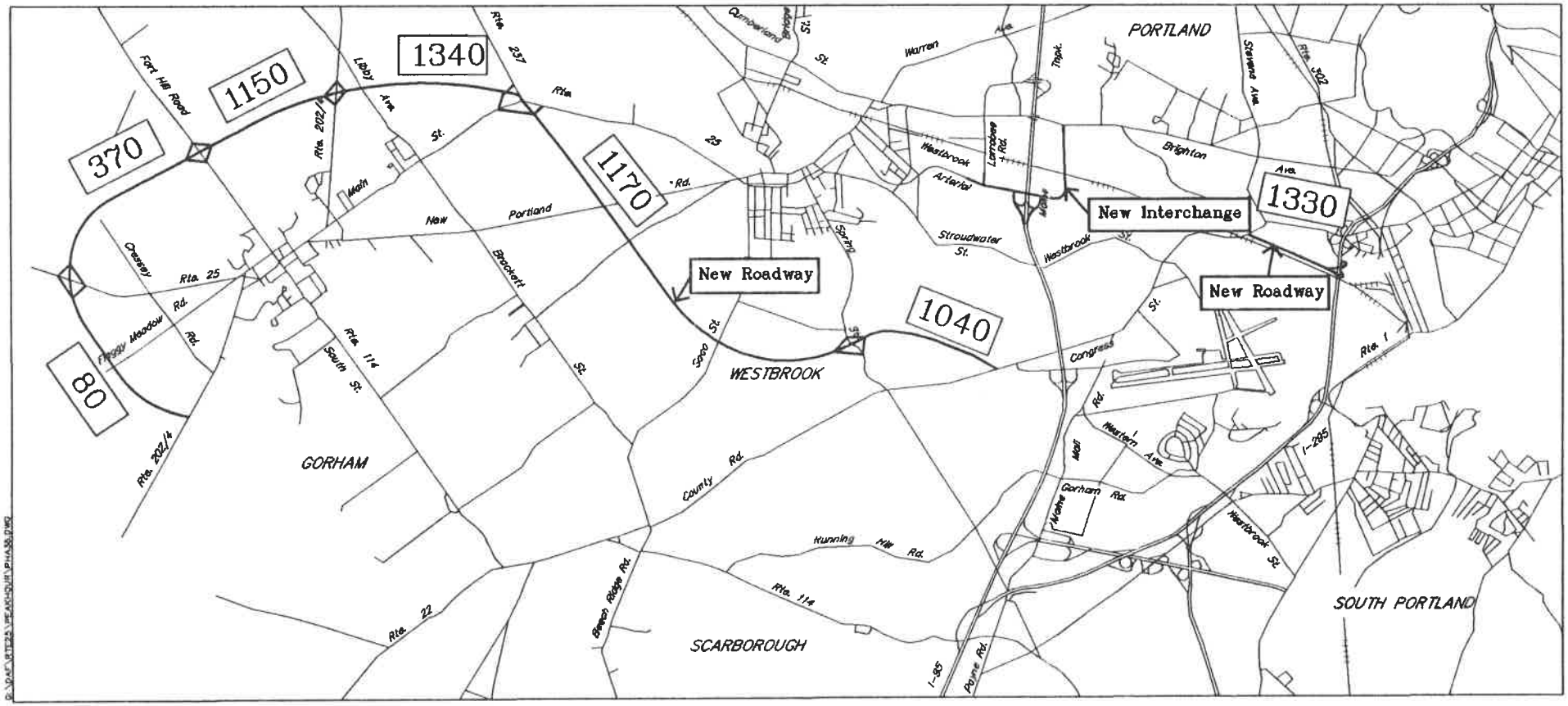

Figure 29: Evening Peak Hour Volume on New Roadways (Alternative 3-5)

Legend

——— New 2-Lane, Limited Access Road

Evening Peak Hour Volume

0 2000 4000 Feet

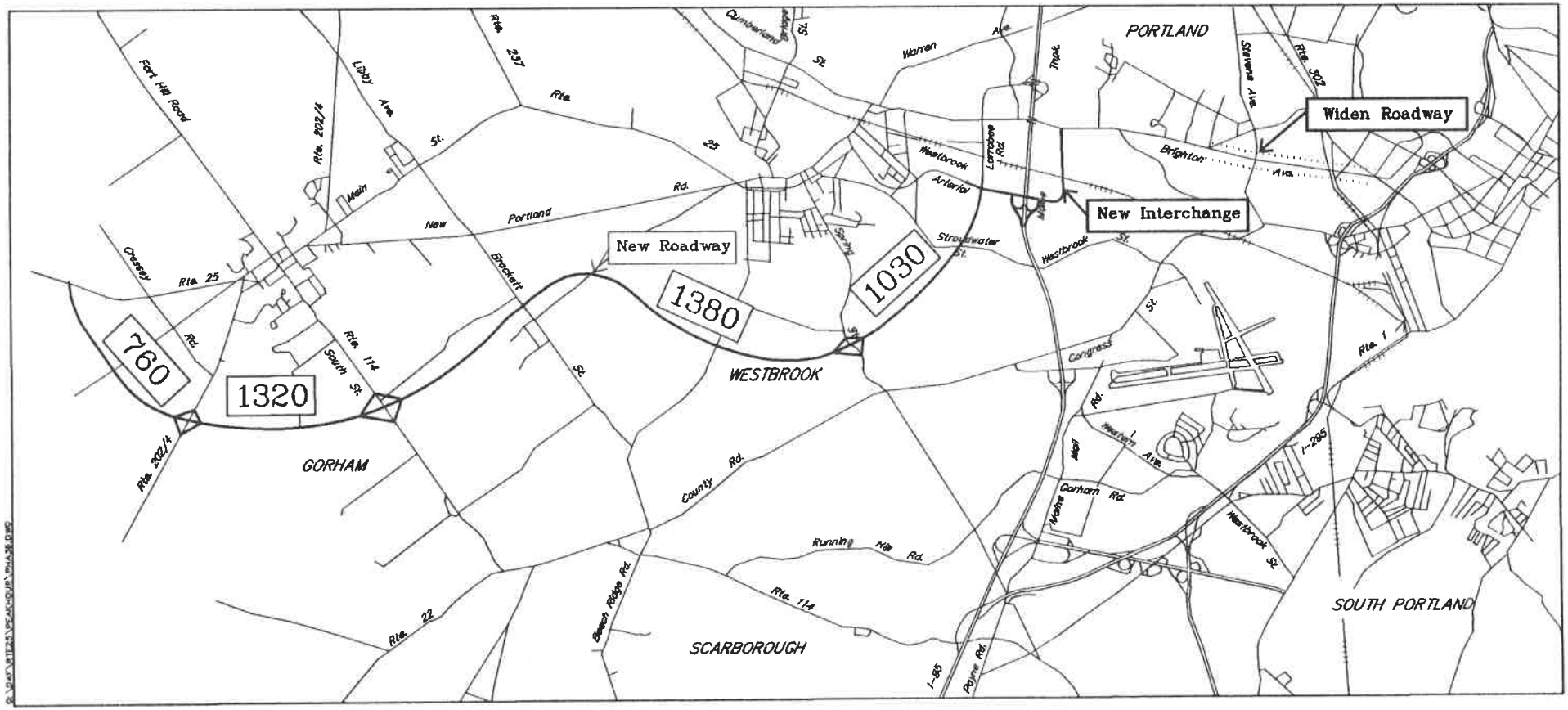

Figure 30: Evening Peak Hour Volume on New Roadway (Alternative 3-6)

Legend

New 2-Lane, Limited Access Road

Roadway Widening

Evening Peak Hour Volume

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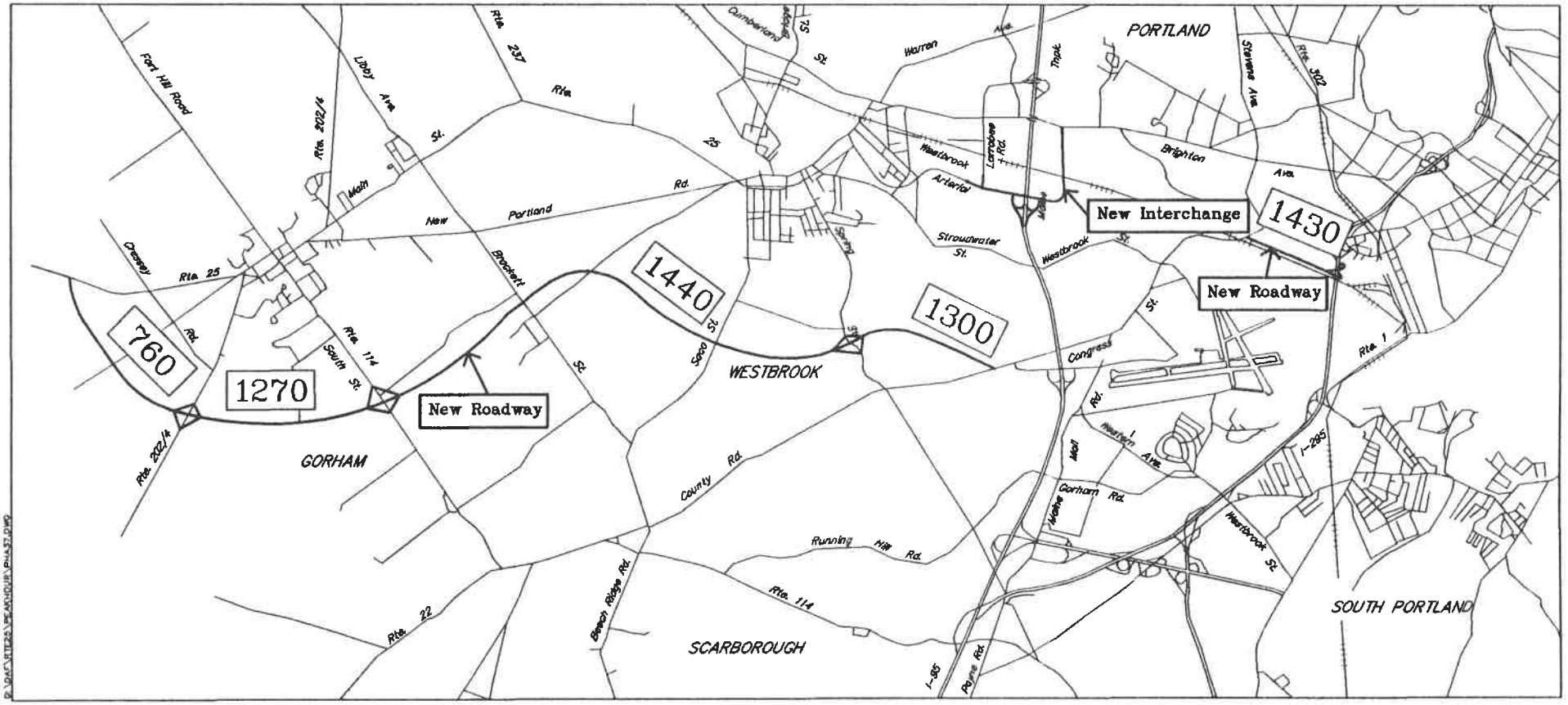

Figure 31: Evening Peak Hour Volume on New Roadways (Alternative 3-7)

Legend

——— New 2-Lane, Limited Access Road

Evening Peak Hour Volume

0 2000 4000 Feet

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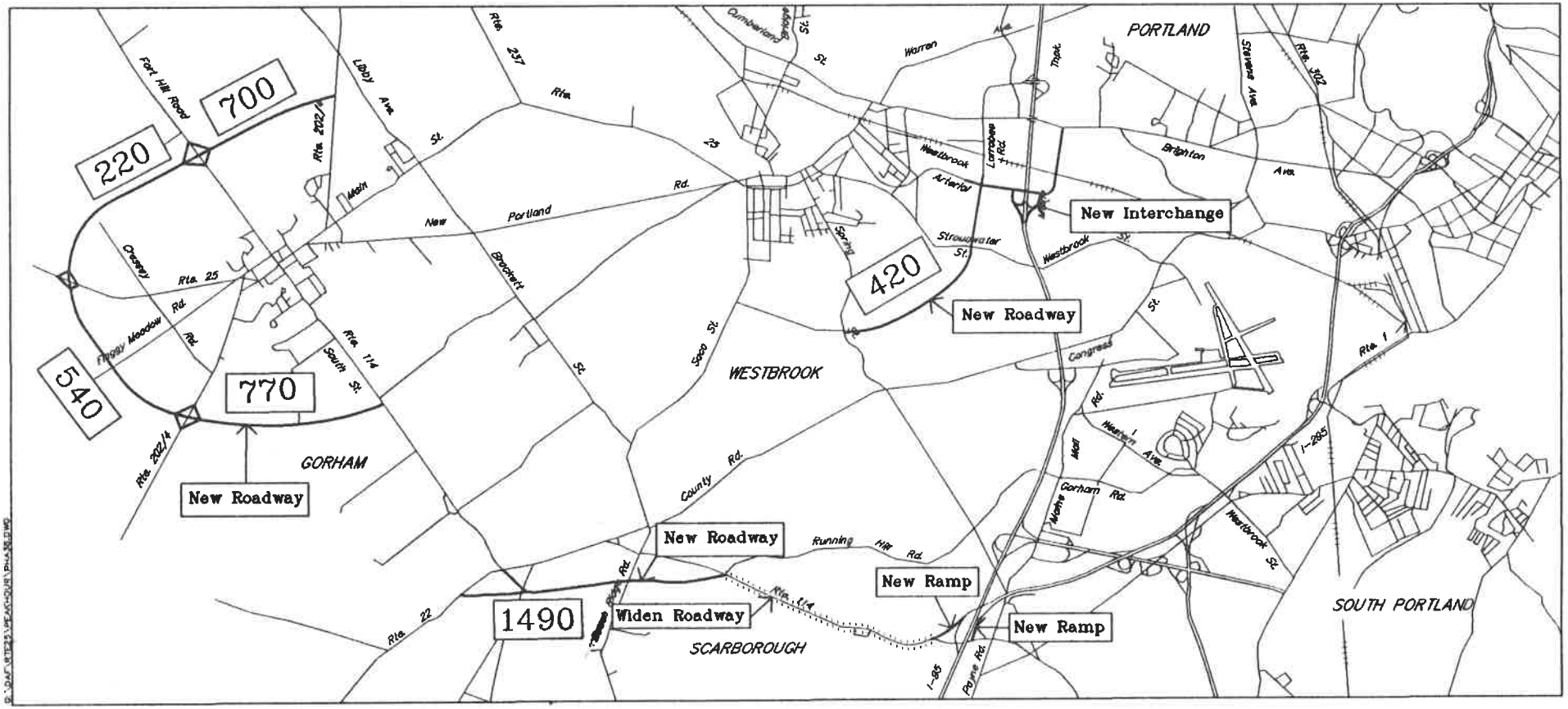

Figure 32: Evening Peak Hour Volume on New Roadways (Alternative 3-8)

Legend

——— New 2-Lane, Controlled Access Roadway

..... Roadway Widening

Evening Peak Hour Volume

0 2000 4000 Feet

A new roadway around downtown Westbrook (Alternatives 3-4 through 3-7) had a significant volume:

- Alternative 3-4 had a peak hour volume of 1,520 (with a new roadway between a new Westbrook Arterial/Turnpike Interchange and a new roadway around the north of Gorham Village);
- Alternative 3-5 had a peak hour volume of 1,170 (with a new roadway between the planned Congress Street/Turnpike Interchange and a new roadway around the north of Gorham Village);
- Alternative 3-6 had a peak hour volume of 1,380 (with a new roadway between a new Westbrook Arterial/Turnpike Interchange and a new roadway around the south of Gorham Village); and
- Alternative 3-7 had a peak hour volume of 1,440 (with a new roadway between the planned Congress Street/Turnpike Interchange and a new roadway around the south of Gorham Village).

An extension of Larrabee Road to Spring Street produced significant evening peak hour traffic volumes, especially when connected to a new roadway which extended beyond Gorham Village:

- a peak hour volume of 1,120 when connected to a new roadway around the north side of Gorham Village (Alternative 3-4);
- a peak hour volume of 930 when connected to a new roadway around the south side of Gorham Village (Alternative 3-6); and
- a peak hour volume of 420 when just connecting Larrabee Road and Spring Street (Alternative 3-8).

South Gorham/North Scarborough -- An evening peak hour volume of roughly 1,400 resulted when the new roadway was built in conjunction with an upgraded Gorham Road/Route 114, with direct access between Gorham Road and I-295 at Exit 6A, and with a new roadway around the southwest side of Gorham Village (Alternative 3-8).

4.3 MOBILITY FOR MOTORISTS

The ability of the alternatives to improve mobility for motorists in the Gorham/Portland corridor was assessed with the aid of two evaluation measures: travel time savings between representative origins and destinations, and levels of congestion at signalized intersections in the corridor. This section of the report on motorist mobility concludes with a discussion of forecast roadway path choices through the corridor.

4.3.1 Travel Time

To illustrate impacts on travel time in the corridor, a set of five key origins of afternoon peak hour trips (e.g., employment locations) were identified: Maine Medical Center in downtown Portland; the Maine Mall area in South Portland; S.D. Warren in Westbrook; the intersection of Route 22 and Spring Street (near Portland Glass) in Westbrook; and the USM campus in Gorham.

These afternoon peak period trip origins were matched with six representative evening trip destinations (e.g., residential areas): Downtown Gorham; South Gorham near the overlap of Routes 22 and 114; Standish Corner; Sebago Lake Village; Buxton; and downtown Westbrook. Locations for each of these origins and destinations were mapped previously in Figure 3 in Chapter Two. These origin-destination pairs were selected to be representative of typical evening peak hour trips in the Gorham-Portland corridor. Some of these pairs naturally represented greater travel demand than do others.

Figure 33 shows composite travel times to Gorham Village from four of the key employment sites (one in Portland, one in South Portland, and two in Westbrook). In 1990, the composite auto travel time was estimated to be 19.0 minutes. By the year 2015 under base conditions (Alternative 3-1), travel time was forecast to increase to 23.8 minutes (a 25 percent jump). With Alternative 3-7 (the Southerly Gorham Bypass to Outer Congress Street) in place, the year 2015 travel time was reduced to below the current level. Alternative 3-3 (Patch Problems), Alternative 3-6 (Southerly Gorham Bypass to Westbrook Arterial Interchange), and Alternative 3-8 (Westerly Gorham Bypass with Improvements to the Route 114 Corridor) also nearly matched current conditions.

Figure 34 shows a comparable travel time chart, but to Buxton (along Route 22). A similar increase (22 percent) in travel time was forecast under year 2015 base conditions as were sizeable travel time savings attributable to Alternatives 3-3 through 3-8. The lowest travel times resulted from Alternatives 3-6 and 3-7.

Table 15 lists composite travel times to and from various locations in the corridor, including those illustrated in Figures 33 and 34. In the table, numerical values in **bold** (and circled by a thick box) indicate the future composite travel time was less than for current conditions. Numerical values in ***italicized bold*** (and circled by a double-line box) indicate the future composite travel time was within one minute of the current conditions value.

In general, Alternatives 3-3, 3-7, and 3-8 appear to be the most effective in terms of travel time savings to these key corridor locations. Alternatives 3-4, 3-5, and 3-6 also produce significantly better travel times then the base condition.

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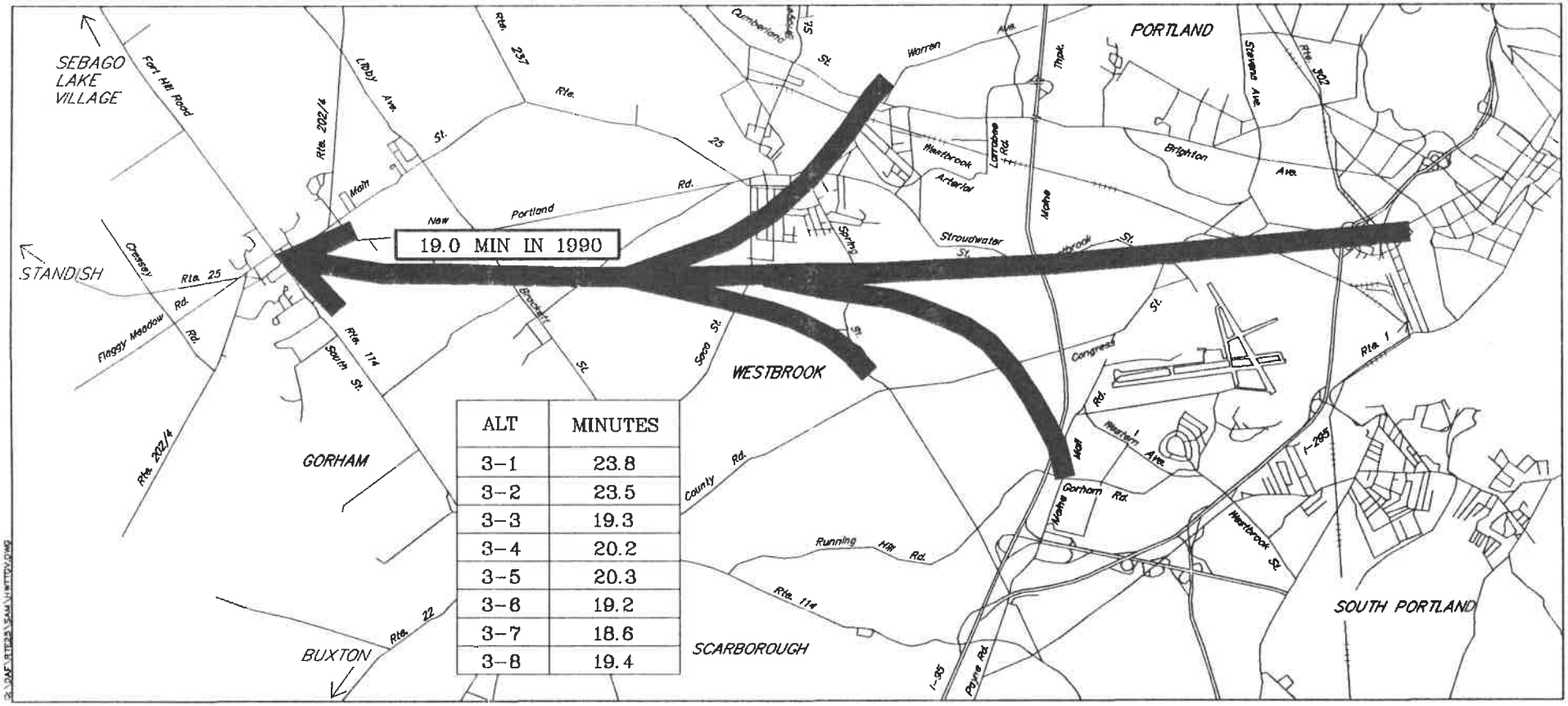

ALT	MINUTES
3-1	23.8
3-2	23.5
3-3	19.3
3-4	20.2
3-5	20.3
3-6	19.2
3-7	18.6
3-8	19.4

0 2000 4000 Feet

Figure 33: Composite Highway Travel Time to Gorham Village from Four Representative Trip Origins

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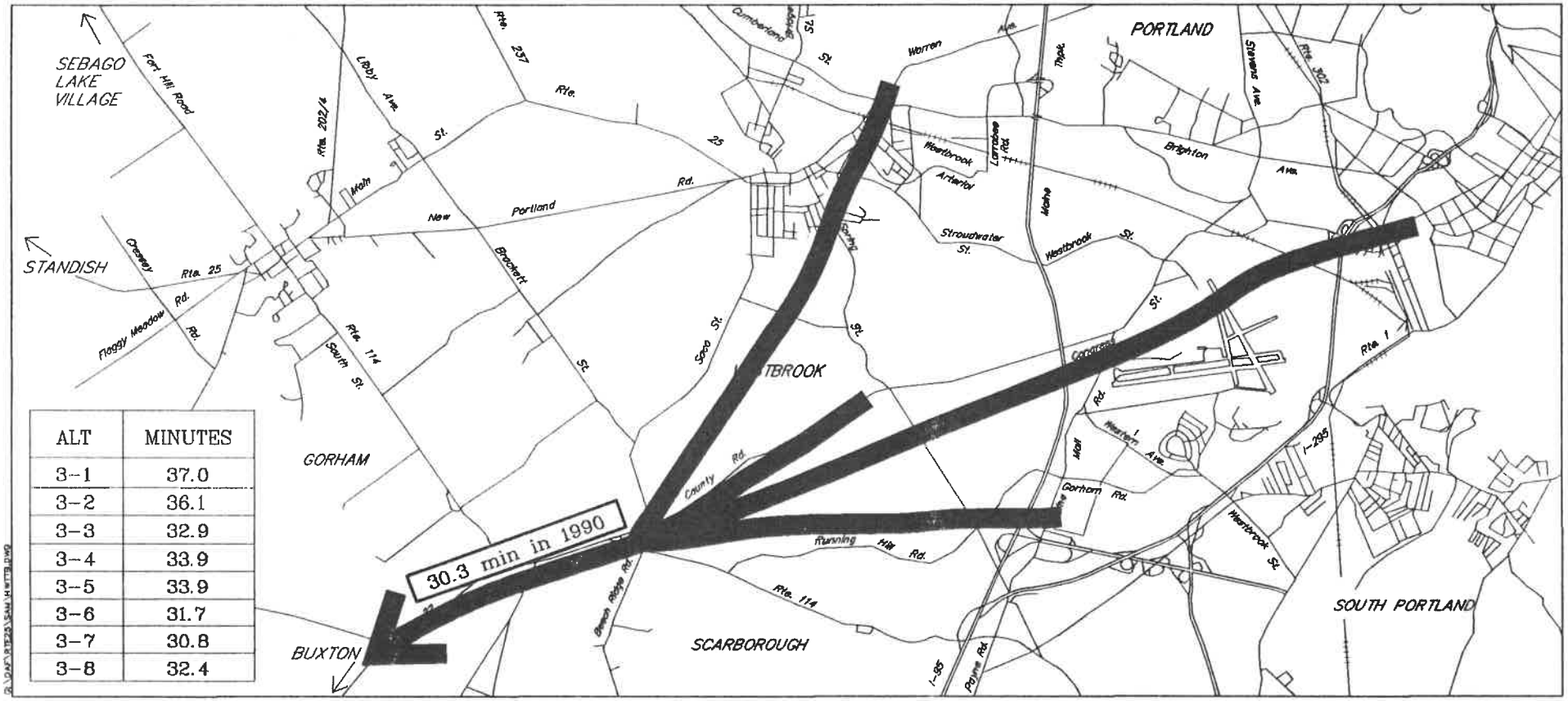


ALT	MINUTES
3-1	37.0
3-2	36.1
3-3	32.9
3-4	33.9
3-5	33.9
3-6	31.7
3-7	30.8
3-8	32.4

Figure 34: Composite Highway Travel Time to Buxton from Four Representative Trip Origins

0 2000 4000 Feet

Table 15. Composite Travel Times to and from Key Locations in Corridor

Alternative	to Gorham Village[1]	to Buxton[1]	to Standish[1]	to Sebago Lake Village[1]	to Westbrook[1]	from Portland[2]	from Maine Mall[2]
1990	19.0 m	30.3 m	35.0 m	28.3 m	8.5 m	27.2 m	25.1 m
3-1	23.8	37.0	39.4	33.4	***9.5***	32.8	29.5
3-2	23.5	36.1	39.4	33.6	***9.4***	32.3	28.9
3-3	***19.3***	32.9	36.9	29.5	**8.1**	29.0	**24.8**
3-4	20.2	33.9	***35.4***	***28.6***	***8.8***	***28.1***	***26.0***
3-5	20.3	33.9	***36.0***	***28.6***	**8.0**	29.3	***25.1***
3-6	***19.2***	31.7	37.3	***29.1***	***8.9***	28.3	***25.6***
3-7	**18.6**	***30.8***	36.8	*28.8*	**8.2**	28.9	**24.6**
3-8	***19.4***	32.4	***35.6***	29.8	**8.2**	28.3	**24.9**

Notes:

(1) -- an average of auto travel times (in minutes) from four employment centers in the corridor: Maine Medical Center in Portland, the Maine Mall area, S.D. Warren in Westbrook, and the intersection of County Road and Spring Street in Westbrook

(2) -- an average of auto travel times (in minutes) to Gorham Village, to the intersection of County Road/Route 22 and South Street/Route 114 in Gorham, to Buxton, to Standish, and to Sebago Lake Village

Table 16 lists the future travel time savings associated with each of the conceptual alternatives tested in Screen Three. The values which depict travel time savings of at least 20 percent (compared to the base condition -- Alternative 3-1) are highlighted in **bold**. The reader can select an origin-destination pair of interest and identify which alternative(s) produces the most significant savings in travel time.

Table 16. Year 2015 Travel Time Savings (in Minutes) for Each Alternative

FROM	TO	3-1	3-2	3-3	3-4	3-5	3-6	3-7	3-8
Downtown Portland (Maine Med)	Downtown Gorham	28.5 min	< 1	4.7	5.0	3.1	**5.7**	4.2	4.5
	South Gorham	30.0	2.8	5.2	5.4	4.5	**6.2**	4.6	**8.1**
	Standish Corner	44.1	< 1	2.7	5.3	3.0	2.6	2.6	3.9
	Sebago Lake Village	38.1	< 1	4.1	5.9	5.1	4.8	4.7	3.6
	Buxton	41.8	< 1	3.9	4.6	3.4	6.5	5.4	5.3
	Downtown Westbrook	14.4	< 1	2.5	1.9	1.8	1.5	2.0	1.5
Maine Mall	Downtown Gorham	25.5	< 1	**5.9**	3.5	4.7	5.0	**6.6**	4.8
	South Gorham	25.1	2.7	**5.3**	4.8	**6.1**	**6.2**	**5.6**	**6.9**
	Standish Corner	41.0	< 1	3.8	4.0	4.4	1.8	2.8	4.1
	Sebago Lake Village	35.1	< 1	5.4	4.7	4.8	4.1	4.9	3.9
	Buxton	38.8	1.2	5.8	3.0	4.3	5.7	**7.8**	6.0
	Downtown Westbrook	11.7	< 1	2.2	1.1	2.1	1.0	1.7	2.2
S.D. Warren	Downtown Gorham	19.1	< 1	2.3	1.6	1.4	2.0	2.1	3.3
	South Gorham	23.7	2.3	2.7	3.7	3.7	**4.9**	4.3	4.3
	Standish Corner	34.8	< 1	< 1	1.9	1.4	1.7	< 1	2.8
	Sebago Lake Village	28.8	< 1	1.6	3.3	3.5	3.9	3.0	2.7
	Buxton	32.3	< 1	1.7	1.1	< 1	2.8	2.8	2.5
	Downtown Westbrook	5.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Route 22/ Spring Street	Downtown Gorham	22.1	1.6	**5.2**	4.4	**4.7**	**5.8**	**7.9**	**5.1**
	South Gorham	20.1	2.4	3.0	**4.2**	**4.3**	**5.5**	**5.0**	**4.3**
	Standish Corner	37.6	< 1	3.2	4.5	4.6	2.1	4.1	4.3
	Sebago Lake Village	31.7	< 1	4.7	5.2	6.0	4.4	6.0	4.1
	Buxton	35.3	2.4	5.1	3.8	4.1	6.4	**9.0**	4.9
	Downtown Westbrook	6.8	< 1	1.0	< 1	**1.8**	< 1	**1.5**	**1.6**
USM (Gorham)	Downtown Gorham	1.9	< 1	< 1	< 1	< 1	< 1	< 1	< 1
	South Gorham	10.5	< 1	< 1	< 1	< 1	1.2	1.1	< 1
	Standish Corner	19.6	< 1	< 1	< 1	< 1	< 1	< 1	< 1
	Sebago Lake Village	17.5	< 1	1.3	1.4	1.4	1.7	1.9	1.9
	Buxton	16.6	< 1	< 1	< 1	< 1	< 1	< 1	< 1
	Downtown Westbrook	8.4	< 1	< 1	< 1	< 1	< 1	< 1	< 1

4.3.2 Evening Peak Hour Levels of Congestion

Levels of congestion in the corridor were evaluated at 18 signalized intersections. Congestion was determined using the Highway Capacity Manual Planning Methodology. Under this approach, a volume-to-capacity ratio was computed and then used to assess whether the conditions were either:

- under capacity (volume-to-capacity ratio of less than or equal to 0.84),
- near capacity (volume-to-capacity ratio of greater than or equal to 0.85 and less than or equal to 0.94),
- at capacity (volume-to-capacity ratio of greater than or equal to 0.95 and less than or equal to 1.00), or
- over capacity (volume-to-capacity ratio of greater than or equal to 1.01).

Overall Corridor -- Fourteen of the eighteen intersections were estimated to currently be operating under capacity. **One of the 18 (i.e., the Gorham Village intersection) was currently operating at capacity**, resulting in significant traffic queues and vehicle delay. **Three other intersections were near capacity** (at County Road/Route 22 and Spring Street in Westbrook, at County Road and Route 114 in Scarborough, and at Running Hill Road and Spring Street/Cummings Road in South Portland). The base future year assumptions (Alternative 3-1) yielded **11 intersections operating near or over capacity** (nearly three times the current number of four) and **seven of these were operating at or over capacity** (in contrast with the current number of one).

Forecasts of traffic congestion were prepared for operating conditions under each of the study alternatives. A summary of the effectiveness of the alternatives in terms of relieving congestion is presented in Table 17.

As noted previously, three of the intersections were currently operating near capacity and one was currently operating at capacity. In the future, the only alternatives to retain only one "at/over-capacity" intersection in the corridor were Alternative 3-3 (Patch Problems) and Alternative 3-6 (Southerly Bypass of Gorham Village to the Westbrook Arterial). Alternatives 3-4 and 3-5 (with northerly bypasses of Gorham Village) and Alternative 3-8 were nearly as effective and produced only two intersections at or above capacity.

All of the alternatives resulted in some intersections operating worse than under current conditions. **Alternative 3-4 produced the fewest number of "worse" intersections** (three). Alternatives 3-3, 3-5, 3-6, and 3-8 produced the next fewest number of "worse" intersections (four).

All of the study alternatives (except for the base condition alternative) caused an improvement compared to current conditions at an intersection in the corridor. **Alternative 3-8 (with four) improved the largest number of intersections**. Alternatives 3-3 and 3-7 were next with 3 "improved" intersections.

Table 17. Effectiveness of Alternatives in Reducing Traffic Congestion at Intersections

Alt	Number of Intersections (out of 18 studied)					
	Near Capacity	At or Over Capacity	Worse than Current Conditions	Better than Current Conditions	Worse than Alternative 3-1	Better than Alternative 3-1
Current	3	1	---	---	---	---
3-1	4	7	11	0	---	---
3-2	6	5	9	1	0	2
3-3	4	1	4	3	0	9
3-4	4	2	3	1	0	9
3-5	4	2	4	2	0	7
3-6	6	1	4	1	0	9
3-7	3	3	6	3	2	7
3-8	2	2	4	4	1	9

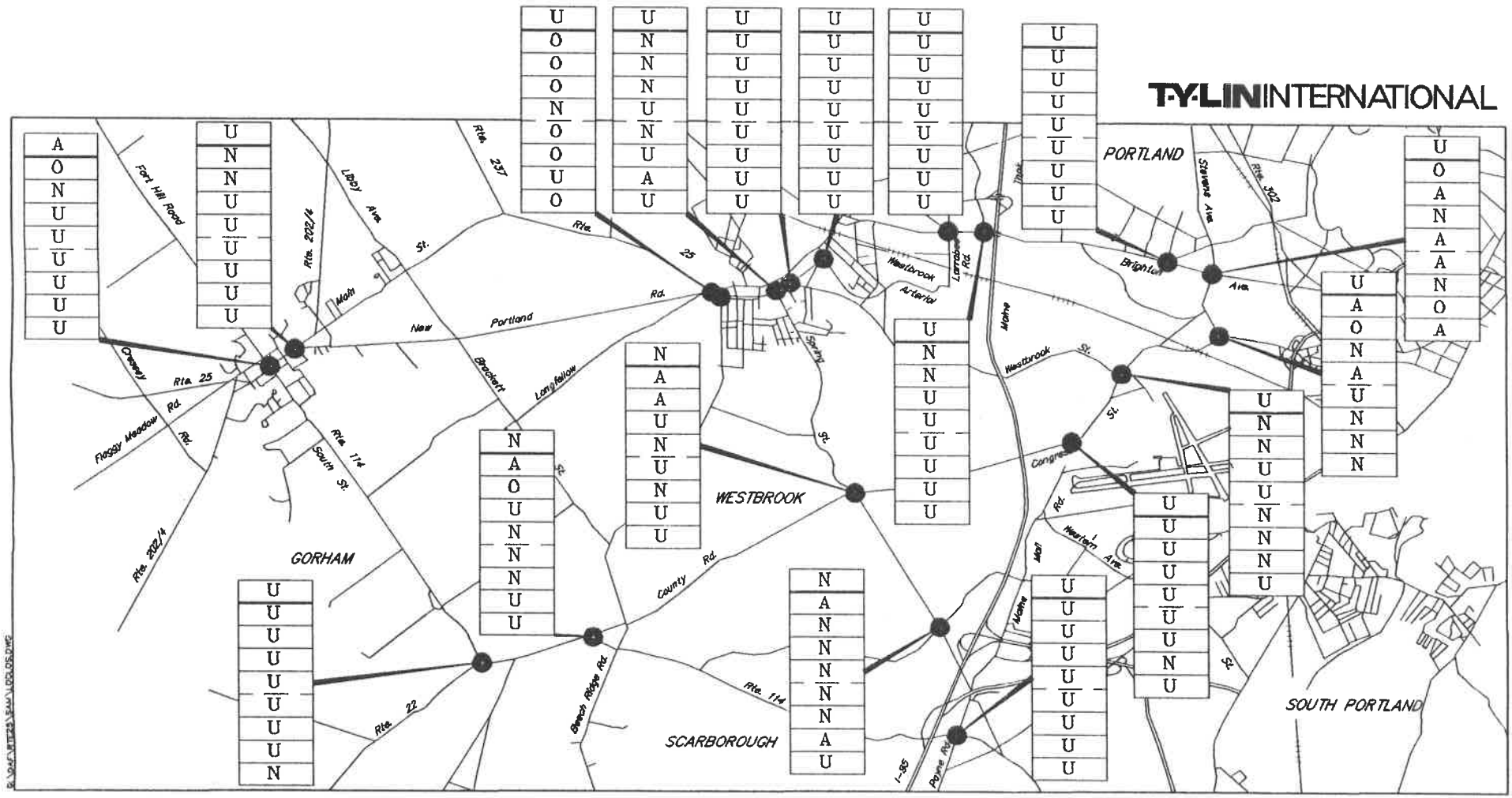
Alternatives 3-2 through 3-8 reduced congestion at intersections compared to the future base condition. Those which improved the largest number of intersections were Alternatives 3-3, 3-4, 3-6, and 3-8.

Individual Intersections -- For each of the 18 analysis intersections, Figure 35 presents the forecast level of congestion in terms of being **under capacity**, **near capacity**, **at capacity**, or **over capacity**. The actual volume-to-capacity ratios for each of the signalized intersections are listed on the following pages in Table 18.

Gorham Village -- All of the alternatives reduced congestion in Gorham Village. Alternatives 3-3 through 3-8 produced significant improvement beyond today's levels of congestion.

Downtown Westbrook -- Large improvement was provided by Alternative 3-4 (Northerly Bypass of Gorham Village to Westbrook Arterial). Modest improvement resulted from Alternatives 3-6, 3-7, and 3-8. Little improvement was provided by Alternatives 3-3 and 3-5 (both of which would require additional left turn lanes on Bill Clarke Drive at some of the signalized intersections).

Brighton Avenue/Route 25 in Portland -- Modest improvement was produced by Alternatives 3-3 and 3-6, both of which assumed a widening of Brighton Avenue. For all alternatives without widening, intersection operations were at least at capacity.



LEGEND: U – Under Capacity
N – Near Capacity
A – At Capactiy
O – Over Capacity

BASE
3-1
3-2
3-3
3-4
3-5
3-6
3-7
3-8

Current Year

Year 2015 by Alternative

Figure 35: Forecast Levels of Congestion

Table 18. Year 2015 Evening Peak Hour Levels of Congestion at Signalized Intersections

JURISDICTION	INTERSECTION	Alt 3-1	Alt 3-2	Alt 3-3	Alt 3-4	Alt 3-5	Alt 3-6	Alt 3-7	Alt 3-8
Gorham	Route 25/202/114 (Village Center)	**1.12 Over**	***0.91 Near***	0.77 Under	0.83 Under	0.81 Under	0.76 Under	0.75 Under	0.74 Under
	Route 25 and New Portland Road	***0.94 Near***	***0.85 Near***	0.80 Under	0.70 Under	0.69 Under	0.66 Under	0.70 Under	0.69 Under
	Route 22/114 (west)	0.74 Under	0.67 Under	0.64 Under	0.58 Under	0.49 Under	0.56 Under	0.54 Under	***0.91 Near***
Westbrook	Route 25 (Bill Clarke Drive), New Gorham Road & Saco Street	**1.51 Over**	**1.25 Over**	**1.01 Over**	***0.85 Near***	**1.08 Over**	**1.17 Over**	0.81 Under	**1.16 Over**
	Route 25 (Bill Clarke Drive) & Spring Street	***0.94 Near***	***0.94 Near***	***0.90 Near***	0.71 Under	***0.93 Near***	0.76 Under	**0.99 At**	0.83 Under
	Route 25 (Bill Clarke Drive) & Stroudwater Street	0.70 Under	0.63 Under	0.49 Under	0.50 Under	0.62 Under	0.47 Under	0.60 Under	0.62 Under
	Route 25 (Bill Clarke Drive) & Westbrook Arterial	0.71 Under	0.66 Under	0.84 Under	0.69 Under	0.80 Under	0.58 Under	0.55 Under	0.57 Under
	Route 25 (Main Street) & Larrabee Road	0.63 Under	0.62 Under	0.67 Under	0.81 Under	0.73 Under	0.77 Under	0.70 Under	0.74 Under
	Route 22 (County Road) & Spring Street	**0.95 At**	**0.95 At**	0.80 Under	***0.91 Near***	0.81 Under	***0.92 Near***	0.82 Under	0.81 Under

Table 18. Year 2015 Evening Peak Hour Levels of Congestion at Signalized Intersections (continued)

JURISDICTION	INTERSECTION	3-1	3-2	3-3	3-4	3-5	3-6	3-7	3-8
Portland	Brighton Avenue (Route 25) & Riverside Street	***0.89 Near***	***0.89 Near***	0.69 Under	0.68 Under	0.66 Under	0.66 Under	0.68 Under	0.67 Under
	Brighton Avenue (Route 25) & Woodford Street	0.60 Under	0.55 Under	0.59 Under	0.65 Under	0.57 Under	0.61 Under	0.58 Under	0.59 Under
	Brighton Avenue (Route 25) & Stevens Avenue	**1.04 Over**	**0.97 At**	***0.88 Near***	**0.96 At**	**0.96 At**	***0.89 Near***	**1.03 Over**	**0.97 At**
	Congress Street (Route 22) & Johnson Road	0.68 Under	0.66 Under	0.80 Under	0.61 Under	0.77 Under	0.70 Under	***0.88 Near***	0.60 Under
	Congress Street (Route 22) and Westbrook Street	***0.94 Near***	***0.94 Near***	0.79 Under	0.84 Under	***0.86 Near***	***0.85 Near***	***0.88 Near***	0.77 Under
	Congress Street (Route 22) and Stevens Avenue	**0.98 At**	**1.02 Over**	***0.87 Near***	**1.00 At**	0.74 Under	***0.91 Near***	***0.93 Near***	***0.85 Near***
Scarborough	Route 22 and Route 114 (east)	**0.99 At**	**1.01 Over**	0.67 Under	***0.90 Near***	***0.93 Near***	***0.90 Near***	0.83 Under	0.77 Under
	Route 114 and Payne Road	0.49 Under	0.49 Under	0.53 Under	0.47 Under	0.49 Under	0.49 Under	0.49 Under	0.59 Under
South Portland	Running Hill Road and Cummings Road	**0.96 At**	***0.91 Near***	***0.90 Near***	***0.88 Near***	***0.91 Near***	***0.85 Near***	**1.00 At**	0.83 Under

Congress Street/Route 22 in Portland -- The largest improvement resulted from Alternatives 3-3 (which assumed a Westgate Bypass) and 3-8 (which sent traffic to Portland via I-295). Modest improvement was produced by Alternatives 3-4 and 3-5. Alternative 3-7 actually worsened conditions by encouraging the greatest usage of the Congress Street corridor.

County Road/Route 22 in Westbrook, Scarborough, and Gorham -- Major improvement was produced by Alternatives 3-3 (which included a widening of Route 22), 3-5 and 3-7 (which included a Gorham Bypass to Outer Congress Street), and 3-8 (which had the greatest benefit but required more than the single-lane approaches assumed at the westerly intersection of Routes 22 and 114).

Alternatives 3-4 and 3-6 (with new/improved roadways to Brighton Avenue)

- improve conditions at the problem intersections in Gorham Village and reduce traffic through Gorham Village on Route 25;
- reduce traffic through South Gorham/North Scarborough on Route 22 roughly 5-10 percent; but peak hour volumes are still greater than today so the Route 22/114 overlap remains a traffic congestion problem;
- push 30 percent more traffic through the currently failing intersection at Brighton and Stevens Avenues;
- add traffic to Westbrook Street, worsening congestion on Congress Street through the Stroudwater neighborhood; and
- have little effect on Route 114 traffic levels in Scarborough.

Alternatives 3-5 and 3-7 (with new/improved roadways to County Road/Congress Street)

- improve many of the problem intersections in the corridor (in Gorham Village, North Scarborough/South Gorham, and Westbrook);
- reduce traffic through Gorham Village on Route 25 by roughly 20 percent from base future condition (i.e., down to current traffic levels);
- reduce traffic through North Scarborough/South Gorham on County Road by roughly 15 percent (i.e., down to current traffic levels);
- do not reduce the traffic volume on Gorham Road/Route 114; and
- worsen Congress Street traffic congestion where improvements are impractical, in particular through Stroudwater (e.g., peak hour volumes are 40-50 percent higher than the current level).

Alternative 3-8 (with new/improved roadways to Gorham Road/Route 114)

- improves many of the problem intersections in the corridor (e.g., Gorham Village, North Scarborough/South Gorham, Westbrook, Congress Street);
- reduces traffic levels in Gorham Village to current levels;
- causes a large jump in traffic (20 percent) through North Scarborough/South Gorham on either a new roadway or along a widened County Road;
- causes a large jump in traffic levels on Gorham Road/Route 114 (nearly twice the current level);
- with ramps between I-295 and Gorham Road, reduces evening peak hour traffic on Payne Road by 400;
- reduces Brighton Avenue traffic slightly (but will still be 10 percent higher than current levels);
- reduces Westbrook Street traffic slightly (but will still be 33 percent higher than current levels); and
- reduces Congress Street traffic slightly (but will still be 30-40 percent higher than current levels).

4.3.3 Roadway Path Choices in Corridor

Trips between Portland and Gorham -- Table 19 presents the paths selected by trips between Portland and Gorham (as estimated by the PACTS travel demand forecasting model). In the year 2015, the model estimates that, for example, 71 percent of the Portland-Gorham trips will use the Route 25 corridor. Nearly all of the remainder (27 percent) will use Route 22.

With the Alternative 3-8 improvements in place, the path distribution is shifted slightly. Most of the Portland-Gorham traffic still uses Route 25 (63 percent) and Route 22 carries the next highest volume (22 percent). But, because of the recommended capacity improvements in Gorham and Scarborough, 14 percent of the Gorham-Portland traffic takes the Route 114 path (most likely to access I-295 at the proposed ramps on Route 114).

With a new road built all the way from west of Gorham Village to the Exit 8 area (i.e., Alternative 3-6), the path via Route 25 becomes less attractive (but is still the highest at 54 percent) and 24 percent of the trips use the new roadway.

Table 19. Route Selection for Trips between Portland and Gorham

Path Choice	Year 2015 Base Condition	Year 2015 with Alternative 3-8	Year 2015 with Alternative 3-6
Route 25	71 %	63 %	54 %
New Roadway	---	---	24 %
Route 22	27 %	22 %	20 %
Running Hill Road	0 %	0 %	0 %
Route 114	2 %	14 %	1 %
Total of 600 Evening Peak Hour Trips			

Trips between South Portland and Gorham -- Table 20 presents the paths selected by trips between South Portland and Gorham. In the year 2015, the PACTS model estimates that nearly two-thirds of these trips will use either Running Hill Road (31 percent) or Route 114 (32 percent).

With the Alternative 3-8 improvements in place, the path distribution is shifted to have even more South Portland-Gorham trips choosing Running Hill Road or Route 114 (80 percent). At the same time, the path which receives the most significant reduction in travel for this pattern is Route 22 (i.e., drops from 19 percent to 8 percent). With Alternative 3-6 (which includes a new road built all the way from west of Gorham Village to the Exit 8 area), there is very little usage of the new roadway by South Portland-Gorham traffic.

Table 20. Route Selection for Trips between South Portland and Gorham

Path Choice	Year 2015 Base Condition	Year 2015 with Alternative 3-8	Year 2015 with Alternative 3-6
Route 25	18 %	12 %	26 %
New Roadway	---	---	4 %
Route 22	19 %	8 %	11 %
Running Hill Road	31 %	43 %	27 %
Route 114	32 %	37 %	32 %
Total of 500 Evening Peak Hour Trips			

4.4 MOBILITY FOR ALTERNATIVE TRAVEL MODES

The ability of study alternatives to increase mobility for alternative travel modes in the Gorham/Portland Corridor was assessed with two measures: (1) the area served by fixed-route transit available to the general public and (2) transit patronage.

4.4.1 Area Served by Transit

The corridor areas currently served by transit are illustrated by the information in Table 21. The table uses the same evening trip origins and destinations as used for estimating auto travel time and identifies those pairs for which transit service is provided. Under the future base condition (Alternative 3-1), the availability of transit service does not improve. However, under each of the remaining seven alternatives, new transit service areas were opened and new connections provided. As shown in Table 21, the origin-destination pairs being served in the corridor were substantially different from the current condition with the bus service provided by Alternatives 3-2 through 3-8.

Alternatives 3-2 through 3-8 connected each of the selected work trip origins (i.e., Maine Medical Center, Maine Mall, S.D. Warren, Outer Congress/Spring St., USM Gorham) with residential concentrations in Gorham, South Gorham, Standish Corner, Buxton, and Westbrook.

In addition to serving more areas, these alternatives included transit service elements which speed transit travel between some origins and destinations. Most notably, a transit trip between the Maine Mall area in South Portland and downtown Westbrook was substantially shorter than the current round-about path through Portland.

4.4.2 Transit Patronage

For the year 2015 base condition, the number of transit patrons in the Gorham-Portland corridor study area included only a small increase over the model-estimated value for the current year. Each of the Screen Three Alternatives affected transit patronage in the corridor.

Implementation of Alternative 3-2 (Bus Service Expansion) resulted in an additional 50-100 afternoon peak hour bus boardings. For the new bus service planned under this alternative, the assumed fare structure was comparable to that currently in place in the Portland Region. In other words, the transit patron pays a portion of the total operating expense, with the remainder being covered by federal, state, and local sources. It is conceivable, though not likely, that additional non-user funding sources could be tapped to significantly lower the fare being paid by the transit patron. The net effect of a reduction in fares would be a commensurate increase in transit patronage.

The remaining Conceptual Alternatives (i.e., 3-3 through 3-8) produced roughly the same transit patronage as Alternative 3-2.

Table 21. Current and Future Transit Availability in Gorham/Portland Corridor

FROM	TO	Availability in 1990 & 2015 Base (Alternative 3-1)	Availability in Alternatives 3-2 through 3-8
Downtown Portland (Maine Med)	Downtown Gorham South Gorham Standish Corner Buxton	No	Yes
	Sebago Lake Village	No	No
	Downtown Westbrook	Yes	Yes
Maine Mall (South Portland)	Downtown Gorham South Gorham Standish Corner Buxton	No	Yes
	Sebago Lake Village	No	No
	Downtown Westbrook	Yes	Yes
S.D. Warren (Westbrook)	Downtown Gorham South Gorham Standish Corner Buxton	No	Yes
	Sebago Lake Village	No	No
	Downtown Westbrook	Yes	Yes
Route 22/ Spring St (Westbrook)	Downtown Gorham South Gorham Standish Corner Buxton Downtown Westbrook	No	Yes
	Sebago Lake Village	No	No
USM (Gorham)	Downtown Gorham South Gorham Standish Corner Buxton Downtown Westbrook	No	Yes
	Sebago Lake Village	No	No

4.5 TRANSPORTATION SYSTEM SAFETY

The alternatives were evaluated for their potential effect on safety for motorists and pedestrians. The measures used were: (1) the number of High Accident Locations expected to be improved by planned actions and (2) whether pedestrian safety would be expected to improve in Gorham Village and downtown Westbrook.

4.5.1 Motorist Safety

In total, there were 28 intersections and eight segments within the immediate study area considered High Accident Locations (HAL). Safety in the corridor was expected to worsen over the forecast 20-year period with the increased traffic congestion. The following assessment of the safety benefits of the alternatives is based on a comparison to base future conditions.

There are a wide variety of factors which could cause a particular location to be a HAL -- insufficient capacity, inadequate geometrics, and ineffective traffic control. For the Gorham-Portland Corridor Alternatives Analysis, the specific cause of safety problems at the corridor HALs was not identified. Instead, the analysis focused on reducing traffic congestion (and presumably, improving motorist safety).

The extent to which safety was improved in the corridor through implementation of an Alternative was assessed through two questions:

- did traffic volumes decrease through the HAL?
- if traffic volumes did not decrease, were capacity improvements being made which will reduce traffic congestion?

Table 22 presents the number of current HALs for which traffic volumes decreased or for which capacity improvements were planned under each alternative. From the table, the alternatives which improved safety the most in the corridor were Alternatives 3-3 (Patch Problems) and 3-5 (Northerly Gorham Bypass to Westbrook Arterial), followed in order by Alternatives 3-6, 3-4, 3-8, and 3-7.

Table 22. Evaluation of Motorist Safety Benefits of Screen Three Alternatives

Alternative	# of the 28 HAL Intersections Improved	# of the 8 HAL Segments Improved
3-2. Enhanced Baseline Scenario	18	6
3-3. Patch Problems	26	6
3-4. Northerly Gorham Bypass to New Westbrook Arterial Interchange	22	6
3-5. Northerly Gorham Bypass to Outer Congress Street	25	6
3-6. Southerly Gorham Bypass to New Westbrook Arterial Interchange	22	7
3-7. Southerly Gorham Bypass to Outer Congress Street	20	7
3-8. Westerly Gorham Bypass with Improvements to Route 114	21	7

4.5.2 Pedestrian Safety

Two locations in particular within the corridor were identified by the Advisory Committee as places where safety for pedestrians needed to be improved: in Gorham Village and along Bill Clarke Drive in Westbrook.

There are many factors which affect the quality and safety of the pedestrian environment, including the number of direct conflicts between pedestrians and motorists, the awareness of motorists for potential pedestrian conflicts, and the speed of motorists. At this level of evaluation of the Screen Three Alternatives, the only factor for which direct information was available was the number of potential conflicts between pedestrians and motorists (a value driven in part by the number of vehicles). Therefore, it was assumed in this analysis of pedestrian safety that a reduction in through traffic volume would produce a likewise improvement in pedestrian safety.

Table 23 summarizes the effects of the Screen Three Alternatives on pedestrian safety in Gorham Village and Westbrook. In the table, a Modest Benefit indicates a reduction in through traffic volume of less than 10 percent. Significant Benefit indicates a reduction in through traffic volume of between 10 and 20 percent. Most Significant Benefit indicates a reduction in through traffic volume of greater than 20 percent.

Alternatives 3-6 and 3-7 (with the southerly bypass of Gorham Village and of the Westbrook downtown) produced the largest traffic reductions in both Gorham Village and downtown Westbrook, thereby (it is presumed) improving pedestrian safety the greatest degree. Alternatives 3-4 and 3-8 were also likely to improve pedestrian safety in both locations, but to a lesser degree.

Table 23. Evaluation of Pedestrian Safety Benefits of Screen Three Alternatives

Screen Three Alternatives	Improved Safety for Pedestrians in Gorham Village	Improved Safety for Pedestrians in Westbrook
3-2. Enhanced Baseline	Modest	Modest
3-3. Patch Problems	***Significant***	***Significant***
3-4. Northerly Gorham Bypass to Westbrook Arterial Interchange	***Significant***	**Most Significant**
3-5. Northerly Gorham Bypass to Outer Congress Street	***Significant***	Modest
3-6. Southerly Gorham Bypass to Westbrook Arterial Interchange	**Most Significant**	**Most Significant**
3-7. Southerly Gorham Bypass to Outer Congress Street	**Most Significant**	**Most Significant**
3-8. Westerly Gorham Bypass with Improvements to Route 114	**Most Significant**	***Significant***

4.6 FREIGHT TRANSPORTATION

4.6.1 Freight Movement by Truck

Route 25 from the Maine Turnpike to Gorham Village and Route 4/202 from that point westward constitute an element of the National Highway System. Each of the study alternatives affected the potential mobility of trucks using the National Highway System through the Gorham/Portland Corridor. A quantitative estimate of travel time for vehicles passing through the corridor, along paths which carry a significant number of trucks, revealed the relative benefits of the alternatives. Table 24 presents a listing of composite travel times from two industrial sectors of the corridor (i.e., S.D. Warren in Westbrook and the intersection of Route 22 and Spring Street in Westbrook) to two common destinations outside of the corridor (i.e., Route 25 in Standish and Route 22 in Buxton) [note: other composite travel time data were presented earlier in Section 4.3.1.]

Alternatives 3-3 through 3-8 produced composite travel times which were between 7 and 12 percent better than those for Alternative 3-1 (the year 2015 base condition) and between 3 and 8 percent worse than under current conditions. The best composite travel time (depicting typical freight movements by truck in the corridor) was produced by Alternative 3-7 followed closely by Alternative 3-8.

Table 24. Composite Truck Travel Time between Representative Points in the Corridor

Screen Three Alternatives	Composite Travel Time • Westbrook to Standish • Westbrook to Buxton • Rt 22/Spring to Standish • Rt 22/Spring to Buxton
Year 1990 Base Condition	29.9 minutes
3-1. Base Condition	35.0 minutes
3-2. Enhanced Baseline	34.4 minutes
3-3. Patch Problems	32.4 minutes
3-4. Northerly Gorham Bypass to Westbrook Art. Interchange	32.2 minutes
3-5. Northerly Gorham Bypass to Outer Congress Street	32.3 minutes
3-6. Southerly Gorham Bypass to Westbrook Art. Interchange	31.8 minutes
3-7. Southerly Gorham Bypass to Outer Congress Street	30.8 minutes
3-8.Westerly Gorham Bypass and Improvements to Route 114	31.4 minutes

[Source: PACTS Travel Demand Forecasting Model]

Table 25 presents a qualitative assessment of the potential benefits accrued to three types of through truckers in the corridor for each of the Screen Three alternatives. Specifically, this table focuses on the mobility of trucks which currently pass through Gorham Village.

For trucks travelling along Route 25 between Westbrook and points west of Gorham Village (i.e., the first row in Table 25), truck mobility will worsen in the future as traffic congestion increases. Alternative 3-2 provides little benefit for this truck path. Alternatives 3-4 through 3-7 (all with new roadways along a path which bypasses congested areas in downtown Westbrook and Gorham Village) provide a direct benefit. Alternatives 3-3 and 3-8, by reducing traffic congestion in Gorham Village, provide an indirect benefit for Route 25 truck mobility.

The second path described in Table 25 is for trucks travelling between County Road/Route 22 and points west of Gorham Village on Route 25. The alternatives which include a southwesterly bypass of Gorham Village (Alternatives 3-3, 3-6, 3-7, and 3-8) enable these trucks to skirt congested Gorham Village. Trucks in Alternatives 3-2, 3-4, and 3-5 must still pass through Gorham Village.

The third path described in Table 25 is for trucks travelling between Gray Road/Route 202 and Narragansett Street/Route 202 west of Gorham Village. Alternatives 3-4, 3-5, and 3-8 allow trucks to bypass Gorham Village while trucks in Alternatives 3-2, 3-3, 3-6, and 3-8 must pass through congested Gorham Village.

Table 25. Mobility of Trucks through Gorham Village

	Alt 3-1	Alt 3-2	Alt 3-3	Alt 3-4	Alt 3-5	Alt 3-6	Alt 3-7	Alt 3-8
Truck Path from Route 25 in Westbrook to Route 25 west of Gorham	Worsens with increasing congestion	Little Benefit	Indirect Benefit	Direct Benefit	Direct Benefit	Direct Benefit	Direct Benefit	Indirect Benefit
Truck Path from Route 22/County Rd to Route 114/South St to Route 25 (west)	through Gorham Village	through Gorham Village	skirts Gorham Village	through Gorham Village	through Gorham Village	skirts Gorham Village	skirts Gorham Village	skirts Gorham Village
Truck Path from Route 202 (north) to Route 202 (south)	through Gorham Village	through Gorham Village	through Gorham Village	skirts Gorham Village	skirts Gorham Village	through Gorham Village	through Gorham Village	skirts Gorham Village

4.6.2 Rail Freight Service between Westbrook and Portland

The economic viability of many businesses in the corridor is dependent on the availability and continuation of rail freight service along the Mountain Division between Portland and Westbrook. Any action which could jeopardize the continued movement of freight over the rail corridor could be considered to have a potential adverse impact. None of the alternatives were expected to adversely impact rail operations along the Mountain Division between Westbrook and Portland.

LAND USE AND ENVIRONMENTAL IMPACTS

Chapter Five

Table of Contents

5.1 COMPATIBILITY WITH LAND USE

To evaluate the alternatives, each alternative was assessed based upon the following considerations:

- Does the alternative advance specific land use or transportation objectives identified in local plans?
- Does the alternative encourage a pattern of residential development that is consistent with local and regional goals?
- Does the alternative support the sound development of commercial and industrial uses consistent with local and regional goals?

While each community within the study area has a comprehensive plan, the major impacts of the proposals were on Scarborough, Gorham, and Westbrook. As a general pattern, most of the comprehensive plans address three basic issues: guiding residential development to areas of the community deemed most appropriate for residential use, fostering commercial and industrial development in designated locations, and improving mobility of the residents.

Table 26 summarizes the presumed positive and negative impacts of Alternatives 3-1 through 3-8. A more descriptive text which provides additional explanatory detail follows.

5.1.1 Alternative 3-1. Base Condition

Comprehensive Plan Objectives - The alternative does not address any of the specific objectives identified in local plans.

Residential Development Patterns - The alternative has no significant impact on residential growth patterns.

Commercial/Industrial Development - The alternative has no significant impact on commercial or industrial development potential.

Overall Compatibility - The alternative is generally consistent with local plans but does little to advance identified community objectives.

Table 26. Summary of Land Use Impacts

	Potential Positive Impacts	Potential Negative Impacts
Alternative 3-1. Base Condition	Little impact on residential growth	• Does little to improve access to Five Star and Gorham Industrial Parks, to USM, or to the Gorham Fairgrounds • Does not create east-west highway
Alternative 3-2. Enhanced Base Line	Should promote new residential and commercial growth which is transit-friendly	• Does little to improve access to Five Star Industrial Park, Gorham Industrial Park, USM, Gorham Fairgrounds • Does not create east-west highway
Alternative 3-3. Patch Problems	Provides relief for Gorham Village Improves access to Gorham Fairgrounds	• Widening of Route 22 divides South Gorham neighborhood • Does little to improve access to Five Star Industrial Park, Gorham Industrial Park, USM • May induce residential growth in Route 22 corridor • Does not create east-west highway
Alternative 3-4. Northerly Gorham Bypass with Westbrook Bypass to New Westbrook Arterial Interchange	Improves east-west access in Westbrook Improves access to Five Star Industrial Park, Gorham Industrial Park, USM, Gorham Fairgrounds Provides relief for Gorham Village Consistent with residential development patterns Creates beginning of east-west highway	• May induce residential development west of Gorham Village
Alternative 3-5. Northerly Gorham Bypass with Westbrook Bypass to Outer Congress Street	Improves access to Five Star Industrial Park, Gorham Industrial Park, USM, Gorham Fairgrounds Provides relief to Gorham Village Consistent with residential development patterns Creates beginning of E-W highway	• Has limited impact on east-west movement in Westbrook • May induce residential development west of Gorham Village
Alternative 3-6. Southerly Gorham Bypass with Westbrook Bypass to New Westbrook Arterial Interchange	Improves access to Five Star Industrial Park and Gorham Fairgrounds Improves east-west movement in Westbrook Provides relief for Gorham Village Consistent with residential development patterns Creates beginning of east-west highway	• Does not address access to Gorham Industrial Park or USM • May induce residential development west of Gorham Village

Table 26. Summary of Land Use Impacts (continued)

	Potential Positive Impacts	Potential Negative Impacts
Alternative 3-7. Southerly Gorham Bypass with Westbrook Bypass to Outer Congress Street	Improves access to Five Star Industrial Park and Gorham Fairgrounds Provides relief for Gorham Village Consistent with residential development patterns Creates beginning of east-west highway	• Has limited impact on east-west movement in Westbrook • Does not address access to Gorham Industrial Park or USM • May induce residential development west of Gorham Village
Alternative 3-8. Westerly Gorham Bypass with Route 114 Improvements	Improves access to Five Star Industrial Park and Gorham Fairgrounds Provides relief for Gorham Village Provides relief for South Gorham neighborhood	• Has limited impact on access to USM • Does not improve access to Gorham Industrial Park • May induce residential growth in Route 22 corridor and west of Gorham Village • Does not create east-west highway • May burden Route 114 areas of Scarborough

5.1.2 Alternative 3-2: Enhanced Baseline

Comprehensive Plan Objectives - This alternative is generally consistent with local plans. Most plans talk about improving traffic flow through TSM/TDM type improvements. The alternative does not address any of the specific objectives identified in local plans.

Residential Development Patterns - The alternative has no significant impact on residential growth patterns, but in the long-run should induce new development to be more transit-friendly.

Commercial/Industrial Development - The alternative has no significant impact on commercial or industrial development potential.

Overall Compatibility - The alternative is generally consistent with local plans but does little to advance identified community objectives.

5.1.3 Alternative 3-3: Patch Problems

Comprehensive Plan Objectives - This alternative is mixed in terms of conforming to local objectives:

1. The partial bypass around Gorham Village is somewhat consistent with the Gorham comprehensive plan but did not mirror the exact proposal of the Town.

2. Widening of Route 22 through South Gorham is inconsistent with the Gorham comprehensive plan. The plan views this area as a neighborhood that should not be further bisected by a major traffic route. The plan suggests bypassing South Gorham as an alternative.

The proposal does little to advance Westbrook's objective of improving east-west movement or Gorham's objective of improving access to the Gorham Industrial Park or the USM campus. It also does not create the beginning of a true east-west highway to New Hampshire.

Residential Development Patterns - This alternative increases accessibility in the Route 22 and 114 corridor and in areas to the West of Gorham. Since much of the North Scarborough, South Gorham, and Buxton areas served by these routes are designated as rural or farm and open space areas, this proposal could induce additional residential development pressure in these areas.

Commercial/Industrial Development - This alternative has limited impact on commercial/industrial land uses. The Gorham Village bypass improves access to the Gorham Fairgrounds area, but does not address access to USM, the Gorham Industrial Park, or the Five Star Industrial Park. The anticipated reduction in traffic in Gorham Village improves its ability to function as a commercial district.

Overall Compatibility - This alternative is generally compatible with local plans except for the widening of Route 22 in South Gorham. The alternative does not advance local objectives for improving access to nonresidential areas.

5.1.4 Alternative 3-4: Northerly Gorham Bypass with Westbrook Bypass to Exit 8

Comprehensive Plan Objectives - This alternative is consistent with a number of the land use and transportation objectives set out in local plans including:

1. It is consistent with Westbrook's objective to improve east-west movement, but this is somewhat compromised by the lack of interchanges at Stroudwater Street and especially Saco Street. It is also consistent with proposals to reconfigure Exit 8 of the Turnpike and to connect the Westbrook Arterial to Rand Road.

2. It is consistent with a number of objectives of the Gorham plan including increasing visibility of the Gorham Industrial Park, improving access to USM, and providing alternative travel routes within the community. It also is consistent with the goal of providing the beginning of a true westerly route to New Hampshire.

Residential Development Patterns - The alternative appears to foster a pattern of residential use that is generally consistent with local plans. It does not increase development pressure in South Gorham, North Scarborough, or areas of Buxton that are not designated for residential growth. The alternative may induce residential growth in areas west of Gorham Village.

Commercial/Industrial Development - The alternative provides much improved access to the Spring Street/Five Star Industrial Park area of Westbrook and improves access to the Mosher's Corner area of Gorham but only limited direct access to the Gorham Industrial Park. The alternative also provides much improved access to the Gorham Fairgrounds and to USM.

Overall Compatibility - This alternative is highly compatible with local plans but may induce some residential development pressure in areas not designated for residential development.

5.1.5 Alternative 3-5: Northerly Gorham Bypass with Westbrook Bypass to Outer Congress Street

Comprehensive Plan Objectives - This alternative is consistent with the objectives of the Westbrook and Gorham comprehensive plans. While it does not fully address east-west movement through Westbrook, it does make the Rand Road connection at the Westbrook Arterial, improves access to the Five Star Industrial Park, provides improved access to the Gorham Industrial Park and Mosher's Corner, provides improved access to USM, and improves the travel paths through the center of Gorham. It is also consistent with the objective of providing the beginning of a true westerly route to New Hampshire.

Residential Development Patterns - As with Alternative 3-4, this alternative appears to foster a pattern of residential growth that is generally consistent with local plans. As with Alternative 3-4, it does not increase development pressure in the Routes 22 and 114 corridor, although it may induce some residential development pressure in areas west of Gorham Village as a result of reduced travel times.

Commercial/Industrial Development - Alternative 3-5 provides increased accessibility for existing and planned nonresidential areas. The alternative improves access to the Five Star Industrial Park area, the Gorham Industrial Park/Mosher's Corner area, the USM Campus, and the Gorham Fairgrounds area.

Overall Compatibility - This alternative is compatible with local plans. It is especially strong in providing access to designated commercial and industrial growth areas while having limited impact on residential growth patterns. Improved travel times in the Route 25 corridor may, however, induce some residential growth pressure in areas west of Gorham Village.

5.1.6 Alternative 3-6: Southerly Gorham Bypass with Westbrook Bypass to Exit 8

Comprehensive Plan Objectives - This alternative advances a number of objectives of the Westbrook comprehensive plan in that it provides for the extension of the Westbrook Arterial to Rand Road and provides an east-west connection to the Five Star/Spring Street area. The alternative also addresses Gorham's desire for creating alternative routes through the center of the community but does not address other objectives of the plan except for improvement in access to the Gorham Fairgrounds area.

Residential Development Patterns - This proposal improves access within areas of Westbrook and Gorham designated for residential growth. The proposal should have little impact on residential development in the Route 22 corridor. As such, the alternative is consistent with local plans. The alternative may, however, increase residential growth pressure west of Gorham.

Commercial/Industrial Development - Alternative 3-6 improves access in the Larrabee Road/Stroudwater area and to the Spring Street/Five Star Industrial Park area. It has limited benefit in improving access to the Gorham Industrial Park/Mosher's Corner area but improves access to the Gorham Fairgrounds area. The proposal does not improve access to USM significantly.

Overall Compatibility - This alternative is quite compatible with desired land use patterns. It has more impact on commercial/industrial development than some other alternatives and is generally compatible with desired residential patterns.

5.1.7 Alternative 3-7: Southerly Gorham Bypass with Westbrook Bypass to Outer Congress Street

Comprehensive Plan Objectives - This alternative advances a number of objectives of the Westbrook comprehensive plan in that it provides for the extension of the Westbrook Arterial to Rand Road and improves access to the Five Star Industrial Park. The alternative also addresses Gorham's desire for creating alternative routes through the center of the community but does not address other objectives of the plan except for improvement in access to the Gorham Fairgrounds area.

Residential Development Patterns - This proposal improves access within areas of Westbrook and Gorham designated for residential growth. The proposal should have little impact on residential development in the Route 22 corridor. As such, the alternative is consistent with local plans. The alternative may, however, increase residential growth pressure west of Gorham.

Commercial/Industrial Development - This alternative improves access to the Spring Street/Five Star Industrial Park area. It has limited benefit in improving access to the Gorham Industrial Park/Mosher's Corner area but improves access to the Gorham Fairgrounds area. The proposal does not improve access to USM significantly.

Overall Compatibility - This alternative is somewhat compatible with desired land use patterns. It is generally compatible with desired residential patterns, although it may induce residential development pressure in areas west of Gorham.

5.1.8 Alternative 3-8: Westerly Gorham Bypass with Route 114 Improvements

Comprehensive Plan Objectives - Alternative 3-8 is quite consistent with the objectives of both the Westbrook and Gorham comprehensive plans. It addresses the Larrabee Road/Rand Road situation, improves east-west access to the Five Star Industrial Park, provides a bypass of the South Gorham neighborhood, bypasses Gorham Village, and improves access to the Gorham Fairgrounds area.

Residential Development Patterns - This alternative is somewhat consistent with desired patterns of residential development. Improved mobility in the Route 22 corridor may induce some residential growth pressure in areas of North Scarborough, South Gorham, and Buxton which are designated as rural or farm and open space. Improved travel times may also increase residential development west of Gorham Village.

Commercial/Industrial Development - This alternative improves access to the Five Star area of Westbrook and the Gorham Fairgrounds area. It does not improve access to the Gorham Industrial Park or Mosher's Corner area of Gorham. It provides limited improvement in access to USM.

Overall Compatibility - This alternative is generally compatible with desired land use patterns but may induce residential growth pressure in areas designated as rural in local comprehensive plans.

5.2 ENVIRONMENTAL

The alternatives were evaluated in terms of their potential impact on identified natural resources. These resources included:

- wetlands;
- wildlife habitat (identified deer yards and both undisturbed and fragmented blocks of forest);
- lakes, streams and ponds (which are important for water quality protection and fisheries);
- threatened/endangered species habitat; and
- surface and groundwater resources.

All of these resources are protected to some degree by federal and state regulations. Wetlands are the most protected of these resources. In building or upgrading a highway, impacts to wetlands must be avoided and minimized to the extent possible. Furthermore, the U.S. Army Corps of Engineers (USACOE) will only grant a permit for the construction of the "practicable" alternative that has low environmental damage. Environmental factors need to be given serious consideration but need not be the sole determining factor in the selection of a preferred strategy. Many potential impacts can be reduced or eliminated through design engineering, use of best management practices, etc. Thus, some of these natural resources can be considered planning and engineering challenges, but not necessarily "roadblocks".

Proposed new and upgraded roadway segments for each alternative were evaluated using the measures of effectiveness listed in Table 27. Existing resource maps prepared by MDOT in the Route 25 Corridor Study: Technical Memorandum 2 (1990) were relied upon, with the exception of wetlands. Wetlands were mapped by overlaying wetlands identified by the Route 25 Corridor Study (which included wetlands identified by US Fish and Wildlife, Maine Department of Inland Fish and Wildlife (MDIFW) and by aerial photograph interpretation) with hydric soils. Inclusion of hydric soils provided a better estimate of wetlands, but probably overestimated the acreage by 9 percent or more.

Table 27. Measures of Effectiveness Used in the Environmental Analysis

Natural Resource	Measure of Effectiveness	Potential Impact Ranking
Surface Water Quality	Number and type of stream crossings	**High:** At least 10 perennial stream crossings within a resource protection area **Moderate:** Less than 10 perennial stream crossings **Low:** No stream crossings
Ground Water Quality	Extent of crossings through aquifer areas	**High:** More than 2 miles of linear impacts **Moderate:** ***1- 2 linear miles within identified aquifer*** **Low:** ***Less than 1 mile of linear impacts***
	Number of crossings of identified contaminated areas	**High:** Affects two or more contaminated sites **Moderate:** Affects one contaminated site **Low:** No effects on contaminated sites
	Number of 25-person wells affected (i.e., crossing within 400 feet)	**High:** More than one well affected **Moderate:** One well affected **Low:** No wells affected
Fisheries/ Aquatic	Extent of crossings of fisheries habitats	**High:** Crosses more than 10 perennial streams or identified MDIFW fish habitats or is adjacent to other important habitats (eg, Stroudwater River, Fore River Estuary) **Moderate:** Crosses 1-10 identified MDIFW fish habitats or perennial streams **Low:** No crossings or crosses only intermittent streams
Threatened/ Endangered Species	Extent of impact on federal and state listed species and habitats	**High:** Crosses or adjacent to habitat suitable for T/E species or area where they have been identified **Moderate:** Crosses or adjacent to area near possible T/E species or their habitat * **Low:** No T/E species or habitat in area
Wetlands	Areal estimate of impact	**High:** More than 50 acres **Moderate:** Between 25 and 50 acres **Low:** Less than 25 acres
	Effects on MDIFW identified wetlands or other important wetlands	**High:** Affects MDIFW or other important wetland **Low:** No effect on wetlands
Wildlife	Effects on large blocks of undisturbed habitat and travel corridors.	**High:** More than five miles of linear impact **Moderate:** At least two, but not more than five, linear miles of impact **Low:** Less than two miles of linear impact
	Effects on disturbed or fragmented habitat	
	Effects on significant wildlife habitats such as deer yards or water fowl and wading bird habitats.	**High:** Affects significant habitat **Low:** Avoids significant habitat

* No species or habitats were noted in the corridor in the MDOT Route 25 Corridor Study. All alternatives were rated "moderate" based on the presence of possible threatened/endangered habitat.

Natural resource impacts for each segment were determined by overlaying the alternative design location over natural resource maps. Acreage estimates for wetland impacts were obtained by multiplying the linear distance of the roadway impact by the anticipated roadway width (200 feet for new roadways and 46-84 feet for widened roadways).

Impacts for each roadway segment were added to obtain the total impact for the alternative, then rated as low, moderate or high using criteria shown previously in Table 27. Results are displayed in Table 28. The no-build and enhanced baseline were included for comparative purposes. This rating method is admittedly subjective but facilitates comparison among alternatives. Impacts resulting from a Maine Turnpike/Westbrook Arterial interchange were not included in Table 28. All of the "build" alternatives (i.e., Alternatives 3-3 through 3-8) include this action.

5.2.1 Impacts of Individual Segments

Figures 36 through 41 present information on three key environmental factors by roadway segment for the six "build" alternatives: wetland acres affected by a potential new roadway, streams crossed by the new roadway, and the miles of new roadway which could affect existing aquifer.

5.2.2 Impacts of Screen Three Alternatives

Alternative 3-3: Patch Problems (see Figure 36)

Alternative 3-3 would have moderate impacts to surface water quality, with seven crossings of Class B streams and one of a Class SC stream. The number of crossings was the lowest of the alternatives.

This alternative affected areas overlying a moderate yield aquifer/aquifer recharge area (3.7 linear miles), plus a public well and three areas of potential groundwater contamination (identified by Maine Department of Environmental Protection, including former landfills, junk yards and salt storage areas). Potential groundwater impacts ranked second highest among the alternatives.

Impacts to fisheries and aquatic resources were ranked moderate. The highway would necessitate eight crossings of six streams including three rated as moderate (F2) by MDIFW.

Wetland impacts were estimated at 50 acres, the lowest of the six "build" alternatives. No important wetlands would be affected by this alternative.

Potential impacts to threatened/endangered species were rated moderate and were judged to be similar for all alternatives. No federal-or state-listed threatened or endangered species or their habitats have been identified in the project area. Since the potential for their occurrence exists, all alternatives were rated moderate.

Impacts to wildlife would include high impacts to one large block of undeveloped habitat and low impacts to two already-fragmented habitats. No identified deer yards would be affected.

Table 28. Comparison of Impacts on Natural Resources

Natural Resource	ALTERNATIVE 3-1	3-2	3-3	3-4	3-5	3-6	3-7	3-8
Surface Water Quality	Low	Low	Moderate	High	High	High	High	High
# stream crossings	0 crossings	0 crossings	8 crossings	16 crossings	17 crossings	14 crossings	15 crossings	13 crossings 1 farm pond
ME water classification *			7-B; 1-SC	13-B; 3-C	12-B; 4-C; 1-SC	11-B; 3-C	10-B; 4-C; 1-SC	11-B; 2-C
Ground Water Quality	Low	Low	High	Low	Low	Moderate	Moderate	High
Impact on aquifer (linear miles)	0	0	3.7	0.5	0.5	1.4	1.4	5.7
# of 25-person wells impacted	Low 0	Low 0	Moderate 1	Low 0	Low 0	Low 0	Low 0	Moderate 1 (minor)
Possible groundwater contamination # of identified sites affected	0	0	3	3	3	3	3	3
Fisheries/Aquatic	Low	Low	Moderate	High	High	High	High	High
# crossings	0	0	8	16 incl. 2 of Stroudwater	17 incl. Stroudwater	14 incl. 2 of Stroudwater	15	15 incl. Stroudwater
MDIFW Rating**	0	0	3-F2	3-F3; 4-F2	4-F3; 3-F2	2-F3; 3-F2	3-F3; 4-F2; 1-F5	3-F2; 3-F3
Threatened/Endangered Species	Low	Low	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Wetlands	Low	Low	Moderate	High	High	High	High	High
Areal Impact (acres)	0	0	50	89	98	67	76	66
Effects on other important wetlands (e.g., MDIFW identified wetlands)	Low None affected	Low None affected	Low None affected	Low None affected	Low None affected	High Affects 1	High Affects 1	Low None affected
Wildlife								
Impacts on undisturbed habitat/travel corridors	None	None	Moderate	High	High	Moderate	Moderate	High
Impacts on developed/fragmented habitats	Low	Low	Low	Low	Low	Low	Low	Low
Impacts on significant wildlife habitat (identified MDIFW deer yard)	Low 0	Low 0	Low 0	Low 0	High 1	High 1	High 2	Low 0

* Freshwater Class B - Discharges to Class B waters shall not cause adverse impact to aquatic life
Class C - Discharges to Class C waters may cause some changes to aquatic life provided that the waters are of sufficient quality to support indigenous species
Marine Class SC - Discharges to Class SC waters may cause some changes to aquatic life provided that the waters are of sufficient quality to support indigenous species

** MDIFW Rating:
F1 Low
F2 Moderate
F3 High
F5 Indeterminate

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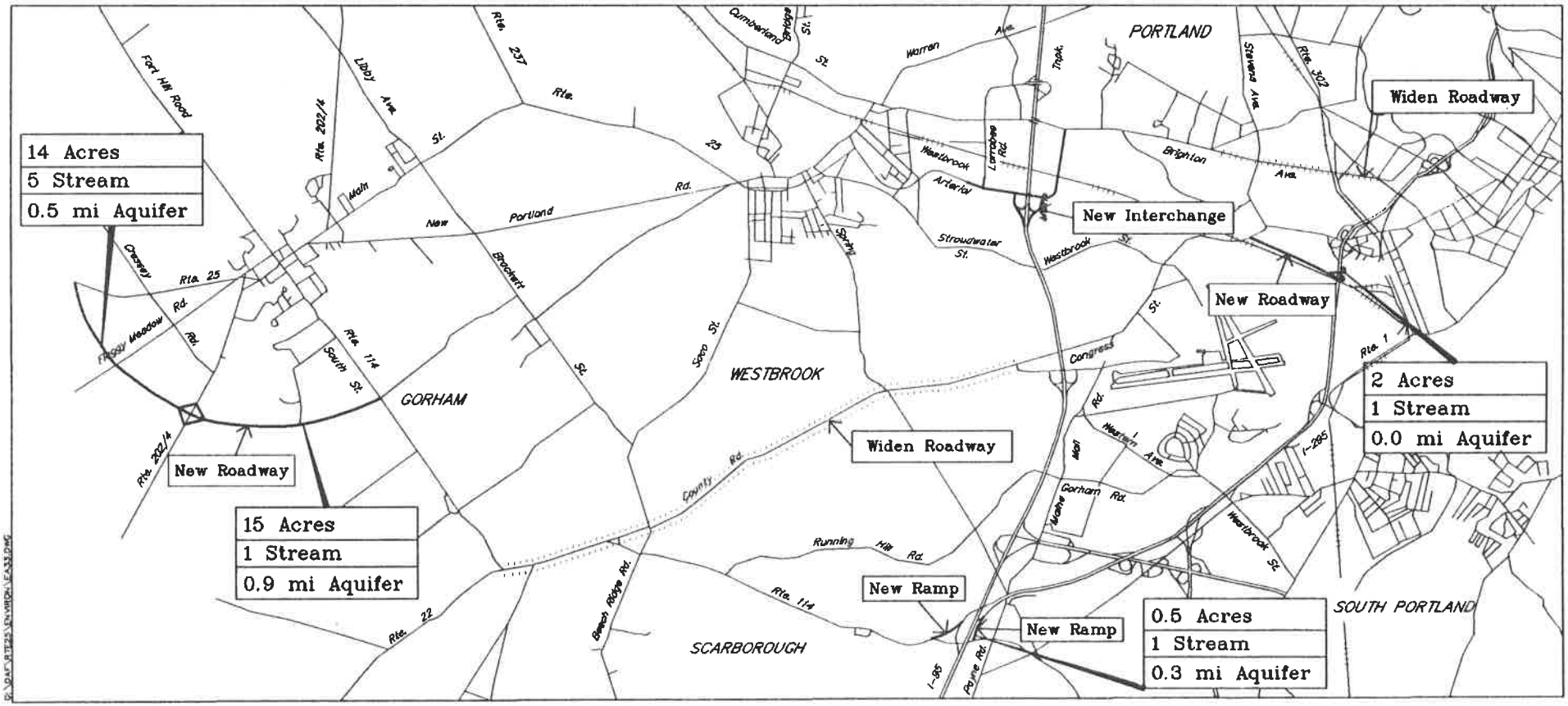

Figure 36: Key Environmental Impacts of New Roadways (Alternative 3-3)

Legend

——— New 2-Lane, Controlled Access Roadway

..... Roadway Widening

Wetland Acres
No of Streams
Miles of Aquifer

0 2000 4000 Feet

Alternative 3-4: Northerly Gorham Bypass, Westbrook Bypass to Westbrook Arterial (see Figure 37)

Alternative 3-4 would require 16 stream crossings (13 Class B, three Class C). Impacts to water quality were ranked high, second highest of the six "build" alternatives.

The new roadways in Alternative 3-4 would overlie a small area of moderate-yield aquifer (0.5 linear miles) and affect no public wells. The roadway would affect three areas of possible groundwater contamination. Groundwater effects were ranked low.

Potential fisheries and aquatic resources impacts were rated high. The 16 stream crossings included three MDIFW-fisheries streams rated high and four rated moderate. The Stroudwater River was crossed twice.

Approximately 89 acres of wetlands were impacted, the second-highest of the six "build" alternatives. Impacts to MDIFW rated wetlands were avoided.

The new roadway could cause high impacts to one large undeveloped habitat and low impacts to one habitat that is already fragmented. This alternative avoided impacts to significant wildlife habitats identified by MDIFW.

Alternative 3-5: Northerly Gorham Bypass with Westbrook Bypass to Outer Congress Street (see Figure 38)

Alternative 3-5 had 17 stream crossings (12 Class B, four Class C and one Class SC), the highest of the six "build" alternatives.

Impacts to groundwater were the lowest of the six "build" alternatives and similar to Alternative 3-4. Approximately 0.5 linear miles of new roadway crossed a moderate yield aquifer, and no public wells were affected. The alternative affected three areas of potential groundwater contamination.

Impacts to fisheries and aquatic resources were rated high. Four MDIFW fisheries habitats rated high and three moderate-rated habitats were crossed as part of the 17 stream crossings.

The impacts to wetlands, estimated at 98 acres, was the highest of the six "build" alternatives. No MDIFW rated wetlands were affected.

This alternative caused high impacts to one undeveloped wildlife habitat and low impacts to two already-fragmented habitats. An MDIFW-identified deer yard was affected.

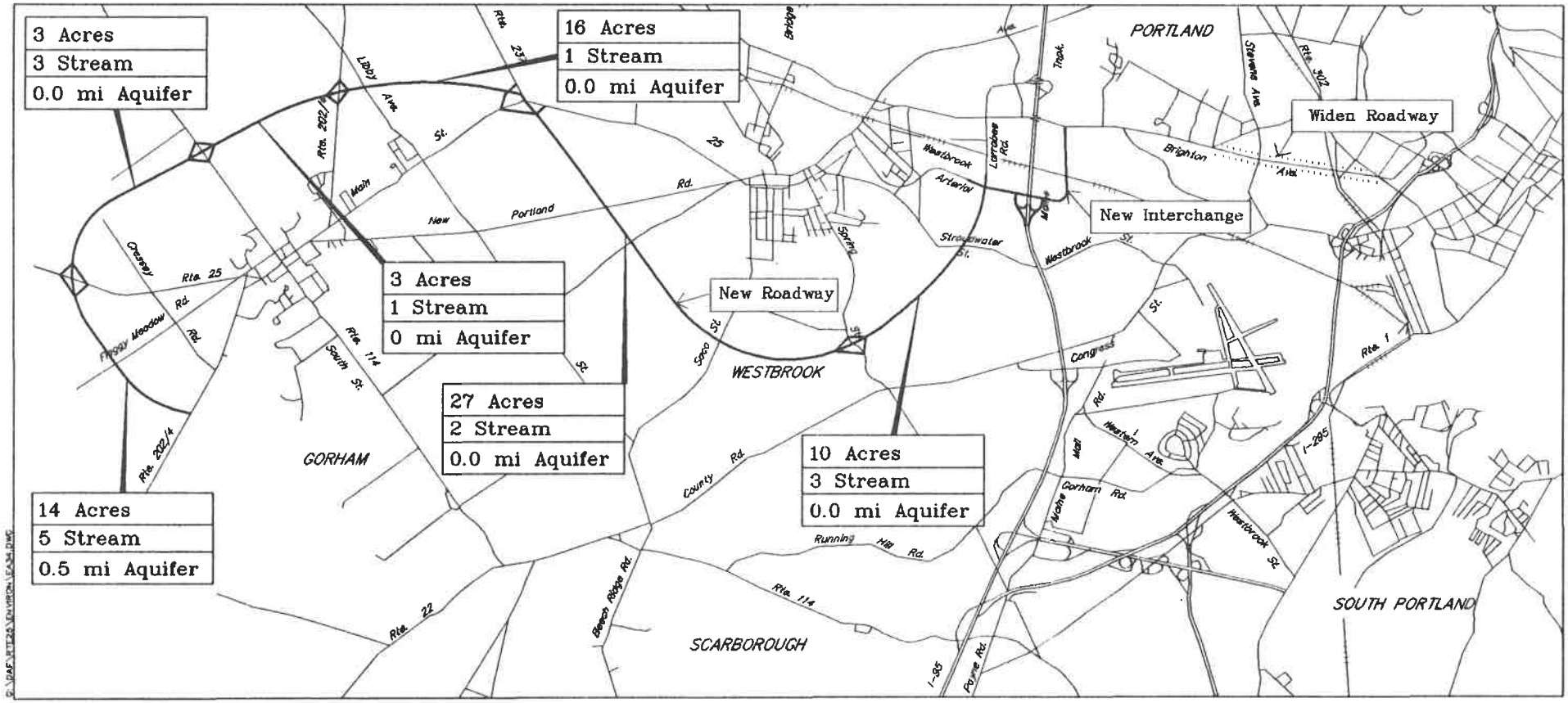

Figure 37: Key Environmental Impacts of New Roadways (Alternative 3-4)

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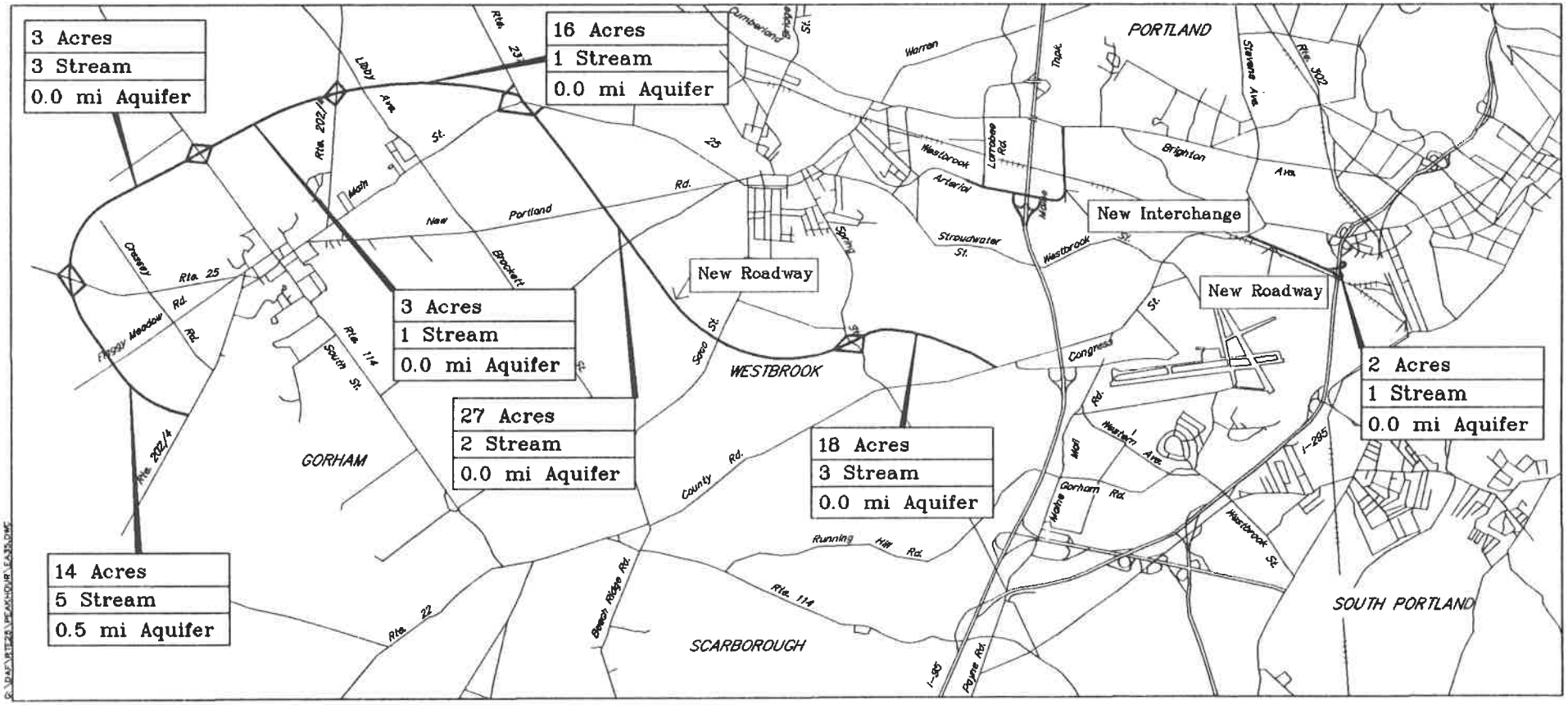

Figure 38: Key Environmental Impacts of New Roadways (Alternative 3-5)

Legend

——— New 2-Lane, Limited Access Road

Wetland Acres
No of Streams
Miles of Aquifer

Alternative 3-6: Southerly Gorham Bypass with Westbrook Bypass to New Westbrook Interchange (see Figure 39)

Potential impacts to surface water quality resulting from this alternative were rated high. A total of 14 crossings (11 Class B, three Class C) resulted, fourth-highest among the six "build" alternatives.

Potential groundwater impacts were rated moderate. Approximately 1.4 linear miles of highway would overlie a moderate-yield aquifer, and impacts to public wells were avoided. Three potential sources of groundwater contamination would be impacted.

Potential impacts to aquatic resources and fisheries were rated high. The highway crossed two streams rated high by MDIFW and three rated moderate. A total of 14 crossings were necessary, including two of the Stroudwater River.

Approximately 67 acres of wetlands (including an area identified by MDIFW) were affected, fourth highest of the six "build" alternatives.

The alternative divided one undisturbed wildlife habitat, causing moderate impacts, and caused low impacts to two other fragmented habitats. The outer Congress Street portion affected a deer yard identified by MDIFW.

Alternative 3-7: Southerly Gorham Bypass with Westbrook Bypass to Outer Congress Street (see Figure 40)

Alternative 3-7 required 15 stream crossings (ten Class B, four Class C, one Class SC), third highest of the six "build" alternatives. This impact was rated high.

Groundwater impacts were rated moderate, similar to Alternative 3-6. Approximately 1.4 linear miles of highway would overlie a moderate yield aquifer, and no public wells were affected. The highway affected three potential sources of groundwater contamination.

Impacts to fisheries and aquatic impacts were rated high. The highway's 15 stream crossings included three rated as high by MDIFW and four rated moderate.

Alternative 3-7 affected approximately 76 acres of wetlands, third highest of the six "build" alternatives. A wetland identified by MDIFW was affected.

Two deer yards identified by MDIFW were affected. Furthermore, one large undisturbed habitat was divided for a distance between two and five miles, rated as a moderate impact. Low impacts occurred in two fragmented habitats.

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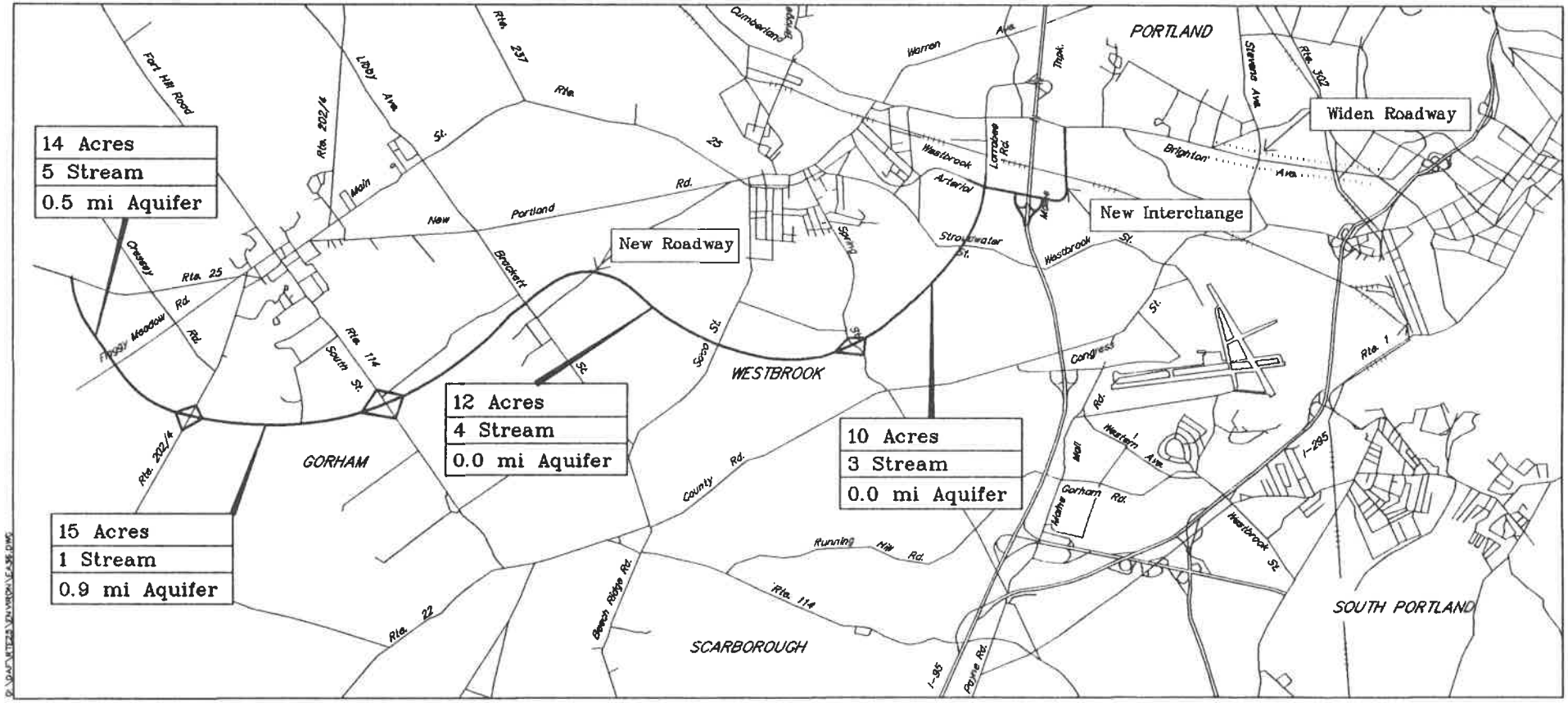

Legend

——— New 2-Lane, Limited Access Road

..... Roadway Widening

Wetland Acres
No of Streams
Miles of Aquifer

Figure 39: Key Environmental Impacts of New Roadways (Alternative 3-6)

0 2000 4000 Feet

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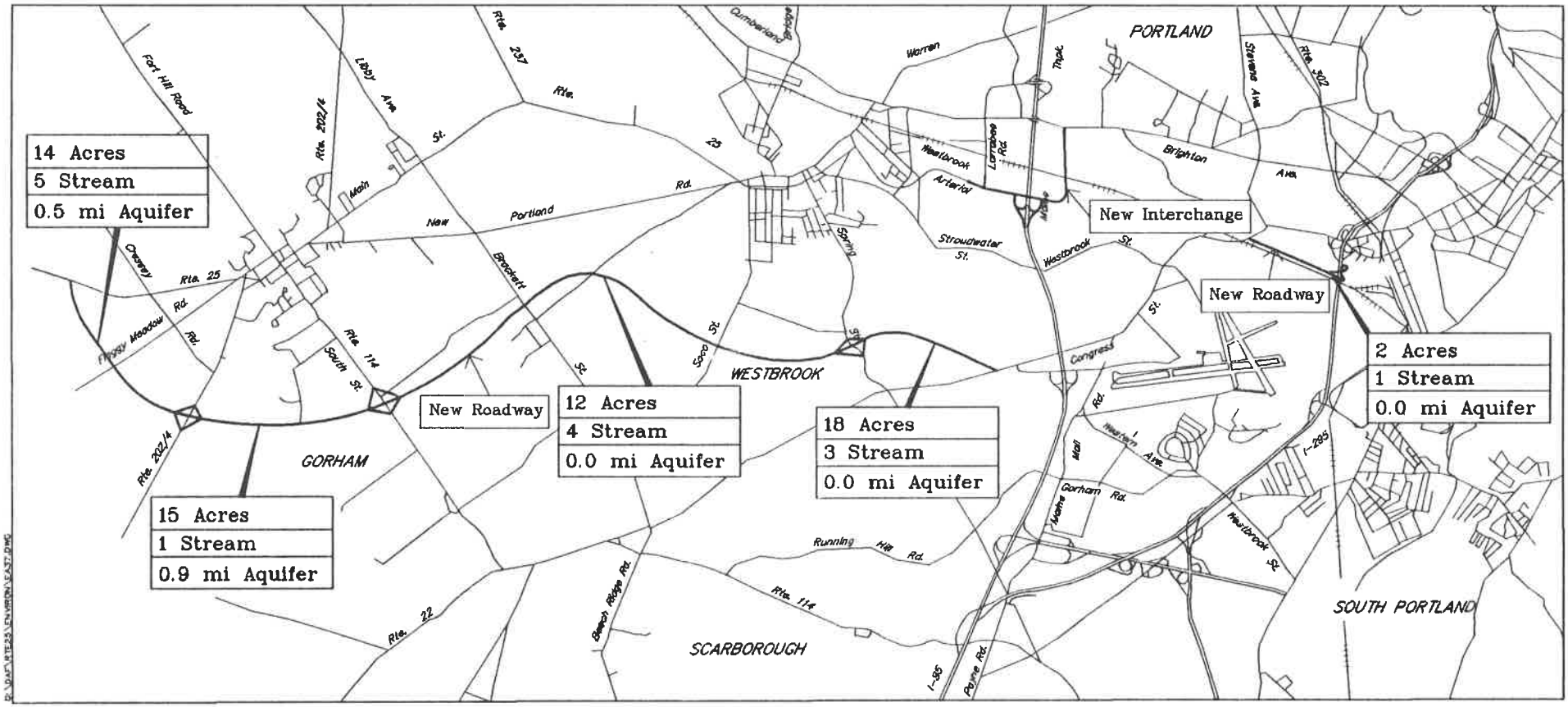

Figure 40: Key Environmental Impacts of New Roadways (Alternative 3–7)

Legend

——— New 2–Lane, Limited Access Road

Wetland Acres
No of Streams
Miles of Aquifer

0 2000 4000 Feet

Alternative 3-8: Southerly Gorham Bypass with 114 Corridor Improvements (see Figure 41)

Alternative 3-8 could have high potential impacts to surface water quality. The new roadways necessitate 13 stream crossings (11 Class B streams and two Class C), second lowest of the six "build" alternatives.

Potential impacts to groundwater quality were rated high, a result of 5.7 linear miles of roadway placed over moderate-yield aquifer and minor effects to a public well. Three potential sources of contamination were affected.

The potential impacts to fisheries and aquatic resources were high. The 13 stream crossings included the Stroudwater River and three streams rated high by MDIFW.

Approximately 66 acres of wetlands were affected, second lowest of the six "build" alternatives and similar to Alternative 3-6. Impacts to MDIFW-identified wetlands were avoided.

This alternative had high impacts to one block of undeveloped habitat and low impacts to two less-valuable wildlife habitats. MDIFW deer yards were avoided.

Summary

Alternatives 3-1 and 3-2, with relatively minor new construction in the corridor, would have very little impact on natural resources.

Of the six build alternatives, Alternative 3-5 ranked worst in terms of environmental impacts, followed by Alternative 3-4.

The effects of alternatives 3-4 and 3-5 on wetlands, streams and wildlife habitats were higher than for the other build alternatives although potential groundwater impacts were low and identified deer yards were avoided.

Impacts resulting from construction of Alternative 3-3 were lowest based on impacts to surface water, wetlands, fisheries, and wildlife. The results were consistent with the length of new roadway and improvements that would be added to the system.

Alternatives 3-3, 3-4, and 3-6 would have significant adverse impacts on residences along Brighton Avenue, which would be widened.

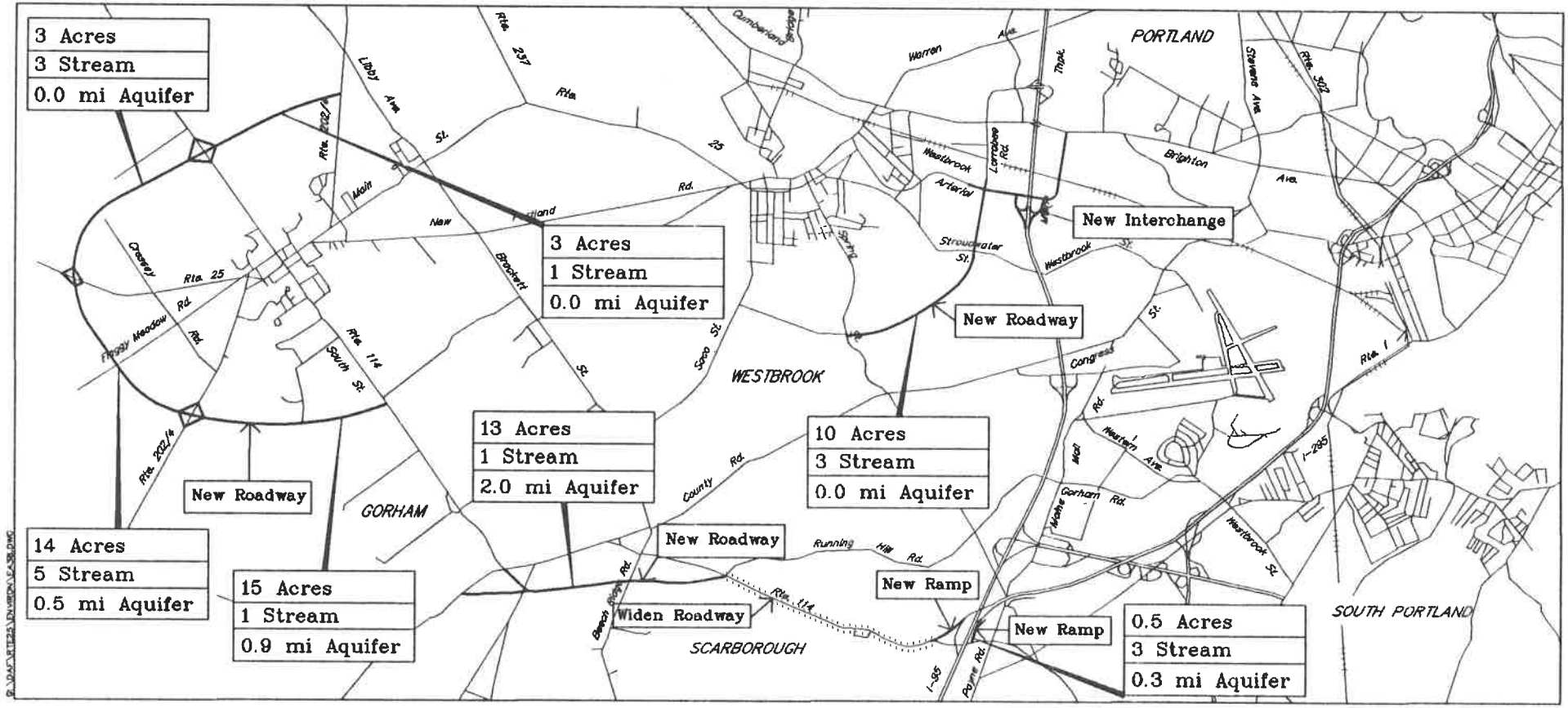

Figure 41: Key Environmental Impacts of New Roadways (Alternative 3-8)

COST IMPLICATIONS

Chapter Six

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6.1 IMPLEMENTATION COST

The costs of implementing alternatives was a major consideration because the financial feasibility of the proposed investment plays a major role in the decision-making process. The cost considerations address total capital costs as well as the annual operating and maintenance costs for the alternatives.

6.1.1 Capital Cost

Capital cost estimates were developed in detail for each component of each of the Screen Three alternatives. The capital cost estimating procedure for roadway projects used the following assumptions:

- New Roadway Construction -- assumed to be on average $300 per linear foot of new roadway and includes typical costs for right-of-way acquisition, cut and fill, gravel base and concrete, guard rail, topsoil, and seeding;
- Existing roadway Upgrade (no widening) -- assumed to be $120 per linear foot;
- Roadway Overpass -- assumed to be $1.5 million (in addition to basic new roadway cost);
- Roadway Underpass -- assumed to be $1.6 million (in addition to basic new roadway cost);
- Stream Bridge -- assumed to cost $1,664,000;
- Culvert -- assumed to cost $62,400;
- Interchange -- assumed to cost $2.6 million (in addition to basic new roadway cost; includes cost of overpass/underpass);
- Wetland Mitigation -- assumed to be on average $125,000 per acre; it was also assumed that the technique used in Chapter Five to estimate wetland acreage (i.e., by hydric soils) likely overestimated actual acreage and that subsequent environmental analysis will identify routes with the lowest feasible wetland impacts; as a result, wetland mitigation was assumed to be necessary for 25 percent of the original generic wetland acreage;
- Construction Contingency -- assumed to be 15 percent of total construction cost; and
- Engineering (including preliminary and final engineering and environmental analysis) -- assumed to be 25 percent of total construction cost.

Transit and TDM program capital costs were estimated to be $6.5 million over the 20-year period ($4.0 million for transit and $2.5 million for TDM).

Table 29 lists the total roadway capital cost for each of the Screen Three alternatives. The middle column presents the estimated capital cost when underpasses are provided at all roadway crossings and when grade-

separated interchanges are provided (instead of at-grade intersections). The initial impression of these roadway capital cost estimates is that, for Alternatives 3-4 through 3-8, there is unlikely to be sufficient public funding within the upcoming twenty years. In Chapter Three, a funding limit of $30-40 million was established based on anticipated levels of federal and state funding for transportation projects in the corridor.

The last column in Table 29 presents capital cost estimates if implementation of grade-separated underpasses and interchanges is postponed (although necessary right-of-way could be acquired to facilitate their implementation at the proper time). The product is a set of capital cost estimates which are more in line with the assumed 20-year funding limitations for Gorham-Portland corridor projects.

Table 29. Capital Cost Estimates for Roadway, Transit, and TDM Elements

	Capital Cost with Overpasses and Interchanges	Capital Cost with no Underpasses or Interchanges
Alternative 3-2	$ 6.9 million	$ 6.9 million
Alternative 3-3	$ 36.3 million	$ 30.6 million
Alternative 3-4	$ 84.3 million	$ 53.4 million
Alternative 3-5	$ 72.7 million	$ 43.9 million
Alternative 3-6	$ 64.6 million	$ 45.1 million
Alternative 3-7	$ 57.5 million	$ 40.1 million
Alternative 3-8	$ 64.7 million	$ 45.2 million

6.1.2 Operating and Maintenance Cost

Operating and maintenance cost estimates were developed for both roadway projects and transit projects. For new two-lane roadways, an annual maintenance cost of $22,000 per mile was used (which includes the cost of roadway resurfacing on a ten-year cycle and typical ongoing roadway maintenance costs).

Transit operating costs absorbed by the general public were assumed to be $41,000 per year for Gorham-Portland service operating during peak periods and $181,000 per year for all-day Westbrook-South Portland service. These values are less than total transit operating costs because of some recovery of expenses through the farebox. Operating expenses for rideshare promotion targeted to the Gorham-Portland corridor was estimated to be $55,000 per year.

6.2 COSTS AND BENEFITS

This section presents an assessment of the costs and benefits (both direct and indirect) for Alternative 3-3, which the Gorham-Portland Corridor Advisory Committee believed to be the "most cost effective" Screen Three alternative. This alternative also closely resembles the recommended program of actions as described later in Chapter Seven and therefore provides a good measure of the relative cost-effectiveness of the final recommendation.

The Project Team estimated indirect costs and benefits (as well as the direct costs and benefits discussed above) using the techniques presented in FHWA Training Course 15257 "Estimating the Impacts of Transportation Alternatives." Computations were made using the Sketch Planning Analysis Spreadsheet Model, also developed by FHWA.

The monetary costs and benefits of Alternative 3-3 are presented in Table 30. All benefits and costs are annualized over the assumed life of the roadway elements of the alternative (i.e., 30 years).

Table 30. Benefits and Costs of Alternative 3-3

	Cost of Item	Subtotal	Total
USER BENEFITS			$17,288,000
COST TO PUBLIC AGENCY			
Capital Costs	$2,141,000		
O&M Costs	$382,000		
Subtotal		$2,523,000	
EXTERNAL COSTS			
Pollution	(-$1,187,000)		
Other External Costs	$9,941,000		
Subtotal		$8,754,000	
REVENUE TRANSFER		(-$141,000)	
TOTAL COST			$11,136,000
NET BENEFITS (OR COSTS)			$6,152,000
BENEFIT/COST RATIO			1.55

As shown in the table, the user benefits are estimated to average $17,288,000 per year. For motorists, these benefits include savings in travel time and in gas consumption. For transit patrons, these benefits include savings in travel time and change in out-of-pocket costs.

The estimated cost to public agencies includes both capital costs (roadway and transit vehicle) and operating and maintenance costs. Together, these are estimated to be $2,523,000.

External costs include changes in costs for accidents, auto ownership, parking, and pollution (noise, air, and water). As shown in Table 30, the estimated cost for external elements totals $8,754,000.

Also presented in Table 30 is an estimate for revenue transfers. These account for any changes in revenue to public agencies due to the changes in out-of-pocket costs (e.g., if fuel consumption goes down [considered a benefit above], state gasoline tax revenue will likewise decrease). This cost is estimated to be $141,000.

The net benefits attributed to this alternative amount to an estimated $6,152,000 per year.

The overall benefit/cost ratio for the alternative is 1.55.

PREFERRED INVESTMENT STRATEGY

Chapter Seven

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This chapter presents the recommended preferred investment strategy for the Gorham-Portland corridor. Sections 7.1 and 7.2 summarize the findings and conclusions from the analyses presented earlier in Chapters Four through Six. Section 7.3 lists the objectives of the preferred investment strategy, with detailed lists of immediate corridor needs identified in Section 7.4 and a long-range plan for the corridor presented in Section 7.5. A strategy for implementing the study recommendations, with a listing of agency responsibilities, is presented in Section 7.6.

7.1 FINDINGS FROM SCREEN THREE ANALYSIS

In Screen Three, eight alternative concepts for improving the transportation system in the Gorham/Portland corridor were evaluated. The following subsections of this chapter summarize the key findings from those analyses covering transportation impacts (Chapter Four), land use and environmental impacts (Chapter Five), and cost implications (Chapter Six). The discussion is organized into analyses of individual corridor subareas (7.1.1), analyses of corridor-wide measures (7.1.2), analyses of potential new roadway alignments around the north side of Gorham Village (7.1.3), and analyses of potential new roadway segments around the south side of Gorham Village (7.1.4).

7.1.1 Corridor Subareas

Gorham Village -- Initiation of local and commuter bus transit service to/from Gorham Village and Standish will not be sufficient to reduce traffic congestion in Gorham Village to an acceptable level.

The addition of center, two-way left-turn lanes along Main Street does not increase throughput capacity through Gorham Village (which is constrained by the Main/State/School/South Street intersection). Installation of a median (with controlled left-turn bays) would likely improve traffic safety but would also require consolidation of commercial driveways, construction of interparcel connections, and enhancement of the Gorham Village grid street network.

All of the alternatives reduce congestion in Gorham Village. Alternatives 3-3 through 3-8 will produce significant improvement beyond today's levels of congestion. A new roadway around the north side or south side of Gorham Village, if connected to a downtown Westbrook Bypass, reduces traffic congestion to an acceptable level in Gorham Village. The lowest traffic volumes in Gorham Village occur with Alternatives 3-6 and 3-7 (which both include a complete new roadway which passes south of Gorham Village and connects with a bypass of downtown Westbrook) and with Alternative 3-8 (which includes a southwesterly relief route around Gorham Village). Significant volume reductions are also found with Alternatives 3-3, 3-4, and 3-5.

North Scarborough/South Gorham -- Initiation of local and commuter bus transit service to/from Gorham and Buxton will not be sufficient to reduce traffic congestion in South Gorham and North Scarborough to an acceptable level.

Provision of left-turn lanes along County Road/Route 22 in Gorham at Burnham Road and at South Street reduce the current congestion problem but do not address future over-capacity conditions.

Widening of Route 22 (Alternative 3-3) resolves future traffic capacity problems in the corridor at the intersections with Route 114 but has two principal drawbacks: (1) the widening might be counter to community plans to preserve and enhance the County Road commercial areas and (2) this widening creates additional traffic congestion along Congress Street in Portland. There is no apparent feasible means of relieving congestion along Congress Street due to physical constraints imposed by historic buildings in the Stroudwater neighborhood.

Traffic congestion is forecast to remain a problem in the future along County Road (Route 22), except under (1) Alternative 3-7 which connects Outer Congress Street with Route 25 west of Gorham Village, via a southerly bypass of Gorham Village, and (2) Alternative 3-8 which connects Route 22 in Gorham west of South Street with Gorham Road (Route 114) south of Route 22 in Scarborough. The extension of Route 114 southward from Route 22 along a new alignment into Scarborough (Alternative 3-8) resolves traffic congestion along the Route 22 corridor but has raised concerns by both Scarborough and Gorham residents and officials regarding potential impacts on residential areas.

Downtown Westbrook -- Initiation of local and commuter bus transit service (1) between Westbrook and South Portland and (2) between Gorham, Westbrook, and Portland will not be sufficient to reduce traffic congestion in downtown Westbrook to an acceptable level.

A large improvement in traffic congestion is provided by Alternative 3-4 (Northerly Bypass of Gorham Village to Westbrook Arterial). Modest improvement results from Alternatives 3-6, 3-7, and 3-8. Little improvement is provided by Alternatives 3-3 and 3-5. The lowest traffic volumes in downtown Westbrook are found with Alternatives 3-4 and 3-6 (both of which have a new east-west roadway bypassing downtown Westbrook and extending to a new Turnpike interchange at the Westbrook Arterial). Alternatives 3-7 and 3-8 (both of which encourage use of Route 22 or Route 114 for east-west travel) also cause traffic reductions in downtown Westbrook.

Exit 8 Area -- A new interchange between the Maine Turnpike and an extension of the Westbrook Arterial produces significant reductions in traffic congestion in the vicinity of Exit 8 and (with an extension of the Westbrook Arterial to Rand Road in Portland) along Brighton Avenue near Riverside Street. The weekday evening peak hour volume on Route 25 (Brighton Avenue) near the Maine Turnpike drops significantly under Alternatives 3-3 through 3-8 as a result of a shift of east-west traffic to the assumed Westbrook Arterial extension to Rand Road and Brighton Avenue.

Brighton Avenue in Portland -- Improvements that encourage greater usage of the Congress Street (Route 22) corridor do not appear to have a significant positive impact on Brighton Avenue (Route 25) congestion at Stevens Avenue.

Brighton Avenue traffic volumes near Stevens Avenue increase under Alternatives 3-3, 3-4, and 3-6 due to their additional capacity (and therefore, reduced delay). A modest improvement in traffic congestion is produced by Alternatives 3-3 and 3-6, both of which assume a widening of Brighton Avenue. However, it is unlikely that the widening could fit into the existing corridor without significant adverse impacts on fronting properties.

Congress Street in Portland -- Improvements that encourage greater usage of the Brighton Avenue (Route 25) corridor do not appear to have a significant positive impact on Congress Street congestion.

Peak hour traffic volumes under Alternatives 3-3 and 3-5 decrease substantially on Congress Street near Stevens Avenue as a result of traffic shifting to a new roadway behind Westgate Shopping Center. However, by adding traffic to the overall Route 22 corridor, this action adds to congestion on Congress Street from Westbrook Street west through the historic Stroudwater neighborhood.

The largest improvement in traffic congestion results from Alternatives 3-3 (which assumes a Westgate Bypass) and 3-8 (which routes some traffic to Portland via I-295). Modest improvement is produced by Alternatives 3-4 and 3-5. Alternative 3-7 actually worsens conditions along Congress Street.

County Road in Westbrook and Scarborough -- Under Alternative 3-3, traffic increases significantly during the peak hour on Outer Congress Street and County Road (Route 22) as a result of the proposed new southwest Gorham bypass, the proposed widening of Route 22, and the new Turnpike interchange at Congress Street. For Alternatives 3-4 through 3-8 (all of which contain new roadways parallel to County Road) the future peak hour traffic volumes on County Road decrease to roughly current levels. Major reductions in traffic congestion are produced by Alternatives 3-3 (which includes a widening of Route 22), 3-5 and 3-7 (which include a Gorham Bypass to Outer Congress Street), and 3-8 (which would have the greatest benefit but requires more than the single-lane approaches that were assumed at the intersection of County Road/Route 22 and South Street/Route 114).

7.1.2 Corridor-Wide Measures

Traffic Congestion -- One of the signalized intersections in the corridor is currently operating at capacity (and three are near capacity). In the future, the only alternatives to retain only one "at/over-capacity" intersection in the corridor are **Alternative 3-3** (Patch Problems) and **Alternative 3-6** (Southerly Bypass of Gorham Village to the Westbrook Arterial). Alternatives 3-4 and 3-5 (with northerly bypasses of Gorham Village) and Alternative 3-8 produce only two intersections at or above capacity.

All of the alternatives result in some intersections operating worse than under current conditions. **Alternative 3-4** produces the fewest number of "worse" intersections (i.e., three). Alternatives 3-3, 3-5, 3-6, and 3-8 produce the next fewest number of "worse" intersections (i.e., four).

All of the study alternatives cause an improvement compared to current conditions at an intersection in the corridor. **Alternative 3-8** (with four) improves the largest number of intersections. Alternatives 3-3 and 3-7 are next with three "improved" intersections.

Traffic Safety -- The alternatives which improve motorist safety the most in the corridor are **Alternative 3-3** (Patch Problems) and **Alternative 3-5** (Northerly Gorham Bypass to Westbrook Arterial), followed in order by Alternatives 3-6, 3-4, 3-8, and 3-7.

Pedestrian Safety -- Alternatives 3-6 and 3-7 (with the southerly bypass of Gorham Village and of the Westbrook downtown) produce the largest traffic reductions in both Gorham Village and downtown Westbrook, thereby (it is presumed) improving pedestrian safety. Alternatives 3-4 and 3-8 are also likely to improve pedestrian safety in both locations, but to a lesser degree.

Transit Mobility -- Alternatives 3-2 through 3-8 substantially expand the bus transit service area and increase the level of ridesharing in the corridor. The analysis of Screen Two alternatives showed that even more bus/rail service in the corridor would not solve the forecast traffic congestion problems.

Environmental Impacts -- Alternatives 3-1 and 3-2, with relatively minor new construction in the corridor, have very little impact on natural resources. Of the six build alternatives, Alternative 3-5 ranks worst in terms of environmental impacts, followed by Alternative 3-4. Effects on wetlands, streams and wildlife habitats are higher than for the other build alternatives although potential groundwater impacts are low and identified deer yards are avoided. Impacts resulting from construction of Alternative 3-3 are lowest based on impacts to surface water, wetlands, fisheries, and wildlife. The results are consistent with the length of new/widened roadways added to the network. Alternatives 3-3, 3-4, and 3-6 would have significant adverse impacts on residences along Brighton Avenue which would be widened.

7.1.3 New Roadway Around the North Side of Gorham Village

This route involves potentially five new roadway segments: (1) extending a new roadway north and west of Gorham Village from Ossipee Trail/Route 25 west of the Village to Fort Hill Road/Route 114, (2) continuing to Route 202/4/Gray Road; (3) continuing to and across Route 25 (possibly near Mosher's Corner), (4) continuing to Saco Street in Westbrook (potentially near or at Eisenhower Drive) and then to Spring Street (either along a new alignment or via Eisenhower Drive), and (5) concluding with a connection between Spring Street and Larrabee Road.

Route 25 (west) to Route 114 (north) -- This segment does not complete a missing (or poor) link of the current National Highway System. For that reason, MDOT will not consider the project of regional significance, thereby hurting its chances for state and federal funding, unless it is part of a complete connection to Route 25 at Mosher's Corner, to the Exit 8 area, or to the Maine Turnpike in general.

This segment passes through terrain with relatively severe grade changes, thereby requiring significant cut and fill sections. In conjunction with anticipated neighborhood opposition to a new roadway around this quadrant outside Gorham Village, the terrain issue makes this section one of the more difficult to accomplish of all new roadway options being considered in Gorham and Westbrook.

Route 25 to Route 202/Gray Road -- This option also does not complete a missing (or poor) link of the current National Highway System. For that reason, MDOT will not consider the project of regional significance, thereby hurting its chances for state and federal funding, unless it's part of a complete connection to Route 25 at Mosher's Corner, to Exit 8, or to the Turnpike in general. This option also includes a segment which passes through terrain with relatively severe grade changes, thereby requiring significant cut and fill sections.

Fort Hill Road/Route 114 to Gray Road/Route 202 -- A connection between Fort Hill Road and Gray Road is forecast to have significant usage (700 during the evening peak hour in the future). The new roadway would have nearly as much usage as a relief route around the southwest side of Gorham Village between Ossipee Trail and South Street. The roadway would reduce traffic congestion in Gorham Village but not enough to bring Gorham Village congestion to an acceptable level.

Route 25 (west of Gorham Village) to Mosher's Corner -- This northerly route around Gorham Village would reduce westbound Main Street traffic in Gorham Village roughly 290 vehicles in the evening peak hour (of which 165 are travelling straight through the South Street intersection and 110 are turning right).

In conjunction with the proposed new roadway south and west of Gorham Village, this segment eliminates virtually all through truck traffic in the Village. This segment also could serve as an upgraded, replacement section of the current National Highway System through Gorham Village.

By providing an improved pathway around Gorham Village, traffic congestion is reduced. However, this pathway does not improve traffic congestion in downtown Westbrook (which is forecast to be unacceptable under future year base conditions).

This traffic demand would necessitate some improvements to Bill Clarke Drive (certainly at the Saco Street and New Gorham Road intersections and likely at the Spring Street and Westbrook Arterial intersections as well). Westbrook representatives on the Study Advisory Committee expressed reluctance to making any capacity improvements to Bill Clarke Drive which would facilitate through traffic flow. In order to accommodate the City of Westbrook, it is anticipated that a complete roadway around downtown Westbrook (i.e., from Route 25 in Gorham to Saco Street and the Larrabee Road extension in Westbrook) would need to be in place prior to the opening of a new roadway around the north side of Gorham Village to Mosher's Corner.

Route 25 (west of Gorham Village) to Saco Street -- The extension of the road north of Gorham Village from Route 25 at Mosher's Corner to Saco Street does little to further reduce traffic in Gorham Village (beyond that already achieved with a Route 25-to-Route 25 roadway) but it does improve access between the Gorham Industrial Park, the Westbrook industrial areas along Eisenhower Drive and Spring Street, and the Maine Turnpike (at Congress Street).

This roadway would also reduce evening peak hour traffic levels on Bill Clarke Drive roughly 180 vehicles, but the Saco Street and Spring Street intersections remain a problem in the future.

Route 25 (west of Gorham Village) to Larrabee Road -- The Larrabee Road Extension would need to be in place prior to (or in conjunction with) the opening of a northerly Gorham bypass (from Saco Street west) to accommodate Westbrook concerns regarding traffic in its downtown. In addition to reducing traffic congestion in downtown Westbrook (with 600 fewer evening peak hour vehicles on Bill Clarke Drive), the Larrabee Road extension directly benefits Five Star Industrial Park and Westbrook Public Works vehicles which could access the Exit 8 area without passing through downtown Westbrook.

However, despite its several benefits and its criticality in terms of the northerly Gorham roadway, the Larrabee Road extension (Westbrook Arterial to Spring Street) also has several potential strikes against it -- its high cost ($5.6 million), its high potential for environmental impact (i.e., crossing the Stroudwater River), and it makes it more convenient for Westbrook residents and businesses to use Westbrook/Stroudwater Street to reach Congress Street (and the Stroudwater neighborhood will certainly oppose any additional traffic through their neighborhood).

7.1.4 New Roadway Around South Side of Gorham Village

The roadway options involve either:

(1) extending a new roadway from Route 25/Ossipee Trail around the south of Gorham Village, then further around Gorham Village to eventually tie back into Route 25 near Mosher's Corner;

(2) extending a new roadway from Route 25/Ossipee Trail around the southwest of Gorham Village, then to Saco Street near Eisenhower Drive and constructing the Larrabee Road extension to provide a direct connection to Exit 8;

(3) extending a new roadway from Route 25/Ossipee Trail around the southwest of Gorham Village, then to Saco Street near Eisenhower Drive and then to Congress Street and the new Turnpike interchange; or

(4) extending a new roadway from Route 25/Ossipee Trail around the southwest of Gorham Village, then along either existing or new roadway alignments to eventually access I-295 near Exit 6A of the Turnpike.

As a controlled-access roadway with at-grade intersections at all public roadway crossings, project costs are estimated to be $5.0 million for the option which ties back into Route 25 in Gorham, $17.6 million for the option which ties into the Exit 8 area, $12.0 million for the option which ties into County Road/Route 22, and $13.8 million for the option which connects to I-295 at Exit 6A.

Southerly Bypass of Gorham Village to Route 25 -- Whether the bypass extends to New Portland/New Gorham Road or all the way to Route 25, it will likely cause a shift of more traffic to New Portland/New Gorham Road (which Westbrook won't support and which the New Portland/New Gorham Road residents will undoubtedly oppose). The only viable option is to overpass New Portland/New Gorham Road without providing an interchange (which would add $1.5 million to the project cost).

With access to New Portland/New Gorham Road, the southerly bypass produces a diversion of roughly 200 westbound vehicles from Main Street in Gorham Village during the evening peak hour to the new roadway. If the bypass can only be accessed via Route 25, the diversion potential is reduced because the new path is more circuitous. Therefore, both alternatives are unacceptable: for one, the impact on a residential community is too substantial; for the other, the potential reduction in Gorham Village traffic congestion is minimal.

Southerly Gorham Bypass to the Exit 8 Area -- This bypass produces a significant reduction in westbound Main Street traffic in Gorham Village (a total of 390 vehicles are diverted from Main Street during the evening peak hour). Traffic volumes likewise drop on New Portland/New Gorham Road and have a slight increase on Saco and Spring Streets in Westbrook. This new roadway could readily be redesignated as Route 25 and as part of the National Highway System.

The drawbacks of this option become evident when trying to develop a construction staging schedule. It will be difficult to build this option in segments which do not create significant adverse impacts. If the southerly bypass is built to Saco Street only, it dumps traffic into downtown Westbrook by way of Saco Street (a clearly unacceptable result for the City of Westbrook). If the roadway is built to just Westbrook/Stroudwater Street, it dumps traffic through the Stroudwater neighborhood (again, an unacceptable result).

Southerly Gorham Bypass to Route 22 -- In its full-build condition, this route has basically the same benefits in Gorham Village as does the route to Exit 8. The route is also logical -- it connects to the new Congress Street interchange and could conceivably become part of the National Highway System (replacing Route 25 through downtown Westbrook and Gorham Village).

However, Portland representatives on the Study Advisory Committee clearly indicated that any option which funnels or directs traffic to the Route 22/Congress Street corridor will be considered unacceptable. This alternative increases traffic on Congress Street through Stroudwater and Libbytown dramatically.

Southerly Gorham Bypass to Route 114 to I-295 -- In its full-build condition, this route has basically the same benefits in Gorham Village as does the route to County Road/Route 22. The route also diverts sufficient traffic from downtown Westbrook to have a noticeable benefit and has the potential to relieve traffic congestion along the overlap of Routes 22 and 114 in North Scarborough/South Gorham. The principal drawback of this alternative is its potential for adverse impacts on North Scarborough/South Gorham residents and businesses. Before this route could be built, the needs of these residents and businesses must be determined and accommodated.

7.2 CONCLUSIONS

Based on the analysis of future year conditions in the Gorham-Portland corridor, the following key conclusions guided the development of a long-term strategy for the corridor:

- If no action is taken to address the mobility and safety issues in the corridor, current problems will worsen. Travel time will worsen substantially (e.g., 25 percent worse to and through Gorham Village). Eleven of the 18 signalized intersections in the corridor will have serious congestion problems. Transit will continue to be virtually absent from the corridor. The current number of high accident locations in the corridor (i.e., 31) will likely grow. The movement of goods by truck though the corridor will be further hampered by growth in traffic congestion.

- A program of implementable actions can be undertaken immediately in the corridor and can provide short-term improvement in terms of traffic congestion and safety. However, future year conditions will be unacceptable with only those improvements in place.

- A long-term program of transit service expansion, carpool and vanpool promotion, and other measures which promote the non-auto travel mode will have a beneficial effect on personal mobility in the corridor. However, it likewise will have only a minor impact on traffic congestion and safety in the corridor over the long-term.

- Any solutions that directly cause traffic volumes to increase along Bill Clarke Drive through downtown Westbrook, along Brighton Avenue in Portland, or along Congress Street through Stroudwater create problems for which there are unlikely to be any feasible solutions.

- Long-term congestion relief in Gorham Village requires the provision of additional east-west roadway capacity.

- Long-term congestion relief in South Gorham/North Scarborough likewise requires the provision of additional roadway capacity.

7.3 OBJECTIVES OF PREFERRED INVESTMENT STRATEGY

In its recommendations, the Project Staff and the Advisory Committee tried to accomplish three primary objectives:

1. to identify actions with little environmental impact, with modest cost, with strong support from the community, without substantial adverse impacts on adjacent properties, with noticeable immediate benefit for motorists, and which therefore **might be accomplished very quickly** (presented in Section 7.4, Immediate Corridor Needs);

2. to identify **significant roadway projects for which construction could be started within a very short timeframe** (perhaps within three years) in order to continue the momentum generated by this study and by the projects mentioned in item 1 above (presented in Section 7.5, Long-Range Plan for the Corridor); and

3. to **develop a long-range plan** of action for the corridor --- a blue-print, if you will, to guide future project development in the corridor (also presented in Section 7.5).

The last section (7.6) of this chapter presents a summary of the recommended **program of actions along with a budget for each element**. The program basically presents the next steps that should be taken for each of the study recommendations and a timeframe for these steps.

7.4 IMMEDIATE CORRIDOR NEEDS

There are two clear traffic bottlenecks in the study corridor -- Main Street in Gorham Village and the overlap of Routes 22 and 114 in North Scarborough/South Gorham. At present, there are no good alternative routes around those two areas and significant roadway improvements (even under an optimistic schedule) are five-to-ten years away. Therefore, it is critical that immediate steps be taken to identify and implement cost-effective solutions.

The following actions are intended to reduce traffic congestion and improve safety for motorists and pedestrians. All of the projects have no known appreciable negative environmental impact, have a modest cost, have support from the community, do not substantially impact any adjacent properties, and will produce noticeable immediate benefit for motorists.

All of the recommendations are needed immediately and all are compatible with the long-range vision for the corridor. These immediate corridor needs are illustrated in Figure 42.

7.4.1 Land Use Policies

Continued growth in the corridor may erode the benefits of any short-term improvements and could keep Gorham Village and North Scarborough/South Gorham congested at an unacceptable level until the recommended major roadway improvements are completed. Therefore, it is recommended that a regional development strategy be prepared. This strategy would focus on reducing demand for travel by drive-alone vehicles through Gorham Village and through the Route 22/114 overlap.

In particular, it is recommended that each community in the corridor review and refine its current land use policies in light of the long-term need to control traffic growth in the corridor. The communities of Gorham, Westbrook, Standish, Limington, Buxton, Hollis, and Scarborough are all forecast to experience significant residential growth. Land use policies (and associated design guidelines for residential and commercial development) should be put in place to encourage development patterns that enable/encourage walking, bicycling, carpooling, and riding transit for trips to work, to shopping, to schools, etc. This program could allow expansion of existing centers such as Gorham Village, Little Falls/South Windham, and North Scarborough/South Gorham as higher density mixed-use villages; higher density residential and nonresidential development in Westbrook and Gorham; and increased restriction of low-density, scattered residential development in the areas west of Gorham Village.

A key concern of the Study Advisory Committee and of the Portland-Gorham corridor communities was whether the proposed improvements could increase the potential for development sprawl. There is clearly a relationship between the accessibility of a location and its desirability as a place to live, work, or do business. At the same time, it is important to recognize that accessibility is only one factor among many. In terms of residential development, factors such as housing costs, tax rates, schools, quality of life, and similar considerations probably far outweigh minor differences in accessibility.

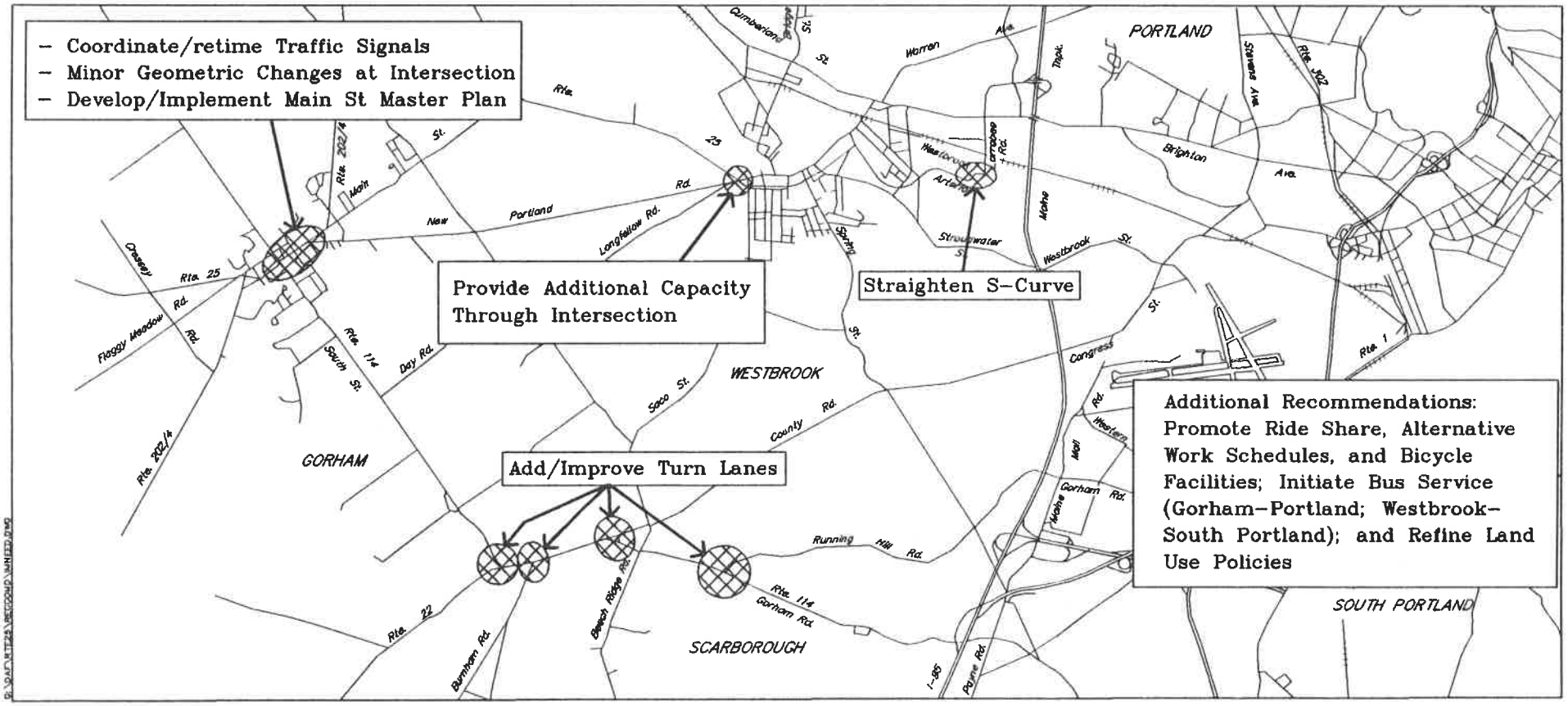

Figure 42: Immediate Needs for the Gorham/Portland Corridor

Note: These actions address identified deficiencies which appear correctable at modest cost and with minimal negative economic, environmental, or social impact. Westbrook Arterial project should not be pursued if proposed Maine Turnpike interchange is approved.

The study process included a number of features that mitigate the potential impacts on sprawl:

- The land use and employment projections used to develop the projections of future traffic volumes are quite conservative. The projections were adjusted downward during the study to reflect new regional projections. The level of growth included in the analysis is less than that currently being experienced. As importantly, a relatively high percentage of the anticipated growth was loaded into the core and first ring of suburban communities, including Gorham and Scarborough. This results in projections of future traffic volumes that are lower than have been used in past studies.

- The analysis included an effort to make the recommended improvements consistent with adopted regional plans and local comprehensive plans. At the regional level there is no regional land use plan. At the local level, the proposals are generally consistent with the development policies contained in the communities' comprehensive plans.

- Compared to previous studies of east-west transportation, the recommended improvements are relatively modest. While they are projected to provide relief, they do not change the fundamental time/distance relationships that exist within the corridor. While some travel times will be reduced with the improvements, the magnitude of the changes should not alter the locational desirability of the communities within the corridor.

- The analysis recognizes that maintaining the livability of older, densely developed areas and creating the opportunity for additional higher density village type residential and commercial uses is an important component of the sprawl equation. Therefore, a focus was on improvements that would maintain/improve the quality of life in areas such as Gorham Village and South Gorham/North Scarborough while not adversely impacting established higher density areas such as downtown Westbrook, Brighton Avenue, Stroudwater, and Congress Street.

Taken together, these features minimize the potential that the recommended improvements will induce additional "sprawl" in the corridor's pattern of development. At the same time, the recommendations recognize that there is a lack of regional planning for growth management even though each community has a local comprehensive plan. Therefore, the plan also recommends that, as part of the overall program, the communities within the corridor revisit their land use plans to see if improvements can be made to reduce long distance travel demand.

7.4.2 Gorham Village

It is recommended that traffic operations in Gorham Village be improved through implementation of several projects: (1) coordinate the traffic signals at the intersections of Main Street/New Portland Road and of Main, School, South, and State Streets; (2) improve the geometrics at the intersection of Mechanic Street and New Portland Road; and (3) improve traffic signal operations at the intersection of Main, School, South, and State Streets.

Even with the potential diversion of through traffic out of Gorham Village by means of a new roadway around the southwest of Gorham Village (as recommended later in Section 7.5.1 of this chapter as part of the long-range plan), there currently is and will continue to be an urgent need to improve the management of traffic into, out of, and between commercial establishments along Main Street. For that reason, it is recommended that work be initiated immediately on the refinement of previous efforts to define a Comprehensive Transportation Plan for Main Street. The plan should reflect anticipated implementation schedules for major roadway improvements outside Gorham Village, should be based on the traffic demand projections developed as part of the Gorham-Portland Corridor Study, and should address such issues as:

- what is the appropriate roadway cross-section through the Village (construct a center median with left-turn bays, construct a center two-way left-turn lane, or leave as is)?
- how and where can driveways be consolidated and interparcel connections be provided?
- should there continue to be on-street parking or should it be provided solely in off-street lots?
- should there be mid-block crosswalks? how can sidewalks be upgraded?

7.4.3 North Scarborough/South Gorham

The residents and businesses in North Scarborough and South Gorham have emphasized the need to make immediate safety and congestion-relief improvements where possible within the current right-of-way. It is recommended that the following four projects be implemented immediately. All are needed under existing levels of traffic demand and all will have immediate benefits.

- Provide a separate left-turn lane on westbound Route 22/County Road at Burnham Road in Gorham. During the evening peak hour, over 120 vehicles currently make that left turn, seriously impeding flow behind them. The actual demand for that left turn movement is probably substantially higher because, during the morning peak hour, nearly 270 motorists exit Burnham Road to travel east along County Road (i.e., the reverse movement to the evening westbound left turn). It is likely that some of these morning commuters currently find another route home in the evening.

  In the mid-term, depending upon the recommendations developed for a South Gorham/North Scarborough bypass (a long-range recommendation described later), the Route 22/Burnham Road intersection could need further improvements, such as: (1) the current driveway access to the retail market on the southeast corner is wide-open and needs to be better delineated and controlled; (2) the Burnham Road approach should be realigned to a right angle with County Road and configured as a straight T-intersection (i.e., removing the concrete planter with a Stop sign and removing the painted island treatment); and/or (3) a traffic signal could be installed at the intersection and coordinated with the South Street/County Road intersection.

- The existing dual left-turn lane on northbound Route 114 at Route 22/County Road in Scarborough is not being used to its full potential. Motorists tend to stay in the left-hand approach lane and only a few motorists use the right-hand lane. In order to improve the efficiency of intersection operations, it is recommended that use of the dual left-turn lane be actively promoted with signage and pavement markings through the intersection. The downstream two-lane merge section on westbound Route 22 west of the intersection needs pavement markings to indicate the presence of two lanes up until the merge taper.

- Provide a separate left-turn lane on eastbound Route 22/County Road at Route 114/South Street in Gorham. An eastbound left-turning vehicle causes unnecessary delay for through-moving motorists with the existing pavement cross-section. The number of left-turning motorists is modest (less than 30 during the morning and evening peak hours), but the project would be very effective in terms of immediate congestion relief.

- At the intersection of Gorham Road/Route 114 and Running Hill Road in Scarborough, there is a significant number of motorists turning left onto Running Hill Road from eastbound Route 114 (during the morning rush hour, roughly 300 vehicles make that turn). These left-turning motorists from the single lane on Route 114 cause delay and impatience for motorists queued behind and, more importantly, create a safety hazard. Therefore, it is recommended that a separate left turn lane be provided on eastbound Gorham Road/Route 114 at Running Hill Road.

7.4.4 Westbrook

It is recommended that traffic operations in Westbrook be improved through implementation of several initiatives:

- Eliminate the S-curve along the Westbrook Arterial by realigning the eastern terminus of the Westbrook Arterial at Larrabee Road. This recommendation will not be needed if the Maine Turnpike Authority receives immediate approval for a new interchange at the Westbrook Arterial, which will include resolution of the S-curve problem.

- Reduce traffic congestion on westbound Bill Clarke Drive at its intersections with Saco Street and with New Gorham Road. Alternatives include (1) prohibition of left turns on westbound Bill Clarke Drive at either Saco Street or New Gorham Road, (2) widening of Bill Clarke Drive to provide two continuous westbound through lanes as well as an exclusive westbound left-turn lane at New Gorham Road, and (3) a one-way street system through downtown Westbrook along Main Street and Bill Clarke Drive (a concept studied by PACTS in 1990). Any action must not impede access to and from Westbrook neighborhoods, must respect the needs of pedestrians who desire to cross Bill Clarke Drive, and must not hurt downtown business.

7.4.5 Promotion of Alternative Modes/Travel Demand Management

It is critical that the transportation system be operated in a most efficient manner (e.g., with the aid of turn lanes, improved signal timing, and access management measures as described above) and that reasonable efforts be made to make the most efficient use of that system (as is described below).

The travel demand forecasting analysis indicates that implementation of a full-range of demand management and alternative mode promotion measures would have little impact on traffic congestion in the corridor. However, the forecasting analysis also indicates that, even with a full-build cache of roadway projects, traffic congestion will remain throughout the corridor in the future (although at somewhat reduced levels than would otherwise be observed). In line with that thinking, one of the stated objectives of the Advisory Committee is to promote the use of non-auto modes of travel through implementation of the following recommendations.

Ridesharing -- There should be targeted promotion of ridesharing (i.e., carpool and vanpool) in the corridor. This promotion should focus on both (1) workers who reside in Gorham and communities to the west and (2) major employers in the corridor such as USM, S.D. Warren, Blue Cross/Blue Shield, UNUM, and National Semiconductor. Preferential parking should be provided for carpools/vanpools at all public parking facilities which cater to long-term parkers (e.g., City of Portland public parking lots and garages located downtown) and at all private parking facilities for major corridor employers.

Vanpool formation and carpool targets should be established and progress monitored. Specifically, VanShare (a RideShare program) should attempt to initiate vans from Standish (and points further west) to downtown Portland, the Maine Mall/Jetport area, and major corridor employers. Because a vanpool makes economic sense to its riders at commute distances of 15 miles or longer, the "most effective" target audiences for potential vanpools in the Gorham/Portland corridor will likely reside outside the corridor.

Potential locations for park-ride lots should be investigated and built (e.g., west of Gorham Village, in South Gorham, in South Buxton, and in Standish Corner).

Alternative Work/Class Schedules -- Efforts should be taken to try to spread travel peaks at USM and other major trip generators in the corridor. In that same vein, a thorough review should be initiated (followed by subsequent refinement where possible) of class schedules at USM.

Bikeways/Pedestrian Facilities -- Efforts should be made to provide bicycle and pedestrian facilities along major commute corridors (e.g., Routes 22, 25, 114, and 237).

Bus Service between Gorham and Portland -- The current shuttle bus service between the Gorham and Portland campuses of USM carries a large number of students, faculty, and staff. Discussions regarding the possibility of USM bus service between Gorham and Portland being opened to use by general public have been convened and should be continued. It is recommended that peak-period bus service between Gorham and Portland operate at half-hour headways.

Federal Congestion Mitigation and Air Quality (CMAQ) funds could be used to expand the current USM service between Gorham and Portland to be open to the general public. In order to give the new service sufficient opportunity to mature, the program should be treated as perhaps a 2-3 year demonstration program. The feasibility of the bus service will be enhanced by the immediate roadway improvements cited above which will reduce bus delay as well.

Bus Service between Westbrook and South Portland -- It is recommended that a re-evaluation be made of the feasibility of regularly-scheduled, fixed-route bus transit service between Westbrook and South Portland. A soon-to-start PACTS study on regional transit services could be a timely vehicle for accomplishing this recommendation. However, as relayed to the Project Staff during public meetings associated with this project, there is concern by corridor communities over the potential need for additional local subsidy for any new transit services. It is recommended that peak-period bus service between Westbrook and the Maine Mall area operate at half-hour headways.

Bus Service (General) -- In conjunction with new services (and even as a supplement to existing services), all new bus shelters in Gorham and Westbrook should be developed as "smart kiosks" (with ATM-like electronic traveler information installations).

7.5 LONG-RANGE PLAN FOR THE CORRIDOR

The long-range plan for the corridor comprises:

(1) all of the Immediate Need recommendations described in Section 7.4,

(2) two significant roadway projects described below (one immediately outside Gorham Village and one in South Gorham/North Scarborough) and as illustrated in Figure 43, and

(3) a review of all modal options for providing additional transportation system capacity in the corridor (and more efficient use of that capacity) upon completion of the roadway capacity projects.

7.5.1 Gorham Village Analysis and Recommendations

The signal timing changes, etc. which are recommended as immediate actions in Gorham Village (discussed earlier in Section 7.4 of this chapter) should have some positive benefit, but will still leave Gorham Village with continued traffic congestion. It is therefore critical that roadway projects be initiated which will noticeably reduce congestion in the Village and which are both compatible with the long-range vision and potentially implementable within a short timeframe.

The logical type of improvement would be one which directly diverts traffic from the Village. A look at the peak hour traffic volumes through the Main Street/South Street intersection, the principal constraint point in the Village, demonstrates which traffic flows are dominant.

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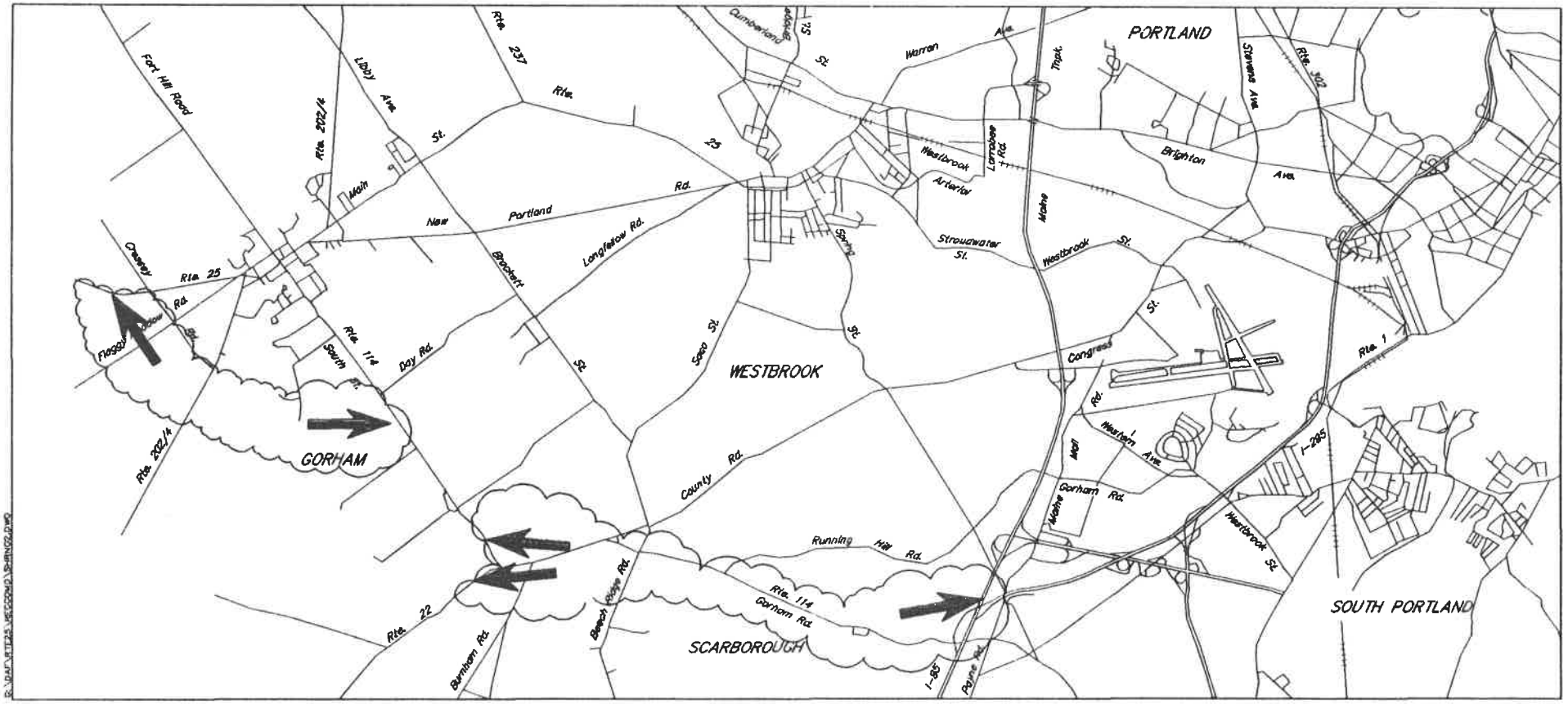

Figure 43: Long-Range Plan for the Gorham/Portland Corridor

LEGEND

Provide Additional Capacity with New or Upgraded Roadways

Note: Long-Range Plan Also Includes Immediate Recommendations (Figure 42)

0 2000 4000 Feet

- During the evening peak hour, there are **880 vehicles travelling westbound on Main Street approaching Route 114** (715 of which are headed straight through the intersection) and **755 vehicles headed northbound on South Street toward the intersection (with 435 turning left)**. Eastbound State Street and southbound School Street have 600 and 280 vehicles, respectively, approaching the intersection (both of which are less than the Main Street and South Street volumes).

- During the morning peak hour, there are **1,020 vehicles travelling eastbound on State Street** approaching South Street (635 of which are headed straight through the intersection and 385 of which are turning right onto South Street). Westbound Main Street has 320 vehicles, southbound School Street has 280 vehicles, and northbound South Street has 230 vehicles approaching the intersection (all of are which are substantially less than the two eastbound State Street volumes).

Therefore, if either the "Route 25-to-Route 25" through traffic or the "Route 25 (west)-to-Route 114 (south)" turning traffic could be diverted from the Village, a substantial volume would be affected and congestion should lessen. The former would require the construction of a much longer (and more expensive and more likely to encounter obstacles) roadway than the latter.

The PACTS travel demand forecasting model estimates that a new roadway, southwesterly of Gorham Village and connecting Route 25/Ossipee Trail and Route 114/South Street, would produce the following reductions in evening peak hour traffic at the Main Street/South Street intersection:

- reduction in westbound Main Street through traffic -- 35
- reduction in northbound South Street left-turning traffic -- 200
- reduction in eastbound State Street right-turning traffic -- 130

These reductions would have a **noticeable impact on traffic congestion in Gorham Village**. For example, the Main Street/South Street intersection traffic signal could be retimed to allow more "green time" for Main Street because South Street would not require as much. This additional "green time" would reduce Main Street delay caused by the signal. In addition, there should be no shift of additional traffic to the Route 22 or Route 114 corridors as a result of the southwesterly Gorham relief roadway.

A key positive benefit associated with a southwesterly relief route is that it **removes the primary flow of tanker trucks through Gorham Village**. It does not remove all trucks, but public perception regarding trucks is "most concerned" when it comes to the oil trucks.

It is **recommended that a new roadway, west and southwest of Gorham Village, be built between Route 25/Ossipee Trail west of the Village and Route 114/South Street south of the Village** in two segments joined at Narragansett Street/Route 202. One alignment to consider would involve upgrading Cressey Road between Route 25 and Route 202/Narragansett Street and continuing to Route 114 along a new alignment. Other potential paths could be along completely new alignments further west of Cressey Road (although the greater length of routes much further west will diminish their effectiveness in reducing Gorham Village traffic congestion).

The potential shortcomings of a southwesterly relief route include:

(1) possible direct impact of new/upgraded roadway on residences on Ossipee Trail, on Cressey Road, on Flaggy Meadow Road, on Narragansett Street, and on South Street;

(2) possible impact of roadway construction on wetlands; and

(3) possible indirect impacts of traffic diverted to inappropriate streets (note: it is the specific intent of the new/upgraded roadways to divert traffic from inappropriate streets by providing smooth-flowing arterial roadways along travel paths desired by motorists; therefore, it is not the intent to direct any regional traffic onto, for example, Day Road or Longfellow Street).

Detailed preliminary engineering and environmental work will need to be undertaken in order to advance the project concept and to address these concerns. A review of the potential roadway corridor indicates that the project is certainly feasible if designed properly and with sensitivity for the community, its residents, and the environment. In particular, the southwesterly relief route should be designed to have its primary flow of traffic to be between Ossipee Trail (Route 25 west of Gorham Village) and South Street/Route 114 (and eventually County Road/Route 22).

As a controlled-access roadway with at-grade intersections at Flaggy Meadow and Route 202/ Narragansett Street, project costs are estimated to be $6.5 million along a new alignment ($600,000 for preliminary engineering and environmental analysis, $700,000 for right-of-way acquisition, and $5.2 million for final design and construction). A grade-separation (with no interchange) at Flaggy Meadow Road and grade-separated interchanges at Narragansett Street, at Ossipee Trail, and at South Street would increase the project cost estimate by approximately $2.1 million for the grade-separation and approximately $3.7 million for each interchange.

7.5.2 North Scarborough/South Gorham Analysis and Recommendations

The analysis presented in Chapter Four indicates that a North Scarborough/South Gorham relief roadway (in combination with a southwesterly relief route around Gorham Village and a new interchange between Gorham Road/Route 114 and I-295 near Exit 6A) causes such a sizeable traffic diversion that the need for a complete Gorham-to-Westbrook-to-Turnpike roadway is eliminated (in terms of traffic congestion in Gorham Village). The analysis also showed, however, that even with a Gorham-to-Westbrook-to-Turnpike roadway in place (i.e., Alternatives 3-4 through 3-7), there was still a need to provide additional capacity within North Scarborough/South Gorham. In that respect, the "Gorham-to-Exit 6A" option would appear to be the best.

At a public meeting held in North Scarborough for this study, the clear message delivered by the area residents was a desire to preserve and enhance their community character. Although there was some sentiment in support of removing through traffic from Route 22 and from Route 114, there was an equal level of concern raised over the issues of new roadways encroaching on area residents and of new roadways consuming valuable open space, treed lots, and fields.

The Advisory Committee **also recommends, as a high priority, the addition of roadway capacity to the area between South Street/Route 114 and I-295 at Exit 6A of the Maine Turnpike.** The Advisory Committee accepts the Town of Scarborough's position that significant improvements to this area be made only after improvements are made in and around Gorham Village and after considerably more evaluation of alternatives is done. As such, it is recommended that preliminary engineering and environmental analysis of the concept be immediately undertaken. The intent of the potential roadway improvements and new alignments would be:

(1) to provide an uncongested route between I-295 and the southwesterly Gorham Village relief route and County Road/Route 22 west of South Street/Route 114;

(2) to avoid, where practical, residential areas in North Scarborough and South Gorham; and

(3) to minimize any adverse traffic impacts on local streets in North Scarborough and South Gorham (note: it is the specific intent of the new/upgraded roadways to divert traffic from inappropriate streets by providing smooth-flowing arterial roadways along travel paths desired by motorists; therefore, it is not the intent to direct any regional traffic onto, for example, Burnham Road or Beech Ridge Road).

The analysis should coordinate the development of proposals for a relief roadway for South Gorham and North Scarborough and of new roadway connections and upgrades, such as those outlined below:

- Add lane capacity in some manner -- conceivably a new road -- to the link between South Gorham and North Scarborough serving both Route 22 and Route 114. The west end of these lanes might be as far west as the Route 22 crossing of the South Branch of the Stroudwater River. The east end might be at Burnham Road, Beech Ridge Road, or at some point along Gorham Road/Route 114, in accordance with what is acceptable to the municipal authorities in Scarborough and in Gorham.

  Another option would be to widen County Road/Route 22 between the two Route 114 intersections. The short setbacks of most of the residences located along County Road and of O'Donal's Nursery could constrain the feasibility of widening Route 22.

- Upgrade Gorham Road/Route 114 in Scarborough as necessary to maintain smooth traffic flow (e.g., with widened shoulders, with a turn lane at Running Hill Road) between the Maine Turnpike, Payne Road and County Road/Route 22. The project scope and scale should be in accordance with what is acceptable to the municipal authorities in Scarborough.

- Upgrade Running Hill Road (e.g., widened shoulders) in Scarborough (and into South Portland) between Route 114 and Cummings Road. The project scope and scale should be in accordance with what is acceptable to the municipal authorities in Scarborough.

- Make appropriate new direct connections between Scarborough's Gorham Road/Route 114 and the southwesterly end of I-295 in accordance with a plan to be developed from further study. One element of this connection could be a ramp from southbound I-295 at Exit 6A onto Gorham Road (Route 114). The project scope and scale should be in accordance with what is acceptable to the municipal authorities in Scarborough.

Upon completion of the North Scarborough/South Gorham analysis, PACTS, Maine Department of Transportation (MDOT), and the Towns of Scarborough and Gorham must agree on the feasibility of increasing capacity in the prescribed corridor. If the North Scarborough/South Gorham analysis determines that there is a feasible set of improvements for increasing capacity, MDOT should complete the preliminary engineering and environmental analysis for the proposed improvements and construct the preferred alternative.

Project costs are estimated to be $13.2 million as a controlled-access roadway along a new alignment with grade-separations at Burnham Road and at Beech Ridge Road ($1.4 million for planning, preliminary engineering and environmental analysis; $1.4 million for right-of-way acquisition, and $10.4 million for final design and construction).

7.5.3 Additional Needs for the Corridor

The plan for increased roadway capacity in North Scarborough and South Gorham (in combination with the Gorham Village southwesterly relief route) accomplishes the objective of reducing traffic congestion in both North Scarborough/South Gorham and Gorham Village to acceptable levels. It should be noted, though, that traffic forecasts indicate that even with new or upgraded roadways, there will still be traffic congestion along Main Street in Gorham Village due to its function as a retail, commercial, employment, and educational center for this part of the Greater Portland Region.

Even with the Gorham Village southwesterly relief route and additional roadway capacity in North Scarborough/South Gorham, some transportation problems are expected to remain in the corridor in the long-term. Most notably, there will continue to be:

- traffic congestion in downtown Westbrook, along Route 25 near Exit 8 of the Maine Turnpike, and along Congress Street and Brighton Avenue in Portland;
- problems associated with the indirect access between the Gorham Industrial Park and the Maine Turnpike;
- safety, congestion, and noise issues related to continued routing of large trucks through Gorham Village; and
- problems associated with cross-corridor traffic patterns, such as between Westbrook or Windham and the Maine Mall area (via, for example, Brackett Street and Libby Avenue in Gorham and Spring Street in Westbrook).

Although resolution of these issues could be pursued by individual local governments, their impacts are regional in scope and appropriate solutions might likewise be regional in scale. When funds become available for additional transportation improvements in the corridor, the above issues should be addressed. In particular, additional transportation system capacity (and more efficient use of that capacity) should be pursued through a review of all modal options. Options considered by the Advisory Committee have included bus/rail transit, bikeways along exclusive rights-of-way, a major restructuring in the region's approach to land use issues as they relate to the transportation system, and new or upgraded roadways.

The evaluation of these long-range options will necessarily give due consideration to minimizing direct impacts of new or upgraded transportation facilities and services (e.g., on residences, businesses, and other property owners), to minimizing and mitigating any potential adverse environmental impacts, and to accepting upstream and downstream constraints (such as the inability to further widen Congress Street/Route 22 through the historic Stroudwater neighborhood in Portland).

Finally, it is recommended that appropriate steps be taken to at least identify potential right-of-way requirements and initiate preservation for anticipated transportation system needs (for examples, a Larrabee Road Extension to Spring Street and the Mountain Division Corridor in Westbrook).

7.6 IMPLEMENTATION STRATEGY

The above plan for the Gorham-Portland corridor identifies both immediate and long-range needs in the corridor. Table 31 presents a strategy for implementing the plan's recommendations in a timely manner. These recommendations are identified as short-term, mid-term, and long-term, implying the appropriate timeframe within which to proceed on the identified action.

The actions within each group are of equal priority. The years listed are guideposts -- not requirements. It is understood that future funding availability and other municipal and state actions may change the order of implementation of these recommendations. It should also be emphasized that all actions recommended in the plan are predicated upon further review, analysis, and ultimately final approval by the affected jurisdiction.

The estimated cost of the specific recommendations described above is $28.9 million over twenty years (in current year dollars). The cost estimates are:

- $3.8 million for capital costs for the Short-Term Recommendations;
- $18.6 million for capital costs for the Mid-Term Recommendations; and
- $6.5 million (over 20 years) for additional operating expenses associated with the recommendations.

The cost of a new Maine Turnpike interchange at the Westbrook Arterial is not included in these cost estimates.

Table 31. Summary of Recommendations for Gorham-Portland Corridor Short-Term, Mid-Term and Long-Term

SHORT-TERM RECOMMENDATIONS (YEARS 1997 TO 2001)		NECESSARY STEPS	
A.	Endorsement of the findings of the Corridor Study by appropriate agencies and jurisdictions and agreement to pursue implementation of its recommendations	1.	PACTS seeks endorsement by Westbrook, Gorham, Scarborough, Portland, PACTS and the RTAC
		2.	PACTS seeks acceptance by Maine DOT, FHWA, FTA, and environmental review agencies
B.	Preparation for construction of a new roadway south and west of Gorham Village between Ossipee Trail (Route 25) and South Street (Route 114); elements could include: • upgraded Cressey Road (or a new roadway) between Ossipee Trail/ Route 25 and Narragansett Street/ Route 202 • grade-separations at Flaggy Meadow Road and Narragansett Street	1.	MDOT does preliminary engineering and environmental analysis (estimated cost $600,000) • PACTS Policy Committee allocates $250,000 during the biennium which starts in July 1997 • Gorham Town Council requests that MDOT provide $350,000 to supplement the $250,000
		2.	MDOT purchases rights of way after completion of preliminary engineering and environmental analysis (estimated cost $700,000)
		3.	Construction is Mid-Term Recommendation L
C.	Preparation for construction of additional east-west roadway capacity in North Scarborough/ South Gorham; elements could include: • new roadway serving both Route 22 and Route 114 • Gorham Road with widened shoulders between Route 22 and Turnpike • Running Hill Road with widened shoulders • direct ramp connections between I-295 and Gorham Road (Route 114)	1.	PACTS confirms position of Scarborough (1) that Scarborough projects should be considered only after Gorham acts to solve its traffic problems and (2) that Scarborough would seek to make improvements starting at or near Route 22 (rather than at or near the Turnpike)
		2.	PACTS seeks funding for a planning study and subsequent preliminary engineering and environmental analysis (estimated cost $1.4 million)
		3.	MDOT does preliminary engineering and environmental analysis
		4.	PACTS, Gorham, and Scarborough decide how project should proceed
		5.	Construction, if determined to be feasible, is Mid-Term Recommendation M
D.	Review and refinement of land use policies in corridor communities in light of the long term need to manage and accommodate traffic growth in the corridor	1.	PACTS initiates appropriate efforts by Gorham, Westbrook, Standish, Buxton, Hollis and Scarborough (individually and collectively); estimated cost of $25,000 for initial efforts

Table 31. Summary of Recommendations for Gorham-Portland Corridor Short-Term, Mid-Term and Long-Term (continued)

SHORT-TERM RECOMMENDATIONS (YEARS 1997 TO 2001) [CONTINUED]	NECESSARY STEPS
E. Traffic operations improvements in Gorham Village • improve the geometrics at the intersection of Main, New Portland and Mechanic Streets • improve the traffic signal operations at the intersection of Main and South Streets • coordinate the traffic signals at the Route 25 (Main Street) intersections with New Portland Road and South Street	1. MDOT decides on Gorham's $36,000 federal Congestion Mitigation and Air Quality Improvements (CMAQ) proposal regarding traffic signal and pedestrian crossing improvements in the village center 2. Gorham considers when and how to pay for the proposed "immediate" road improvements (at estimated cost of $35,000)
F. Traffic operations improvements in South Gorham and North Scarborough: • provide a separate westbound left-turn lane on County Road (Route 22) at Burnham Road in Gorham • promote more use of the dual left-turn lane on northbound Gorham Road (Route 114) at County Road (Route 22) in Scarborough • provide a separate southbound left-turn lane on Gorham Road (Route 114) at Running Hill Road in Scarborough • provide a left-turn lane on County Road (Route 22) eastbound at South Street (Route 114) in Gorham	1. Gorham and Scarborough consider when and how to pay for the proposed "immediate" road improvements, estimated to cost $100,000 (Note: Additional changes might be needed later depending on the product of Mid-Term Recommendation M (additional east-west roadway capacity in North Scarborough/South Gorham)
G. Traffic operations improvements in Westbrook: • reduce traffic congestion on westbound Bill Clark Drive at its intersections with Saco Street and New Gorham Road • eliminate the S-curve on Westbrook Arterial by realigning at Larrabee Road (unless MTA receives approval for new interchange)	1. Westbrook considers when and how to pay for the proposed Bill Clarke Drive improvements (estimated cost $20,000) 2. PACTS requests that MTA fund the Westbrook Arterial project as part of an overall plan to provide an interchange at Westbrook Arterial

Table 31. Summary of Recommendations for Gorham-Portland Corridor Short-Term, Mid-Term and Long-Term (continued)

SHORT-TERM RECOMMENDATIONS (YEARS 1997 TO 2001) [CONTINUED]		NECESSARY STEPS	
H.	Park-ride lot construction and promotion of alternative travel modes and alternative work schedules in the corridor. • investigate potential locations for park-ride lots in South Gorham, west of Gorham Village, South Buxton and Standish Corner -- and build where possible • perform targeted promotion of ridesharing and alternative work (and USM class) schedules in the corridor • facilitate the formation of vanpools in the corridor • pursue bicycle facilities along major commute roadways in the corridor (e.g., Route 25, Route 22)	1. 2. 3. 4.	MDOT investigates potential park-ride lot locations and constructs at appropriate sites (estimated cost of $375,000 for one 100-space park-ride lot) GPCOG expands promotion of ridesharing, vanpooling, and alternative work schedules in the corridor (estimated cost of an additional $55,000 per year) PACTS promotes bikeways as part of all corridor roadway projects (estimated cost of $42,000 for some bike lane striping, signs, and shoulders) METRO provides bus shelters in corridor (estimated cost of $12,000 for three shelters)
I.	New bus service open to the general public is provided between Gorham and Portland and new bus service is provided between Downtown Westbrook and the Maine Mall area. • establish goals for the service, monitor its use, and gauge its acceptance by the community	1. 2. 3. 4.	GPCOG sends USM a proposal regarding the expansion of bus service in the corridor. USM and others work with GPCOG staff to prepare a new bus service plan GPCOG submits request for CMAQ funding for Gorham-Portland service (current estimate of $500,000 for purchase of buses and $41,000 per year for additional operating subsidy) GPCOG conducts study of unmet transit needs in region GPCOG initiates discussions for funding and operation of bus service between Westbrook and South Portland
J.	Preparation of a Gorham Village Main Street Master Plan. Topics should include: roadway cross-section, number and location of driveways, interparcel road connections, on-street and off-street parking policy, location of mid-block crosswalks, and possible sidewalk upgrades.	1. 2. 3.	Gorham prepares scope of work and PACTS funds project PACTS consultant completes Gorham Village Main Street Master Plan (estimated project cost $30,000) Implementation of Plan is Mid-Term Recommendation P
K.	Preparation for and construction of a new Turnpike interchange with an extension of the Westbrook Arterial	1. 2. 3.	MTA obtains environmental permits MTA designs new interchange and associated roadways construction of interchange is Mid-Term Recommendation Q

Table 31. Summary of Recommendations for Gorham-Portland Corridor Short-Term, Mid-Term and Long-Term (continued)

MID-TERM RECOMMENDATIONS (YEARS 2002 TO 2006)		NECESSARY STEPS	
L.	Construction of a new roadway south and west of Gorham Village between Ossipee Trail (Route 25) and South Street (Route 114)	1.	MDOT completes final design/construction of new road to south/west of Gorham Village ($5.2 million for final design/construction; $54,000 additional annual maintenance cost)
M.	Construction of additional east-west roadway capacity in North Scarborough/ South Gorham (if feasible)	1. 2.	MDOT purchases rights of way (if needed) for additional east-west lane capacity (estimated cost $1.7 million) MDOT completes final design/construction of new and upgraded roadways ($11.5 million for final design/construction for one option and an annual maintenance cost of $66,000)
N.	Continue new bus services which were initiated as Short-Term Recommendation I	1. 2.	Continuation of Gorham-Portland service at an annual operating subsidy of $41,000 Initiation of Westbrook-South Portland service (estimated cost of $500,000 bus purchase and $181,000 for annual operating subsidy)
O.	Continue TDM programs initiated as Short-Term Recommendation H	1. 2. 3. 4.	MDOT constructs two park-ride lots ($750,000 for two 100-space, park-ride lots) GPCOG continues targeted promotion in corridor (estimated cost of $55,000 per year) PACTS implements bike lanes in corridor (estimated cost of $83,000) METRO provides three new bus shelters and two kiosks (estimated cost of $47,000)
P.	Implementation of Gorham Village Main Street Master Plan	1.	Gorham/MDOT begins implementation (estimated cost $200,000)
LONG TERM RECOMMENDATIONS (YEARS 2007 TO 2017)		**NECESSARY STEPS**	
Q.	Preparation for implementation of a transportation system which would provide additional (and more efficient use of) capacity	Initiate studies of transportation capacity needs in corridor after completion of the design of all new roads listed above (no cost estimate); elements could include bus/rail transit, bikeways, land use changes, or new or upgraded roadways	
R.	Continue bus service and other TDM programs as initiated and refined in Mid-Term Recommendations N and O	1. 2. 3. 4.	MDOT constructs 3 park-ride lots ($1.125 million) GPCOG continues rideshare effort ($55,000 per year) MDOT continues bikelane program ($42,000) METRO continues Gorham-Portland and Westbrook-S Portland services ($1 million capital cost; $222,000 annual operating subsidy)