

**GARVINS FALLS URBAN RESERVE AREA  
DEVELOPMENT FEASIBILITY STUDY**

**Final Report  
August, 1996**

***Presented to***  
**The City of Concord Planning Department**

***Prepared and Presented by***  
**Northern Economic Planners**

***With the Assistance of***  
**The Cavendish Partnership, Inc.**

**EarthTech, Inc.**

**Greiner, Inc.**

**Mullin Associates, Inc.**

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**Project Team**

- Northern Economic Planners
- Mullin Associates
- The Cavendish Partnership, Inc.
- Earth Tech, Inc.
- Greiner, Inc.

**Work Program**

1. Base Maps, Environmental Studies
2. Neighborhood Meetings
3. Conceptual Land Use Plan
4. Preliminary Market Study
5. Preliminary Engineering
6. Neighborhood Meeting
7. Final Land Use Plan
8. Final Market Study
9. Final Engineering Cost Estimates and Off-site Impacts
10. Development Cash Flow/Feasibility Analysis
11. Municipal Fiscal Impact Analysis
12. Final Report and Presentation to City Council



## **EXECUTIVE SUMMARY FOR THE GARVINS FALLS STUDY**

The Garvins Falls Urban Reserve Area is identified in the City of Concord's Master Plan as that portion of the city between the back lot line of those properties which front onto the south side of Manchester Street and the Soucook and Merrimack Rivers, exclusive of the residential areas along Garvins Falls Road and setback buffer areas along these rivers. This area has been identified in the Master Plan as an "urban reserve," as the City government wishes to identify how this area should be developed and the timing under which this development is most likely to occur.

The Garvins Falls Urban Reserve study area includes approximately 1,000 acres and does not include currently developed properties which front onto Manchester Street, Broken Bridge Road and Garvins Falls Road but does include the setback buffer areas. About 600 acres in the study area are owned by the Public Service Company of New Hampshire as part of its Garvins Falls hydroelectric facility on the Merrimack River. Over 50 acres are owned by EnergyNorth Natural Gas, Inc., around its "take station" facility on Broken Bridge Road.

Other than the two residential areas along Garvins Falls Road, the area is largely undeveloped. There are two high tension power lines (with unpaved service roads) which originate at the Garvins Falls hydroelectric station and pass through the study area. There is an abandoned railroad road bed which runs parallel to the shore of the Merrimack River on the Public Service property. The area is primarily forested, with some wetlands. The majority of the forest land appears to have been selectively cut or thinned within the past 25 years.

This report is the study of whether or not the Garvins Falls Urban Reserve area is an appropriate site for a first class office park in the City. It includes: visions for development of this area, a summary of the environmental conditions at the site, the latest (and likely future) trends for non-residential development in the Concord area, possible recreational use of the area, and likely development patterns and timing of development for this study area as a first class office park. This study also includes: a traffic analysis and design issues, water and sewer capacity evaluation, an estimate of the impact of the project on City government and the Concord School District and an analysis of the financial viability of possible development of the site.

This study found that 485 acres of the 1,000 acres in the study area were developable, with the remaining 515 acres set aside for environmental protection. The UNH wildlife study recommends that setbacks near wetlands and along corridors of movement for wildlife be even larger than used in this study, resulting in even less developable acreage.

The current MB, industrial park, zoning would result in between 12,000 to 15,000 jobs in the developable portion of the Garvins Falls Urban Reserve study area. This number of employees would increase employment in Concord by 35 to 40 percent, not counting off-site employment impacts. This size development would require: a new bridge across the Merrimack River from Hall Street; a two lane road connecting across the Garvins Falls area to the Route 106/Route 3 intersection in Pembroke; four to five lanes on Manchester Street; and four lanes on Hall Street, Airport Road and Route 106.

This study recommends that the zoning for the area be changed to a new industrial park zone nearest to Manchester Street and to a first class office park zone on those developable portions of the study area further from Manchester Street. One alternative evaluated was to permit residential development on a portion of the interior part of the study area in order to reduce traffic counts and off-site development impacts.

The first development alternative examined for the 485 developable acres found that 9,300 to 9,700 jobs would locate in the study area. This is 30 percent less development than would occur under the present zoning. This lower job count would still result in 3,700 to 4,100 peak hour traffic flows into and out of the study area. Added to traffic projected from other properties that would use Manchester Street, total traffic counts would approximate current I-93 traffic counts in Concord. This added development would require four to five lanes on Manchester Street and a new parallel roadway between Hall Street and Route 106, but Hall Street and Airport Road could remain at two lanes.

The second development alternative had 215 housing units and 7,500 to 7,800 jobs on-site. This would lead to peak hour traffic flows of 3,200 to 3,400 per hour into and out of the study area, 15 percent less than the first development alternative and 40 percent less than the current zoning. Similar road improvements would be needed as under the first development alternative, but would be less crowded.

The off-site land use impacts of the first development alternative are estimated to be 6,091 jobs and 4,806 new housing units elsewhere in Concord. The off-site land use impacts of the second development alternative are estimated to be 4,676 jobs and 3,628 new housing units elsewhere in Concord; impacts about 24 percent less than for the first development alternative.

The Fiscal Impact Analysis shows that under normal economic conditions and "best case" economic conditions that the on-site and off-site impacts on the City's tax base and the cost of running City Government and the Concord School District is positive under both development alternatives. A fundamental reason for this is that 64 percent of those who will work at the new jobs at the Garvins Falls development are projected to live in another city or town. Under the "worst case" economic projection, development at Garvins Falls would result in a much larger city with more congestion and schools, but with no change in the tax rate as there would be less out-commuting of those who work in Concord to other places.

The Cash Flow Analysis shows that this property is not developable under current economic conditions as land prices are far too low to pay for the necessary infrastructure to enable development to occur. It is possible that development may occur on those parcels which are already on a City street with City water, such as Integra Drive and Broken Bridge Road. Even with higher land prices, the cash flow analysis indicates that the City would need to participate in the cost of installing water and sewer lines and pumping stations in the early phases of the project if it is to be financially feasible.

The survey of area commercial real estate brokers and architects indicated that the market for a first class office park in Concord is at least ten years off. However, the lesson of Merrimack, Keene and other municipalities now developing first class office parks is that it takes at least ten years of preparation and the proper zoning to enable such park development to occur.

The following zoning standards are recommended for the developable area at Garvins Falls:

- 1) for the Phase 1 area nearest Manchester Street which is to be developed first and where manufacturing, transportation and warehousing uses are to be permitted as well as offices, the current MB zoning should be modified so that building height limit would be a maximum of 35 feet, a maximum floor area ratio of 0.25, a maximum coverage ratio (for building footprint, parking lot and walkways) of 75 percent, and a minimum lot size of two acres; and
- 2) for the remainder of the Garvins Falls site where the primary uses are to be offices and research and development facilities for manufacturers (with supporting hotel, conference center, day care and recreation facilities), create a new office park zone with the building height limit of 48 feet, a maximum floor area ratio of 0.20, a maximum coverage ratio of 60 percent, and a minimum lot size of six acres. Twenty percent of the lot should remain as managed woodlands with setbacks of 100 feet for wetlands and 150 feet along high tension power line corridors. An alternative is that the Phase 4 area might be developed as a traditional neighborhood housing area (similar to the RA zone, but single family only) and as an RC suburban housing zone instead of as a first class office park.

For a variety of reasons, this office park should not include a new golf course. It might be served by an expanded Plausa Valley Country Club which owns ten acres in the study area.



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**STATEMENT OF PURPOSE**

The Garvins Falls Urban Reserve Area is identified in the City of Concord's Master Plan as that portion of the city between the back lot line of those properties which front onto the south side of Manchester Street and the Soucook and Merrimack Rivers, exclusive of the residential areas along Garvins Falls Road and setback buffer areas along these rivers. This area has been identified in the Master Plan as an "urban reserve," as the City government wishes to identify how this area should be developed and the timing under which this development is most likely to occur.

The Garvins Falls Urban Reserve study area includes approximately 1,000 acres and does not include currently developed properties which front onto Manchester Street, Broken Bridge Road and Garvins Falls Road but does include the set back buffer areas. About 600 acres in the study area are owned by the Public Service Company of New Hampshire as part of its Garvins Falls hydroelectric facility on the Merrimack River. Over 50 acres are owned by EnergyNorth Natural Gas, Inc., around its "take station" facility on Broken Bridge Road.

Other than the two residential areas along Garvins Falls Road, the area is largely undeveloped. There are two high tension power lines (with unpaved service roads) which originate at the Garvins Falls hydroelectric station and pass through the study area. There is an abandoned railroad road bed which runs parallel to the shore of the Merrimack River on the Public Service property. The area is primarily forested, with some wetlands. The majority of the forest land appears to have been selectively cut or thinned within the past 25 years.

The City's current zoning for about 600 of the 1,000 acres in the study area is MB, the industrial park zone. This zone permits manufacturers, warehouses, transportation uses, office uses and supporting, ancillary land uses. This zoning permits a minimum 40,000 square foot lot size and a maximum coverage ratio of 90 percent. This current zoning is would not result in a first class office park being built on this site and it is unlikely that even a good quality business or industrial park would be built unless the developer set higher standards than found in the zoning ordinance. The zoning for the remaining 400 acres in the study area is RE, agricultural district.

The economic development strategy prepared by Northern Economic Planners and Mullin Associates for the Concord Regional Development Corporation in 1993 identified the Garvins Falls area as one of five sites within the city where a large, first class office park development might occur. The Master Plan which was prepared by the City Planning Department in 1994 reduced the number of sites for a large, first class office park from five to two because of: size, access, environmental problems, lack of water and sewer facilities and proximity to residential areas at three of these sites. The two remaining large sites were: Garvins Falls and Broken Ground. Both of these sites were near city water and sewer and relatively near interstate interchanges.

In late 1993 the Concord Regional Development Corporation (CRDC), in cooperation with the Society for the Protection of New Hampshire Forests, proposed the construction of an office park and the establishment of a surrounding forest preserve in the Broken Ground Urban Reserve Area (largely) consistent with the recently adopted master plan. In order to facilitate the office park development, the CRDC asked the Planning Board to amend the recently adopted master plan to allow access to the proposed office park through residential neighborhoods along Portsmouth Street and Josiah Bartlett Road.

This proposed amendment was not supported by the environmental community and by the residents of those neighborhoods. The Planning Board did not amend the master plan for the Broken Ground Urban Reserve Area and subsequently the CRDC lost interest in this proposed office park project. It appears that the development of a first class office park in the Broken Ground area is unlikely in the foreseeable future. Given the City government's goal of establishing a first class office park within the City, the City Council appropriated funds to study the feasibility of the Garvins Falls Urban Reserve Area as a first class office park.

This report is the study of whether or not the Garvins Falls Urban Reserve area is an appropriate site for a first class office park in the City. It includes: visions for development of this area, a summary of the environmental conditions at the site, the latest (and likely future) trends for non-residential development in the Concord area, possible recreational use of the area, and likely development patterns and timing of development for this study area as a first class office park. This study also includes: a traffic analysis and design issues, water and sewer capacity evaluation, an estimate of the impact of the project on City government and the Concord School District and an analysis of the financial viability of possible development of the site.

## **PUBLIC PARTICIPATION**

Three public participation meetings were held during the study of the future of the Garvins Falls area. Each of these three meetings was facilitated by Dr. John Mullin of Mullin Associates in Pelham, Massachusetts. Dr. Mullin is also a professor of economic development planning at the University of Massachusetts in Amherst.

The minutes of each of these three meetings follows this introductory section. The first of the meetings was held on July 26, 1995, near the beginning of the project. Its purpose was to obtain a vision of the future for the Garvins Falls area from residents of Concord and from the business community. Visions of the future included: retain current zoning for a high density industrial park, create a lower density first class office park, establish a regional recreational area with some residential development, or keep the area in its current status as an undeveloped tree farm with some wild lands.

It became apparent at this first public meeting that residents of the Garvins Falls area had special concerns regarding how it might be developed. Also, many of them believed that development was imminent, with the consequent strong sense of anxiety. As a result, a second meeting was held on September 13, 1995, specifically for residents of the Garvins Falls area. Some residents of other areas of the city also attended this second meeting. The residents did not want the current industrial zoning to remain for the area south of Integra Drive. A few would favor a first class office park, but only as a last option. Most preferred that existing uses of the property continue. Their specific concerns were to minimize traffic, noise and light impacts on their existing neighborhood. In addition, they liked the wild life and natural look of the area and preferred to use it as a recreational resource. Any development which did occur should respect and incorporate all of these values, in their opinion.

The third public meeting was held on March 21, 1996, after most of the preliminary research on the natural environment and possible development alternatives were evaluated. This research was presented primarily in a map format with a discussion of the proposed density, layout, character and timing of development. Two development options were discussed to obtain reaction and new ideas from those present. Most of those at this third meeting were residents of the two neighborhoods along Garvins Falls Road. While residents acknowledged that many of their concerns raised at earlier meetings had been considered in the proposed zoning and design regulations for the project study area, they were still overwhelmed by the scale of development which might occur, the resulting traffic flows in that part of the city and the impact on wildlife.

The minutes of these three public meetings follow.

Since these three public meetings were held, additional research has been undertaken for the Garvins Falls study area with the results presented at a Planning Board meeting on April 17, 1996. This research includes a wildlife study by an undergraduate biology course at the University of New Hampshire. The research also includes additional traffic studies, a fiscal impact analysis of the proposed development on City government and the Concord School District and a Cash Flow Analysis for proposed development in the study area.

The findings of these research studies raise the question as to whether or not it is in the best long term interest of the City to develop all of the 485 acres within the 1,000 acre study area,

which is currently defined by state and federal law and regulations as developable. It is clear that the study area does need to be changed to lower density development than currently permitted under MB Zone (Industrial Park) because present city infrastructure does not have the capacity to serve large scale development in this area.

## **GARVINS FALLS URBAN RESERVE VISIONING MEETING**

*July 26, 1995 from 7:00 to 9:00 p.m.  
Welfare Department Meeting Room  
Green Street, Concord, NH*

### ***Introduction***

An estimated 40 people attended all or part of this public meeting, although only 24 people signed the sign-up sheet. Seven people who signed the sign-up sheet were residents of Garvins Falls Road. Others present included the city manager, city planning department staff, the Pembroke planning director, the city development director, two city councilors, members of the planning board, members of the conservation commission, staff from Energy North and PSNH, members of various environmental groups and other interested citizens. Although invited, no representatives of the media were present.

The meeting opened with an introduction to the Garvins Falls project by Stephen L. Henninger, the Assistant Planning Director for the City. He reviewed the zoning for the area, a brief history of land ownership and land use in the area, the recently adopted Master Plan and its options for the area and the purpose of this current study.

He introduced Laurence Goss of Northern Economic Planners, the lead consultant for the Garvins Falls Urban Reserve study. Mr. Goss introduced those consultant team members present at this meeting: John Mullin and Zenia Kotval of Mullin Associates; Steve Plunkard of The Cavendish Partnership, Inc.; and Nicholas Rubino and Brian Clogston of Earth Tech. The meeting was then turned over to John Mullin who facilitated the remainder of the meeting.

The purpose of this visioning session was for those present to give their views on the strengths, weaknesses, opportunities and problems for new development in the Garvins Falls area and their vision for what it might be like in the future. Given the size of the group and the range of interests and comments by those present, the notes that follow are not in chronological order, but are grouped into the topics of strengths, weaknesses, problems and opportunities. The meeting closed with a discussion of a vision for the area and its role in the City's overall development.

### ***Strengths***

The strengths of the area were viewed primarily by the residents of Garvins Falls Road as the characteristics which make it a great place to live. They believe that it is the best kept secret as a residential area within the City. While not near schools and stores, it offers little traffic, is safe and has a large and attractive undeveloped area for extensive and passive recreational activities such as walking, jogging and biking. It was described as a great place to raise a

family. Almost all residents of the area felt that it should either not be developed at all or remain as a reserve area for development after other areas of the city have been fully developed.

Several other people present described the strengths of the area in terms of opportunities for recreation by all city residents, its possible role in the state's Heritage trail, its scenic views of the river and of wild life, its continued role for PSNH hydro power generation, and its large size.

Some of those present saw this area as providing for a different kind of economic development from what is available elsewhere in the city. This development would build upon the area's natural setting and large size and would feature the ability to support very large employers on large parcels with large natural buffers. This large size would also permit mixed use development in the area. Other strengths were the ability of this area to provide new employment opportunities and to increase the city's tax base.

### ***Weaknesses***

The weaknesses of the site for new development as described by the audience fell into three areas: highway access, nearness to the city's wastewater treatment plant and the natural environment. The site is entered by Garvins Falls Road, characterized as a narrow paved residential street with limited sub-base. In turn, Garvins Falls Road is entered from Manchester Street which is currently over-used and has a sub-standard intersection with Garvins Falls Road. The residents complained about the noise and vibrations from the few trucks which currently use Garvins Falls Road and noted they would be unhappy with any additional truck traffic. Other infrastructure problems include limited municipal sewage and water services.

The portions of this property likely to have the greatest visual aesthetic value for new development are also located near the city's wastewater plant. In recent years this plant has produced offensive odors under certain environmental conditions which would greatly reduce the attractiveness of this area. (The city has been working to solve this problem).

The residents and some environmental group members believe that the strong environmental characteristics of the area described above should be defined as weaknesses for large scale industrial, commercial or residential development. Protection of river habitats and the range of wildlife (including possible rare species) present should be viewed as reasons to limit any additional development in the Garvins Falls area. These people stated that there are other developable areas within the city which do not have these characteristics and they should be developed first. Other environmental weaknesses for development on this site include: sandy, silty and thin soils; steep slopes and the presence of wetlands.

### ***Opportunities***

The audience believed that opportunities for development at this site ranged from almost non-existent to strong. While no one could identify a development proposal which was ready to move forward immediately, some stated that commercial or industrial development might begin to occur on this site once a direction for such development had been set by the city. Most area residents who did not favor any new development conceded that eventually new development would occur unless the city took active action to restrict development of the area.

Some of those present noted that a developer could create a first class, mixed-use business park in this area which would offer development opportunities at a scale and development theme not available anywhere else in the city. It was noted that there currently is a shortage of useable Class A office space and privately owned (taxable) campus style development within the city even though a number of industrial buildings and Class C office buildings are currently vacant. It was also noted that an opportunity does exist to create at least one new access route into the Garvins Falls area so that Garvins Falls Road will not need to be used. The primary opportunity identified was to plan the development of this area so a range of needs could be met in a comprehensive manner.

### ***Problems***

The problems described were almost the same as the weaknesses listed above and focused on the limited access and infrastructure and the need to protect environmental attributes. The very long time frames to receive NHDOT (including federal) money for major highway projects was noted. Some believed that the market forces do not yet exist which will create or support proper development of this property. A final problem touched on by a few was the process by which a developer could successfully undertake this long term process. It was noted that development that is not properly planned and undertaken from the beginning could result in an unattractive and inappropriate use of an area which would hurt the city instead of being a great, long-term asset for the city.

### ***Visions***

There was broad agreement that intensive industrial development (heavy manufacturing, trucking and warehousing) would be an inappropriate use of the area. There was agreement that there should be buffers with conservation easements to restrict development along the banks of the two rivers and in environmentally sensitive areas. There was only limited interest in a new golf course.

The majority of those present had a vision for the Garvins Falls area of high quality, limited (non-retail) commercial development or Class A campus style office park occurring within a natural setting. In addition to retaining environmentally sensitive areas, historically significant areas and existing neighborhoods the site would also include a Heritage Trail segment (near the river bank), other community recreational trails and facilities and have totally new access routes into the site. There might be limited waterfront recreational activities such as swimming and/or boating. This area would provide for new forms of economic development, would be a place where headquarters could be moved into and would add to the city's tax base.

Some of those present had a vision of the area which was little changed from uses today. They favored an area where wildlife would thrive. In areas that were not environmentally sensitive there would be managed forests with some recreational trails open to community use. Under this vision there would be limited additional residential development and no non-residential development.

**GARVINS FALLS URBAN RESERVE VISIONING MEETING  
FOR AREA RESIDENTS**

*September 13, 1995 from 7:00 to 9:00 p.m.  
Welfare Department Meeting Room  
Green Street, Concord, NH*

***Introduction***

An estimated 35 people attended all or part of this public meeting and 26 people signed the attendance sheet. Approximately 25 people present were residents of Garvins Falls Road. Others present included: the assistant city planning director, the city engineer, the city development director, two city councilors, three members of the planning board, and staff from PSNH. No representatives of the media were present.

The meeting opened with an introduction to the Garvins Falls project by Stephen L. Henninger, the Assistant Planning Director for the City. He reviewed the zoning for the area, a brief history of land use in the area, the recently adopted Master Plan and its options for the area and the purpose of this current study. He then introduced Laurence Goss of Northern Economic Planners, the lead consultant for the Garvins Falls Urban Reserve study, who provided additional information about the study. Mr. Goss introduced John Mullin of Mullin Associates who facilitated the remainder of the meeting.

The purpose of this visioning session was to give the residents of and property owners adjacent to Garvins Falls Road the opportunity to express their views on alternative types of land use which might occur in the Garvins Falls area and share their vision for what it might be like in the future.

The meeting opened with each person present given the opportunity to describe why they were at the meeting and what they would like the area to be like in the future. Then John Mullin asked people individually to give their ideas on a range of topics including: alternative forms of development along Garvins Falls Road, possible development elsewhere in the city, access issues, environmental conditions in the area, tax base for the city and the overall need in the city for additional employment and Class A office space.

***Summary Comments***

The following is a summation of the comments (those for which there was nearly a consensus) as presented by John Mullin at the conclusion of the meeting based on what he had heard the residents and others present say:

1. avoid using the existing Garvins Road for access to any new development in the study area;
2. preserve spaces that are special and important to wildlife through long term conservation easements or deed restrictions - including game animals in addition to rare and endangered plants and animals;
3. the overall density on the site should be low, with clustering encouraged/required so that large areas of the site are left alone;
4. land uses permitted would be restricted to either residential (single family) or campus style, Class A, headquarters office space;
5. residents want to be shown that there is a need to have development of this land;

6. low intensity recreational uses such as trails for walking, biking and cross country skiing were endorsed;
7. having the city purchase the entire site to have it become a large city park/forest was not supported by most present;
8. there was little support in having a golf course on this site, especially a full 18 hole course; and
9. there was consensus that there should be a wildlife habitat analysis before any development plan is approved, particularly for game and wild animals such as turkeys and deer.

***Other Comments***

Specific comments and ideas presented (in addition to those included above) include:

1. keep the area as open space for wildlife under PSNH ownership with some logging permitted;
2. create buffer zones between the existing residential areas, the rivers and any new development;
3. evaluate lighting and noise impacts from any new development on existing residential development;
4. re-use existing developed/abandoned sites and buildings elsewhere in the city first;
5. permit only those types of office development which do not generate high levels of traffic;
6. limit the size of buildings and have a low coverage ratio;
7. campus style or large lot development was preferred over small lot development;
8. build the new entrance road before other development on the site begins;
9. develop only the northern portion of the urban reserve and leave the southern portion as open space;
10. change the current zoning for this area so it does not remain as industrial;
11. use the site for ecotourism, with guided tours and nature trails;
12. evaluate the cost to the city of providing services for any new development; and
13. PSNH would like to have the option to develop at least a portion of the site.

**GARVINS FALLS URBAN RESERVE MEETING  
MARKETING STUDY RECOMMENDATIONS**

*March 21, 1996 from 7:00 to 8:45 p.m.*

*Welfare Department Meeting Room*

*Green Street, Concord, NH*

***Introduction***

An estimated 25 people attended all or part of this public meeting and 16 people signed the attendance sheet. Approximately 13 people present were residents of Garvins Falls Road. Others present included: the assistant city planning director, the city engineer, one city councilor, two members of the planning board, two members of the conservation commission and staff from PSNH and EnergyNorth. No representatives of the media were present.

The meeting opened with an overview of the project from Stephen Henninger, Assistant Planning Director, as to the purpose of this study and the current zoning requirements for the area. Laurence Goss of Northern Economic Planners then presented the results of the

marketing study and described two alternative development options of the study area, including projected traffic impacts, employment and possible time frames for development. It was noted that the primary purpose of this study was to determine how this area should be zoned to ensure the most appropriate development use and densities.

John Mullin of Mullin Associates then facilitated questions, concerns and observations from the public present at this meeting regarding the two alternative proposed development options for the Garvins Falls study area. The major areas of concern expressed at this meeting were: traffic impacts and circulation, environmental impacts and the over-all scale and land uses of the project. Comments by staff or consultants and the results of follow-up research are presented in parentheses.

In general, those in the audience favored the proposed cul-de-sac at the north end of Garvins Falls Road to limit through traffic in that residential area. Some concern was expressed as to whether the current health club should continue to have direct access to Manchester Street or be on the new interior cul-de-sac and exit through the new boulevard which runs from Manchester Street to the proposed office park. Opinion was mixed as to whether the southern end of the northern segment of the existing Garvins Falls Road should be gated, be off-set from a major street where it meets the new entry boulevard or form a four-way intersection with the entry boulevard. High levels of concern were expressed with the traffic levels and their likely impacts on Manchester Street, Route 3, Route 106 and Airport Road once full development of the study area was reached.

Concerns were expressed regarding the environmental impacts of the proposed development. A few of those present wanted no development in the study area other than possibly on that portion nearest to Manchester Street.

The question was raised as to whether or not the 200 to over 500 foot setbacks from the Merrimack River were enough in terms of minimizing impacts on rare and endangered plant and animal species, including bald eagles. The proposed set-backs from the river, wetlands and steep slopes should protect the habitats of all rare and endangered species, including the bald eagle. The final road layout for a crossing of the Merrimack River must be undertaken with detailed biological research to be sure that there are no impacts on these species or their habitats. (Following the meeting, the New Hampshire Audubon Society was contacted to determine the river corridor needs of bald eagles and it was noted that they will fish near developed areas, providing the fish are present. It was also noted by Audubon Society staff that use of the abandoned railroad bed along the Merrimack as a hiking trail would have a stronger negative impact on the eagles than would buildings over 200 feet away.)

Game species such as deer and turkeys were also raised as points of concern by area residents. It was noted that both species have adapted to living near people and buildings and use the transmission line corridors for movement. Other requirements for deer and turkeys to continue to live in the study area would be for access to wintering areas, for food supply to remain available, and for dogs to be kept under control. However, some of those present felt that other game and non-game animal species (such as beaver) would leave the area once development got underway. While the UNH study of wildlife in the Garvins Falls area has not been released yet, some of the residents questioned how accurate it would be.

One person noted that small wetlands are found in the study area which do not show up on the study area maps. The proposed development standards and zoning should ensure that such wetlands and a buffer area around them are protected from development when the final plans and engineering designs are undertaken. Current state law does provide these wetlands with the same protection.

The final major concern was the overwhelming size of the development and the likely schedule for it to occur. It was noted by Mr. Henninger that the current zoning permits higher levels of development than that proposed in the marketing study. Questions were raised regarding the possibility of any development occurring on PSNH property and whether or not any companies had inquired about moving into the study area. It was noted that there have been inquiries by developers regarding portions of the study area nearest to Manchester Street, but none on PSNH property at this time. Those in the audience seemed relieved by these answers and also for the lengthy time frames for which development was likely. However, some believe that this study by the city is a front for a private developer and that the PSNH property will soon be sold and developed.

There was some opposition to having any warehousing and trucking activities in Phase 1 of the study area - the part nearest to Manchester Street - under both development options or in the Phase 3 area - the part nearest to Pembroke - where such land uses might be permitted under the first development alternative.

Those present had no specific reaction as to whether they preferred residential development or business park development, the two alternatives for the Phase 3 area. Those present were concerned with the likely enrollment impacts on the school system and increased property taxes from residential development, but also with the additional traffic impacts should there be business park development instead. There was some support for a small village center with neighborhood retail stores and services and with a day care center, health center and small hotel as supporting uses for the office and business uses in the park.

There was also concern expressed for the long length of time that construction would be undertaken in the study area and the noise, dust and truck traffic which would occur over an extended period of time. It was noted that due to the very large size of the site that most construction would not occur near existing neighborhood areas. However, there would likely be traffic noise audible in the northern Garvins Falls Road residential area. There also was concern with street and parking light glare which might impact on residential areas. There was the desire for a larger vegetated buffer between the northern residential area along Garvins Falls Road and the new entrance boulevard.

There was concern raised by PSNH regarding set-backs from the dam and from known archeological areas. (A review of PSNH maps after the meeting showed that setbacks from the dam are more than adequate under FERC requirements and that all known archeological resources are within the buffer zone areas. However, there may be unknown archeological resources in the proposed development areas located nearest to the dam and the Soucook River.)

Additional conditions might be placed on the site by the federal government which would limit development near the dam and mouth of, and along, the Soucook River when the PSNH-owned Garvins Falls and Hooksett dams undergo a new FERC re-licensing process, which will start in 2001.

EnergyNorth indicated that it is ready to develop its property along Broken Bridge Road and would favor zoning for that area that would permit major energy users, such as manufacturers, to locate there. EnergyNorth indicated an interest in connecting Broken Bridge Road to Integra Drive. (The cost of this connection would be quite high due to the elevation differences between these two streets and the ravine and wetland area which lies between them.)

Those present favored development of the rail or "opportunity" corridor in the city before development occurred on the interior portions of the Garvins Falls study area. Other concluding comments by those present favored low density development, if any development were to occur in the area, and that the coverage ratios and densities proposed in this study were preferable to the current zoning for the area. It was noted that the engineering studies were not yet completed and that they might require even lower development densities for the project to be affordable to undertake.

The view of neighborhood residents is that development of Phases 2, 3 and 4 at Garvins Falls should be put off as long as possible. When development does occur, it should have minimal environmental and neighborhood impacts, be of low density, produce almost no truck traffic and minimize the amount of new automobile traffic which will be put onto Manchester Street near their neighborhood.

*Minutes taken by:*

Laurence E. Goss, Jr.  
Northern Economic Planners

## ENVIRONMENTAL CONSTRAINTS

This 1,000 acre study area is largely undeveloped. The soils were never attractive for farming. The Amoskeag Company's plans for a mill city next to its Garvins Falls dam never materialized. Even the railroad passing through a portion of the site for over 80 years did not cause development. Only a trolley car served park (now abandoned) near the mouth of the Soucook River, the railroad track (now abandoned), some residential development along Garvins Falls Road, the dam at Garvins Falls (with the power house and locks on the Bow side of the Merrimack River) and the high tension lines from the dam through the study area have been the only development on the site since the mid-1700's. Archeological studies indicate that there was seasonal occupancy of the area before that time by Native Americans, especially near the location of the dam.

EarthTech, the engineering firm for this study, established a computer generated base map for the study area. This base map included the study area and immediately adjacent areas within Concord, Bow and Pembroke. Topographic features, contour lines, buildings, streets, and zoning boundaries were obtained as digital files from the City Geographic Information System (GIS) and mapped by EarthTech. Also mapped were LANDSAT vegetative cover and environmental information and wetlands as designated in the National Wetlands Inventory.

The resulting map was field checked with a walk-through of the site by City staff, engineers from EarthTech and landscape architects from the Cavendish Partnership, Inc. This walk-through indicated that the wetlands as defined from the LANDSAT satellite imagery were most often pine forests. As a result, hydric soils from the Merrimack County Soils Survey were substituted for the LANDSAT data on wetlands and supplemented the National Wetlands Inventory information. It should be noted that these sources do not identify all small wetlands which may be in the study area, but which would be picked up in more detailed biological studies when an actual development is being designed for the site.

An environmental constraints map was prepared by the Cavendish Partnership, Inc., which showed: the wetlands as defined above, vegetative cover, steep slopes over 15 and 25 percent, existing development, surface hydrology features, higher elevations and viewpoints. Adjacent areas of Concord, Bow and Pembroke were included on this environmental constraints map. The next step was to consider the location of rare and endangered plant species and the planning requirements of those state and federal agencies from which permits to develop the site would most likely be needed.

Biologists with the University of New Hampshire, the New Hampshire Natural Heritage Inventory and The Nature Conservancy have identified and mapped several endangered and threatened plants and animals species within the study area. All areas containing individually named threatened and endangered plant and animal species identified by these biologists were avoided in selecting those areas within the Urban Reserve study area where development might be permitted to occur. All of these identified threatened and endangered species are located in wetlands, near the rivers or fall within the setbacks from these features. Also, almost all of the most productive areas for game species (e.g., deer and turkeys) are within these setback areas, according to a University of New Hampshire wildlife inventory conducted on the study area during the winter of 1995-1996.

Those portions of the study area known to historians and archaeologists to contain historic human settlements and artifacts are all located within these setback areas or buffer zones. The State Archeologist cautions that there may be undiscovered archeological sites on the land considered as developable in this study, particularly in the southern portion of the study area.

The Cavendish Partnership then prepared a map of the site which showed where development might occur which avoided those portions of the site where state and federal environmental and archeological requirements would either prohibit development or require significant remediation. This map is called the Net Usable Land Area (NULA) map. The following criteria were used in preparing the NULA map: no development on identified wetlands or on slopes over 15 percent; and no development within the following setback distances - 200 feet from rivers, 25 feet from the edge of steep slopes, 50 feet from wetlands, 100 feet from high tension power lines, 25 feet from developed non-residential parcels and 200 feet from existing residential parcels.

Portions of those areas identified by the biologists as "globally-rare woodlands - pitch pine/scrub oak barrens," but which do not contain threatened and endangered species, have been identified as acceptable for development in this report. It is recognized that further study is needed to map these areas and that the development which might occur (i.e., limited to streets) should be designed to minimize the amount of these specific forested areas which would be disturbed.

Of the 1,000 acres in the study area, this NULA mapping process found that 500 acres remained as developable under these criteria. A further review of the NULA map showed that 15 of these 500 acres were contained in two small sections near the southern residential area on Garvins Falls Road. The City Planning Department and Northern Economic Planners agreed that these two sections should not be considered further for development. One of these areas contains portions of the "globally-rare woodlands" described in the preceding paragraph. The net result is that out of the 1,000 acres in the study area, only 485 acres should be considered further for development.

The University of New Hampshire wildlife inventory conducted on the study area during the winter of 1995-6 was completed after the NULA map was prepared. The principal changes which might be made in the NULA map as a result of this UNH inventory would be to enlarge the buffers around wetlands to at least 100 feet and to enlarge the buffers along the high tension power lines to at least 150 feet and manage that buffer area for wildlife habitat. The size of the buffers near steep slopes and along the rivers appear to be adequate. In many places the setback from the rivers exceeds 300 feet. The third recommendation which comes out of reviewing the UNH study is that at least 20 percent of each parcel in the phase 2, 3 and 4 development areas of the study area remain as an undisturbed, but managed natural area and that the site plan review process encourage the clustering of these natural areas either with each other or with adjacent buffer areas.



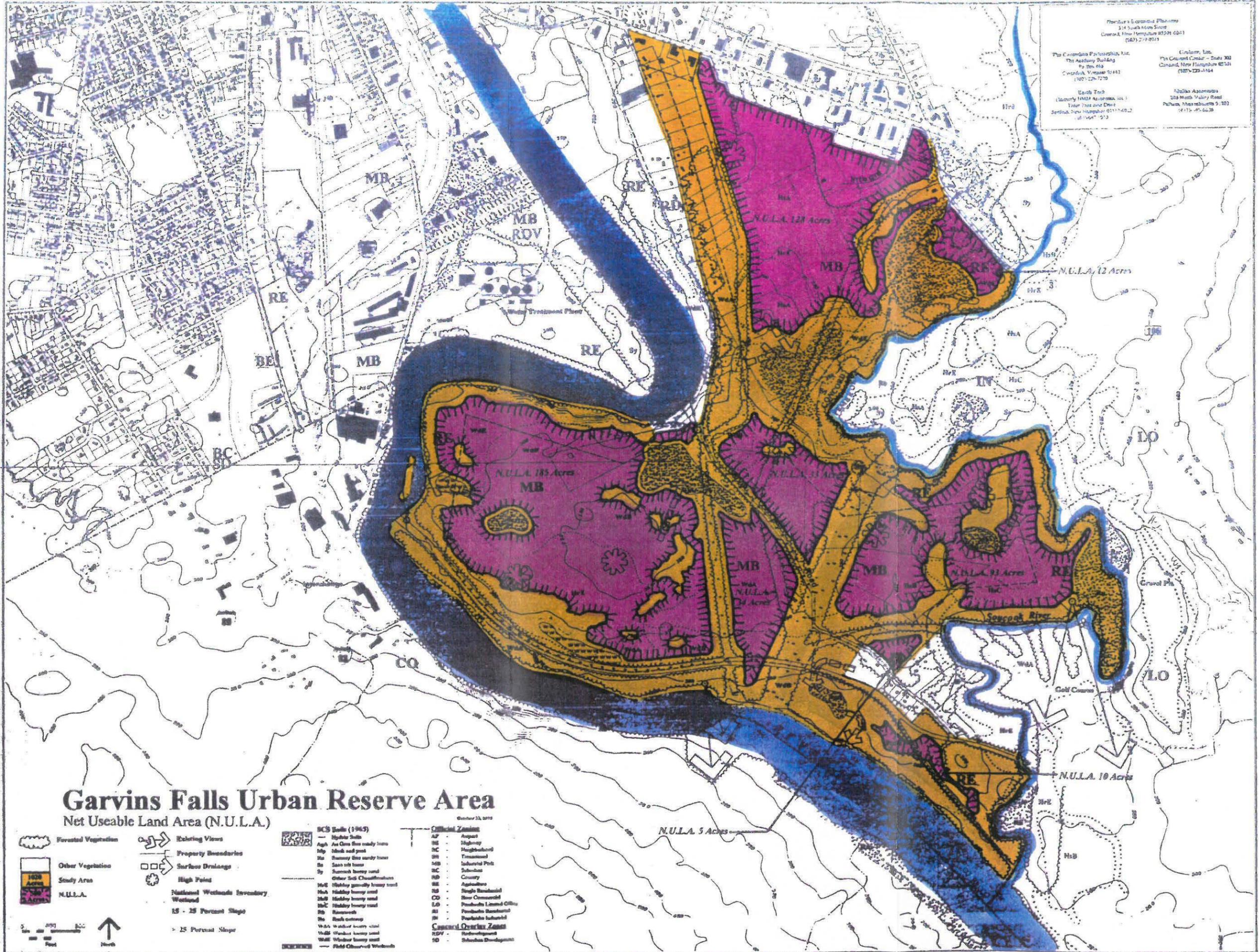
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### Garvins Falls Urban Reserve Area

Net Useable Land Area (N.U.L.A.)

- |                             |                       |                           |                                |
|-----------------------------|-----------------------|---------------------------|--------------------------------|
| Forested Vegetation         | Existing Views        | BCS Soils (1965)          | Official Zoning                |
| Other Vegetation            | Property Boundaries   | Agh Aspen fine sandy loam | AP Airport                     |
| Study Area                  | Surface Drainage      | Hsp Hardwood and pine     | Hb Neighborhood                |
| N.U.L.A.                    | High Point            | Hs Spruce fine sandy loam | Hc Commercial                  |
| National Wetlands Inventory | 15 - 25 Percent Slope | Hw Heavy heavy loam       | Hd Industrial Port             |
| > 25 Percent Slope          |                       | Hx Heavy heavy sand       | Hs Suburban                    |
|                             |                       | Hw Heavy heavy sand       | Hc Country                     |
|                             |                       | Hw Heavy heavy sand       | Hs Agriculture                 |
|                             |                       | Hw Heavy heavy sand       | Hc Single Residential          |
|                             |                       | Hw Heavy heavy sand       | Hc River Commercial            |
|                             |                       | Hw Heavy heavy sand       | Hc Professional Limited Office |
|                             |                       | Hw Heavy heavy sand       | Hc Professional Residential    |
|                             |                       | Hw Heavy heavy sand       | Hc Professional Industrial     |
|                             |                       | Hw Heavy heavy sand       | Hc General Office Zoning       |
|                             |                       | Hw Heavy heavy sand       | RDV Redevelopment              |
|                             |                       | Hw Heavy heavy sand       | SD Suburban Development        |

## GARVINS FALLS URBAN RESERVE AREA MARKET STUDY

### Introduction

This chapter includes the latest (and likely future) trends for non-residential development in the Concord area, possible recreational use of the area, and likely development patterns and timing of development for this area.

### EMPLOYMENT AND REAL ESTATE TRENDS IN CONCORD

The New Hampshire Department of Employment Security (NHDES) has just released its employment forecast for New Hampshire for the 1992 to 2005 period in its report *New Hampshire Employment Projections by Industry and Occupation, 1995*. These projections are based on national and state projections by the U.S. Bureau of Economic Analysis (USBEA) and detailed employment data analysis by NHDES for the state for the 1989 to 1992 period. Unfortunately, the 1989 to 1992 period was a period of recession in New Hampshire and the USBEA has recently stated (*Survey of Current Business, August 1995*) that its forecast for New Hampshire relative to the United States was too conservative.

The net result, for these and other reasons, is that Northern Economic Planners finds that the NHDES state-wide employment forecast is too conservative for the Concord area. If New Hampshire were to have employment growth for the 1992 to 2005 period at the rate which NHDES projects, there would be continued net out-migration of population from the state during this period. While the U.S. Census Bureau did report net out-migration during the 1990 to 1992 period for the state, it has reported net immigration since 1992.

The Concord area has out-performed the state-wide average in employment growth since 1990. It was one of the few places in the state that actually had an increase in employment in the early 1990's. Merrimack County is one of only three (out of ten) counties to out-perform the state-wide rate of employment growth for the 1990 to 1995 period.

**Table 1: Annual Rate of Industry Employment Change**

Employment Sector	NH Dept. of Employment Security 1992-2005	Northern Economic Planners 1995-2005	Northern Economic Planners 2005-2015
Mining/Construction	1.9 %	1.8 %	1.6 %
Manufacturing	-0.2	0.8	0.7
Transportation & Utilities	1.8	2.1	2.1
Wholesale Trade	2.6	2.4	2.4
Retail Trade	2.1	2.3	2.0
Financial Services	0.9	1.4	1.5
Other Services	2.3	2.5	2.6
Government	1.0	1.3	1.0
<b>Average</b>	<b>1.5</b>	<b>2.0</b>	<b>1.9</b>

Table 1 (above) shows the projected growth rates by industry for the state by NHDES for the 1992 to 2005 period and the projections for the City of Concord by Northern Economic Planners for the 1995 to 2005 and 2005 to 2015 periods. The projections for Concord are based on employment trends in the city between 1990 and 1995 in comparison with state-wide trends for that period.

Table 2 (below) shows how this employment is distributed by work setting for 1995, 2005 and 2015. Special buildings are designed to meet a specific need such as hotels, prisons, schools and medical facilities. Employment "outside" is primarily in construction, mining, agriculture and transportation. It should be noted that a portion of the jobs that are assigned to homes for the 2005 and 2015 periods will actually be at residences located outside Concord for people who would otherwise commute to work at their employer's facilities within Concord. The rapid rate of growth in employment at residences helps cause a lower than average percentage growth rate for employment in office space.

**Table 2: Projected Employment in Concord by Work Setting**

Work Setting	1995	2005	2015	% change/yr. 1995-2015
Office	18,946	21,736	24,543	1.5 %
Manufacturing	2,256	2,441	2,628	0.8 %
Retail Store	5,803	7,114	8,569	2.4 %
Warehouse	3,014	3,681	4,453	2.4 %
Special Building	6,078	7,176	8,369	1.9 %
Outside	1,809	2,259	2,809	2.8 %
Residence	1,266	2,485	4,213	11.6 %
<b>Total</b>	<b>39,171</b>	<b>46,892</b>	<b>55,583</b>	<b>2.1 %</b>

Table 3 (below) shows the demand for space in various kinds of buildings in response to the changes in employment shown in Table 2. Also incorporated into Table 3 is the changing amount of space per employee over time. For office buildings and special buildings, there will be less space needed per employee over time. In contrast, in manufacturing plants, warehouses and truck terminals and in retail stores, there will be more space per employee over time. Special buildings include: hospitals, nursing homes, dormitories, schools, museums, theaters, and hotels.

**Table 3 Projected Space Needs in Concord by Work Setting  
(in thousands of square feet)**

Work Setting	1995	2005	2015	change/year 1995-2015
Office	6,366	7,075	7,731	68
Manufacturing	1,203	1,343	1,490	14
Retail Store	2,803	3,585	4,499	85
Warehouse	2,548	3,150	3,858	66
Special Building	2,840	3,277	3,734	45
<b>Total</b>	<b>15,760</b>	<b>18,431</b>	<b>21,312</b>	<b>278</b>

The demand for office space is affected by three trends which are causing a decline in the amount of office space needed: 1) the increasing use of an office in the home (and possible tele-commuting to work); 2) less space needed per employee for those office workers who do work in office buildings, and 3) the down-sizing of the typical company, with the greatest job losses in business offices as book-keepers and payroll clerks are replaced by computers.

Two trends that are causing an increased demand for office space in places like Concord are: 1) many of the fastest growing occupations (even with the slow growth projected for financial services and government) require office space; and 2) businesses located in very large cities like Boston and New York are relocating office functions to suburbs and smaller cities.

Over two-fifths of all employment in Concord in the year 2015, including those who work at home or outside, is projected to be located in office buildings. The importance of federal, state and county government employment in Concord contributes to the relatively large amount of office space used in Concord. The government sector is projected to have slow growth over the next 20 years, which will also keep down the rate of construction of new office buildings.

An overview of the trends shown in Tables 1, 2 and 3 is that Concord's historic role as a transportation and trade center for New Hampshire and northern New England is re-emerging. From 1820 to the 1950's, Concord was the largest railroad and transportation center in the state. This helped the city to retain its role as the center of state government and be an important wholesale and retail trade center for the state. The loss of railroad service and the reliance on trucking companies located elsewhere led to the loss of many wholesale trade companies in Concord. The development of shopping malls elsewhere (initially along Route 128 in Massachusetts and later in Manchester) caused its slow growth as a retail center between the 1950's and the 1980's.

The development of the interstate highway system in New Hampshire in the 1960's should have benefited Concord. However, it appears to have taken about 30 years for trucking companies, warehouses, wholesale trade businesses, national chain retail stores and shopping malls to discover Concord. The recent growth of these kinds of businesses in Concord has occurred during a period when much of the state's economy was in a recession.

In comparison with the growth projections made by Northern Economic Planners when it wrote the Economic Development Strategy for Concord in 1993, this market study for Garvins Falls forecasts: 1) faster rates of growth for retail stores, warehouses and transportation terminals and specialized buildings; 2) a slightly faster rate of growth for office buildings; and 3) a slower rate of growth for manufacturing facilities. It is the latter two types of work settings which are preferred to be located at the Garvins Falls Urban Reserve. The only specialized buildings which might be located in the interior sections of the Garvins Falls site are a small hotel, small conference center and day care center which would serve employees and businesses at that location. Because of the strong market demand for warehouses and transportation terminals, it may be appropriate to locate these uses on those two sections of the Garvins Falls study area nearest to Manchester Street, but only if rapid development of these two sections is a goal.

As part of this study, six commercial and industrial real estate companies located in central and southern New Hampshire were interviewed. Also interviewed were two architects who design large buildings and one large contractor who operates state-wide. These people were asked to project the future demand for class A office space in Concord and the demand for an executive style office park in Concord.

Almost all of those contacted agreed that there is a shortage of class A office space within Concord, especially for businesses seeking less than 10,000 square feet. They noted that while there is such a shortage, that rental rates are not high enough to lead to the construction of new class A office buildings, especially on speculation. Where an existing building has a low enough price, it might be attractive to renovate it into class A office space. They did note that banks will make construction loans for new class A office space where there are firm lease commitments and collateral. Those contacted felt that the demand for office space in Concord is currently from small businesses who would normally lease only a portion of a large office building or who might build their own small office building.

Several of those contacted felt that large office space users were unlikely to relocate to Concord from a very large city for three reasons. The first reason is that Concord is perceived as not having a large, available work force in comparison with cities and towns to the south of Manchester. The unemployment rate is very low in Concord, especially for office workers. The second reason is that Concord is not viewed as being accessible to Boston and to major airports. The area between Manchester and Boston is viewed as very accessible for air transportation. The third reason is that Concord is not perceived as having suitable sites for large office buildings and parks while places such as Merrimack, Bedford and Londonderry are perceived as having such sites.

Very few of those interviewed saw an immediate need for an executive style office park in Concord, based on current market trends. They noted that most large corporations would not currently consider locating a regional headquarters or back-office operation in Concord or would relocate their national headquarters to Concord. They do find that companies are seeking locations for such facilities in Merrimack, Bedford, Salem, Londonderry, and Nashua in the Merrimack Valley and in Exeter, Hampton, and Portsmouth on the seacoast. They note that the demand for back-office facilities by banks and insurance companies across New England has been declining due to mergers. The estimates of current demand for new Class A office space and research and development facilities for manufacturers at the Garvins Falls site ranged from 20,000 to 30,000 square feet per year, with the more optimistic estimates made by those people located in Concord.

Those interviewed predict that with continued improvements in telecommunications, better air service into Manchester, continued corporate concern with "quality of life" for executives and employees and the filling of competing sites to the south, that ***Concord will become competitive in attracting such businesses about ten years from now.*** They do not rule out that such companies might locate in Concord before then and that Concord should work to ensure a suitable site for such companies if it wants to attract them in the future. The Garvins Falls Urban Reserve could be such a site.

It was noted by some that it has taken the Town of Merrimack about 15 years of planning and infrastructure development to get to the point where Fidelity recently announced the creation of an executive style office park with over 2,000 employees on 107 acres in that town.

The conclusion that one would reach from these comments is that most demand for new office space in Concord for the immediate future will come from those businesses that are already here. The companies most likely to locate a new office facility in Concord at the present are most likely to serve a New Hampshire or northern New England market; while those which would serve a New England, national or international market are more likely to locate south of Manchester, especially if air travel is required and the company is large in size.

Concord was viewed by those interviewed as having high property taxes and development fees in comparison with communities to the south of it. It was also viewed as providing good quality services and educational facilities at the local government level and in having a good quality of life. The stability in the local economy was viewed as positive, except for the availability of labor. Communities to the south of Concord have dealt with this issue by noting the large amount of long distance commuting which occurs today and that the labor force now resides within a fifty mile radius.

On-site design and desirable amenities were solicited from those interviewed. They noted that the entrance to an executive style office park should be a clearly defined gateway and have a landscaped, boulevard entrance road if the park is to attract the desired kinds of tenants. They noted that an on-site indoor exercise center and outdoor jogging paths and softball fields should be provided. An on-site day care center is a necessity and a small on-site conference center and business-oriented hotel would be nice.

The land around each cluster of buildings should be primarily treed and separated from other clusters by forests, in keeping with a New Hampshire location and to minimize landscaping and maintenance costs. Those interviewed noted that golf courses are no longer considered to be an attraction within an office park for the businesses which locate there. Today's companies want their executives to work, but with a short period available during the workday for healthful exercise. They do not want to see employees spending a few hours on the golf course during working hours. Also, outdoor (and indoor) tennis and basketball courts were not viewed as worthwhile amenities for employees.

## **RECOMMENDED DEVELOPMENT FOR GARVINS FALLS**

The projection of future employment in Concord in Tables 1, 2 and 3 and the observations of those people interviewed suggest that the current demand for office space which would seek an executive style office park at Garvins Falls (assuming that Manchester Street is upgraded and the Route 3 bridge is replaced) is in the range of 15,000 to 25,000 square feet per year. If research and development facilities for manufacturers are also permitted in the park, then current demand would rise to 20,000 to 30,000 square feet per year. If the portion of the study area nearest to Manchester Street is developed first, such as along Integra Drive, and transportation oriented uses are also permitted, then current demand would be 30,000 to 35,000 square feet per year.

In the year 2005 and thereafter it is projected that demand for office space will range from 20,000 to 28,000 square feet per year, with as much as 36,000 square feet per year if research and development facilities for manufacturers and a small hotel and on-site recreation complex are also permitted. It is assumed that transportation-oriented companies and manufacturing processing plants will not be allowed in those portions of the park not immediately adjacent to Manchester Street.

To convert these projections of annual demand in square feet into a rate of land absorption, it is necessary to recommend development standards for the park. The residents of the area have made it clear that they do not want a high density business park at the Garvins Falls site. It is also clear that the current highway infrastructure cannot support a high density business park, even with the proposed improvements to Manchester Street. Finally, it is clear that companies do not leave the Boston area for New Hampshire to locate in a business park at the same densities that they would find along Route 128, where land is far more expensive.

The Institute of Transportation Engineers (ITE) has conducted research on business and industrial park densities along major highways near major cities. ITE's standards for traffic generation contained in the January 1991 *Trip Generation* handbook for such parks found an average density of 73.5 employees per acre in office parks located primarily in the New York City area. The ITE has found an average density of 52.7 employees per acre for parks with research and development facilities for manufacturers located primarily in Washington, San Francisco and San Diego. Finally, the ITE has found an average density of 33.2 employees per acre in business parks (which are transportation and warehouse-oriented) located primarily in San Diego and Atlanta. Similar densities were found at most business parks that the Urban Land Use Institute has researched and described in its *Business and Industrial Park Development Handbook*, 1988.

The Centerra Resource Park in Lebanon, New Hampshire, owned and being developed by Dartmouth College, is one of the few high quality office parks in New Hampshire. It is not a campus or executive style park, but does have a "forested look" with mostly high quality buildings and tenants. There are three different land use zones within this park: 1) an office zone for offices only, 2) an industrial zone for research and development manufacturers (which also permits office uses), and 3) a commercial zone which is primarily for transportation and warehouse operations and a hotel and day care center, but which excludes retail trade, office uses and manufacturers.

In theory, Lebanon's zoning ordinance and developer deed covenants permit employee densities as high as 60 people per acre. In reality, the steep slopes and wetlands at the site as well as lot layout and internal building design constraints keep employee densities within a range of 25 to 33 employees per acre. The zoning ordinance and deed covenants permit four story buildings, maximum coverage ratios of 90 percent and floor area ratios of 0.25. The minimum lot size at Centerra is two acres.

The business park contained in the *Business and Industrial Park Development Handbook*, 1988, most like that being considered for the Garvins Falls site is the Princeton Forrestal Center being developed by Princeton University along U.S. 1 in Princeton, New Jersey. Of this 1,750 acre site, 470 acres are kept as forest lands and wetlands. Also, 403 acres are being used for housing, a shopping center, infrastructure and other common lands within

the development. This leaves 877 acres for development as an office park, research and development laboratories for manufacturers, and a hotel and conference center. The average employee density for these 877 acres is about 25 employees per acre. The zoning ordinance and deed covenants permit three story buildings, maximum coverage ratios of 90 percent and floor area ratios of 0.25.

The Concord Regional Development Corporation is currently developing a business park near Concord Airport on Chenell Drive. Most of the businesses locating there are manufacturing and transportation-oriented, which have lower employee per acre densities than do offices. The projected employment density at build-out will average 22 employees per acre. The absorption rate at this mixed use park is 5.0 acres per year and about 40,000 square feet of enclosed building space are constructed each year.

In order to achieve an employee density of 25 or fewer employees per acre at the Garvins Falls site, the following standards are recommended:

1. for the area nearest Manchester Street which is to be developed first and where manufacturing, transportation and warehousing uses are to be permitted as well as offices, the building height limit should be a maximum of three stories, a floor area ratio of 0.25, a coverage ratio (for building footprint, parking lot and walkways) of 75 percent, and a minimum lot size of two acres; and
2. for the remainder of the Garvins Falls site where the primary uses are to be offices and research and development facilities for manufacturers (with supporting hotel, conference center, day care and recreation facilities), the building height limit should be a maximum of four stories, a floor area ratio of 0.20, a coverage ratio of 60 percent, and a minimum lot size of six acres.

The City of Keene has recently adopted a new "Corporate Park" section for its zoning ordinance which has standards very similar to those proposed under recommendation two immediately preceding this paragraph. The Black Brook Corporate Park, which meets these zoning standards is now under construction in Keene.

The recommended outdoor facilities at Garvins Falls should include: jogging trails (which can also be used for biking and cross country skiing) and several softball fields. Area residents would also like a small City park with skating and sliding facilities and a picnic area at a site overlooking the Soucook or Merrimack rivers.

It is recommended that there not be a new golf course built in the study area. The size of the study area and the environmental constraints present do not permit such a course to be built. The Plausawa Valley Country Club in Pembroke currently owns ten acres within the study area on which it plans to place at least one green and tee area as part of its expansion to a 27 hole course. It is interested in serving the proposed Garvins Falls office park from the Pembroke side of the Soucook River over a pedestrian bridge which can support golf carts.

**PROJECTED RATE OF OFFICE PARK DEVELOPMENT**

In the previous section of this report the demand for new building space at Garvins Falls was presented. Table 4 shows the acreage required per year based on 25 employees per acre for office uses and 18 employees per acre for manufacturing, warehousing and transportation uses. In Table 4 it is assumed that for the first 20 years that there may be warehousing and transportation businesses in addition to office and research and development facilities on the two sections of the study area nearest to Manchester Street. The interior developable sections at Garvins Falls will be developed primarily as office space after the year 2015. As a result, the annual average acreage that will be needed for development is lower after the year 2015.

**Table 4: Acreage Required Annually For Proposed Development Rate**

	1995-05	2005-15	2015-25	After 2025
Low Growth	3.2	4.3	4.3	4.5
Median Growth	3.6	4.8	4.5	4.8
High Growth	5.0	6.3	5.4	5.9

*Note on Table 4:* Data shown are in acres per year.

**THE FIRST DEVELOPMENT ALTERNATIVE**

The first phase of development is proposed to be on the two sections of developable land shown adjacent to Integra Drive and Broken Bridge Road on the "Alternative One" map prepared by The Cavendish Partnership, Inc., and located nearest to Manchester Street. The Broken Bridge Road area has 12 developable acres and the Integra Drive area has 128 developable acres. It is assumed that 20 percent of these developable areas will be set aside for roads and common areas. This leaves 112 acres for development in office space, manufacturing, transportation terminals and warehouses. The western portion of the 128 acre section should be set aside for the main entry road (or boulevard) into the interior portion of the site and Integra Drive should be lengthened to reach this new road. The final layout of other internal roads for this Phase 1 area are yet to be determined and are only suggested on this map. The minimum lot size for business park development should be two acres and most buildings will be in the 5,000 to 15,000 square feet range in this Phase 1 area.

Under the low growth projection (office uses only) for acreage required shown in Table 4 it will take 28.6 years to completely fill the 112 acres in this first phase. Under the median growth projection (office and manufacturing uses only) it will take 26.2 years to fill these 112 acres. Under the high growth projection (office, manufacturing, transportation and warehouse uses) it will take 19.8 years to fill these 112 acres. Thus, if development at the first phase sections had begun in 1995, it would take until 2015 to fill these two sections under the high growth scenario, until 2021 under the median growth projection and until 2024 under the low growth projection. Manchester Street will need to be widened to four lanes (with a fifth, center lane for turning movements) for the entire length between the Merrimack River Bridge and Airport Road to accommodate development of Phase 1.

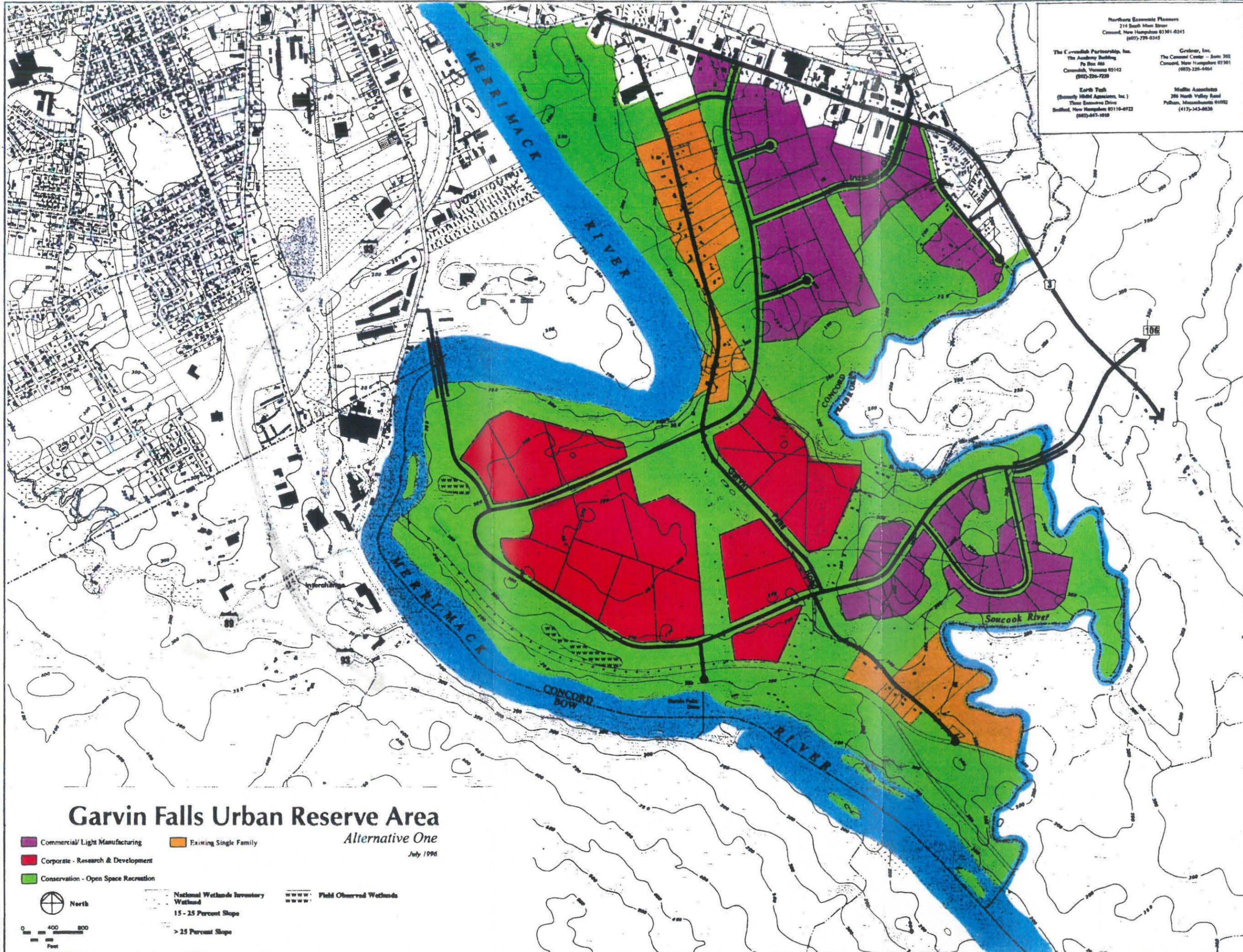
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### Garvin Falls Urban Reserve Area

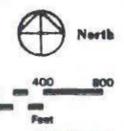
*Alternative One*

July 1996

- Commercial/Light Manufacturing
- Existing Single Family
- Corporate - Research & Development
- Conservation - Open Space Recreation

National Wetlands Inventory Wetland  
 15 - 25 Percent Slope  
 > 25 Percent Slope

Field Observed Wetlands



There would be 2,800 employees in this Phase 1 area under the low growth projection, or 98 jobs added per year. There would be 2,722 employees on these two sections under the median growth projection, or 104 additional jobs per year. There would be 2,553 employees on these two sections under the high growth projection, or 129 jobs added per year. It should be noted that the residents of the Garvins Falls Road area do not favor trucking and warehouse facilities anywhere in the study area and would be, therefore, opposed to the high growth projection under proposed Phase 1.

The second phase of the development is proposed to be the two sections between the two PSNH power lines which are split by Garvins Falls Road and total 67 acres. Because these sections are at the center of the project, it is assumed that 20 percent of these sections are needed for roads and common lands. This leaves 53.6 acres as developable. This second phase is assumed to be primarily office space with some research and development facilities for manufacturers under this first development alternative. The minimum lot size for first class office park development should be six acres and most buildings will be at least 20,000 square feet in size in Phase 2.

By the time Phase 2 is needed for development, the annual demand for new office space is assumed to increase and the City is assumed to be more competitive in attracting corporate offices as shown above in Table 4. Under the low growth projection it would take 12.2 years to fill the 53.6 acres in this second phase. Under the median projection it would take 11.4 years and under the high growth phase it would take 9.9 years. Employment is likely to average 24 jobs per acre in this second phase for a total number of jobs of 1,286. This is 105 jobs per year under low growth, 113 jobs per year under median growth, and 130 jobs per year under the high growth rate.

The first half of Phase 2 can be developed and rely on access to Manchester Street. The development of the second half of Phase 2 will require access to Hall Street, including a bridge across the Merrimack River.

The third phase would be the 185 acre section located between the narrower PSNH power line and the Merrimack River. This phase is the most interesting and largest developable area in the study area. It is assumed that 15 percent of the Phase 3 section would be retained for roads and common land. This leaves a developable area of 157.3 acres. The minimum lot size for a first class office park in Phase 3 should be six acres and most buildings will be at least 20,000 square feet in size.

It would take 32.9 years under the low growth projection, 30.8 years under the median growth projection and 25.1 years under the high growth projection to fill the 157.3 acres in Phase 3. Assuming 24 jobs per acre, there would be 3,750 jobs in this phase. The low growth projection assumes 114 jobs per year, the median projection assumes 122 jobs per year and the high projection assumes 149 jobs per year.

Table 5: Employment by Phase for Development Projections – First Alternative

Land Use	Low Growth	Median Growth	High Growth
<b>Phase 1 - 112 acres*</b>			
Office Uses	2,800	2,314	1,660
Manufacturing	0	408	383
Warehouse	0	0	510
<b>Subtotal</b>	<b>2,800</b>	<b>2,722</b>	<b>2,553</b>
<b>Phase 2 - 53.6 acres</b>			
Office Uses	1,030	1,030	1,030
Manufacturing	256	256	256
<b>Subtotal</b>	<b>1,286</b>	<b>1,286</b>	<b>1,286</b>
<b>Phase 3 - 157.3 acres</b>			
Office Uses	2,955	2,955	2,955
Manufacturing	590	590	590
Hotel/Daycare/Fitness	205	205	205
<b>Subtotal</b>	<b>3,750</b>	<b>3,750</b>	<b>3,750</b>
<b>Phase 4 - 74.4 acres</b>			
Office Uses	1,860	1,537	1,103
Manufacturing	0	271	254
Warehouse	0	0	339
<b>Subtotal</b>	<b>1,860</b>	<b>1,808</b>	<b>1,696</b>
<b>Total Employment</b>	<b>9,696</b>	<b>9,566</b>	<b>9,285</b>

**Notes for Table 5**

1. Manufacturing is assumed to be 70 percent research and development and 30 percent assembly in the median and high growth scenarios for Phases 1 and 3, and 90 percent research and development and 10 percent assembly in Phases 2 and 4. Office uses in Phases 1 and 3 are most comparable to "general office building;" and to "office park" in Phases 2 and 4. Note that employment densities above are far below ITE densities for these categories.
2. \* Ten acres (nine percent of the jobs) in Phase 1 have a separate Broken Bridge Road entrance onto Route 3.
3. The day care center is assumed to serve 80 percent on-site traffic and the hotel and fitness center would serve 60 percent on-site traffic.

At the conclusion of the development of Phase 3, it will be necessary to build a roadway to the Route 3 and 106 interchange with a bridge across the Soucook River. Improvements will also need to be made to Hall Street so it can support higher traffic levels.

The fourth phase would be the 93 acre section between the wider PSNH power line and the Soucook River across from the industrial and limited office zones in the Town of Pembroke. It is assumed that 20 percent of this section would be retained for roads and common land as this section provides the opportunity for an exit road to Routes 3 and 106 through the industrially zoned land in Pembroke. This leaves a developable area of 74.4 acres. It would take 16.5 years to fill this land under the low growth projection, which would include office uses and manufacturing research and development facilities only. It would take 15.8 years under the median growth projection, which also includes other types of manufac-

turing facilities. The high growth projection also includes trucking and warehousing facilities and would take 10.5 years to fill the 74.4 acres in this section. The low growth projection assumes 113 jobs per year, the median projection assumes 114 jobs per year and the high projection assumes 162 jobs per year.

As indicated above, residents of the Garvins Falls Road area do not favor trucking and warehousing and would be opposed to the high growth option shown in Table 5 for developing Phase 4. The minimum lot size in Phase 4 for business park development should be two acres and most buildings will be 5,000 to 15,000 square feet in size under the median and high growth projections. Under the low growth projection development would be as a first class office park and the minimum lot size should be six acres and most buildings will be at least 20,000 square feet in size.

Table 5 summarizes the development which would occur in these four phases under the first development alternative. The total developable area of 397.3 acres would take 65.3 years to fill under the high growth scenario, or until the year 2061. The median growth scenario would take 84.2 years, or until 2078. The low growth scenario would take 90.2 years to fill or until the year 2086. The number of jobs at this site is projected to total 9,285 under the high growth rate projection, 9,566 under the median projection and 9,696 under the low growth rate projection. This is an annual average increase in employment of 142 jobs per year under the high growth projection, 114 jobs per year under the median projection and 107 jobs per year under the low growth rate projection.

As stated above, there were found to be 485 developable acres in the study area. Of these 485 acres: 46 would be under public streets and walkways; 266 acres would be under parking lots, buildings, driveways and private walkways; and 173 acres would be landscaping, lawns, woods and small wetland areas. Table 6 summarizes the timetable for build-out for the first development alternative under the three different development scenarios.

**Table 6: Projected Timetable for the First Development Alternative**

Phase	Low	Median	High
1	28.6	26.2	19.8
2	12.2	11.4	9.9
3	32.9	30.8	25.1
4	16.5	15.8	10.5
<b>Total</b>	<b>90.2</b>	<b>84.2</b>	<b>65.3</b>

*Note on Table 6:* Data shown is in years.

**THE SECOND DEVELOPMENT ALTERNATIVE**

Due to the very large amount of developable land, the development of this area exclusively as an office park would add significant volumes of traffic to Manchester Street, Hall Street, and Routes 3 and 106. It would also take a long time to fill this office park as shown in Table 6. For these reasons, the development of Phase 4 as a residential area is considered as an option under the second development alternative. Under that scenario, the Phase 4 area is adjacent to the proposed expansion of the Plausawa Valley Country Club. The

views of the golf course and the Soucook River would provide an attractive setting. Having residences located in this development area would reduce traffic impacts and speed up the rate of development.

In this second development alternative, Phase 1 would be identical to that described above for the first development alternative. Phase 2 would have fewer office and manufacturing research and development employment and buildings than under the first development alternative as it would also contain six acres of land (including parking) for a neighborhood level retail and services center with an estimated 50 jobs. This business center would be located on the edge of Phase 2 nearest to the residential neighborhood in Phase 4. Phase 1 would have a two acre minimum lot size and Phase 2 would have a six acre minimum lot size just as under the first development alternative. Half-way through the development of Phase 2, a roadway connecting to Hall Street would need to be built, including a bridge over the Merrimack River. Hall Street would need improvements to carry additional traffic.

A bridge will need to be built across the Soucook River to the Route 3 and Route 106 intersection at the beginning of Phase 4. The hotel, conference center, day care facilities and fitness center in the Phase 3 area have been reduced in size under this second development alternative as the total employment levels in this park are lower. The employment for offices and manufacturing research and development facilities have been increased slightly for the Phase 3 area.

The discussion of the possibility of a residential area at the Garvins Falls study area raised the notion that a range of housing opportunities should be offered in the Phase 4 area. This part of the city might be appropriate for a traditional village neighborhood which included some neighborhood level stores and services. Most "neo-traditional" neighborhood villages being built today (south of New England) are based on lot sizes of 5,000 square feet per housing unit, which may work well in a warmer climate or at seasonal resorts. Most New England planners who have looked at this form of development believe that the minimum lot size in a modern village style neighborhood which considers both automobiles and winter snow should be at least 7,000 square feet per housing unit.

For this second development alternative it is recommended that Phase 4 contain 120 single family detached houses (with 2 or 3 bedrooms) located on lots which average 7,500 square feet in a neo-traditional neighborhood layout. There would also be 95 homes (with 3 or 4 bedrooms) on 20,000 square foot lots in a suburban style layout nearest to the river and golf course. The Plausawa Valley golf course might be expanded so that more of it is on the Concord side of the Soucook River.

It is assumed that Phases 3 and 4 will be built simultaneously under this second development alternative, instead of sequentially. In a recent study by Northern Economic Planners it was projected that housing demand in Concord would be 120 units per year in the year 2015. If 20 percent of these units were built in the Garvins Falls study area, then it would take almost nine years to build the 215 housing units in Phase 4. This is slightly

Table 7: Employment by Phase for Development Projections – Second Alternative

Land Use	Low Growth	Median Growth	High Growth
<b>Phase 1 - 112 acres*</b>			
Office Uses	2,800	2,314	1,660
Manufacturing	0	408	383
Warehouse	0	0	510
<b>Subtotals:</b>	<b>2,800</b>	<b>2,722</b>	<b>2,553</b>
<b>Phase 2 - 63.6 acres</b>			
Office Uses	915	915	915
Manufacturing	227	227	227
Retail Trade	25	25	25
Consumer Services**	25	25	25
<b>Subtotals:</b>	<b>1,192</b>	<b>1,192</b>	<b>1,192</b>
<b>Phase 3 - 157.3 acres</b>			
Office Uses	3,025	3,025	3,025
Manufacturing	604	604	604
Hotel/Daycare/Fitness	146	146	146
<b>Subtotals:</b>	<b>3,775</b>	<b>3,775</b>	<b>3,775</b>
<b>Phase 4 - 64.6 acres</b>			
Residential Units***	215	215	215
<b>Subtotals:</b>	<b>215</b>	<b>215</b>	<b>215</b>
<b>Total Employment</b>	<b>7,767</b>	<b>7,689</b>	<b>7,520</b>

**Notes for Table 7**

1. Manufacturing is assumed to be 70 percent research and development and 30 percent assembly in Phase 1, and 90 percent research and development and 10 percent assembly in Phases 2 and 4. Office uses in Phase 1 are most comparable to "general office building;" and to "office park" in Phases 2 and 4. Note that employment densities above are far below ITE densities for these categories.
2. \* Ten acres (nine percent of the jobs) in Phase 1 have a separate Broken Bridge Road entrance onto Route 3.
3. \*\* Consumer services includes: personal services, medical offices, financial services offices, video rentals, dry cleaner, etc.
4. \*\*\* Residential development in Phase 3 includes: 120 units in a traditional village neighborhood layout and 95 units in a suburban layout.
5. The day care center is assumed to serve 80 percent on-site traffic and the hotel and fitness center would serve 60 percent on-site traffic. The retail store and services serve 80 percent on-site traffic. less time than it would take to develop Phase 2.

One option for a road layout for this Phase 4 area is shown on the "Alternative Two" map by the Cavendish Partnership, Inc., which appears on the following page.

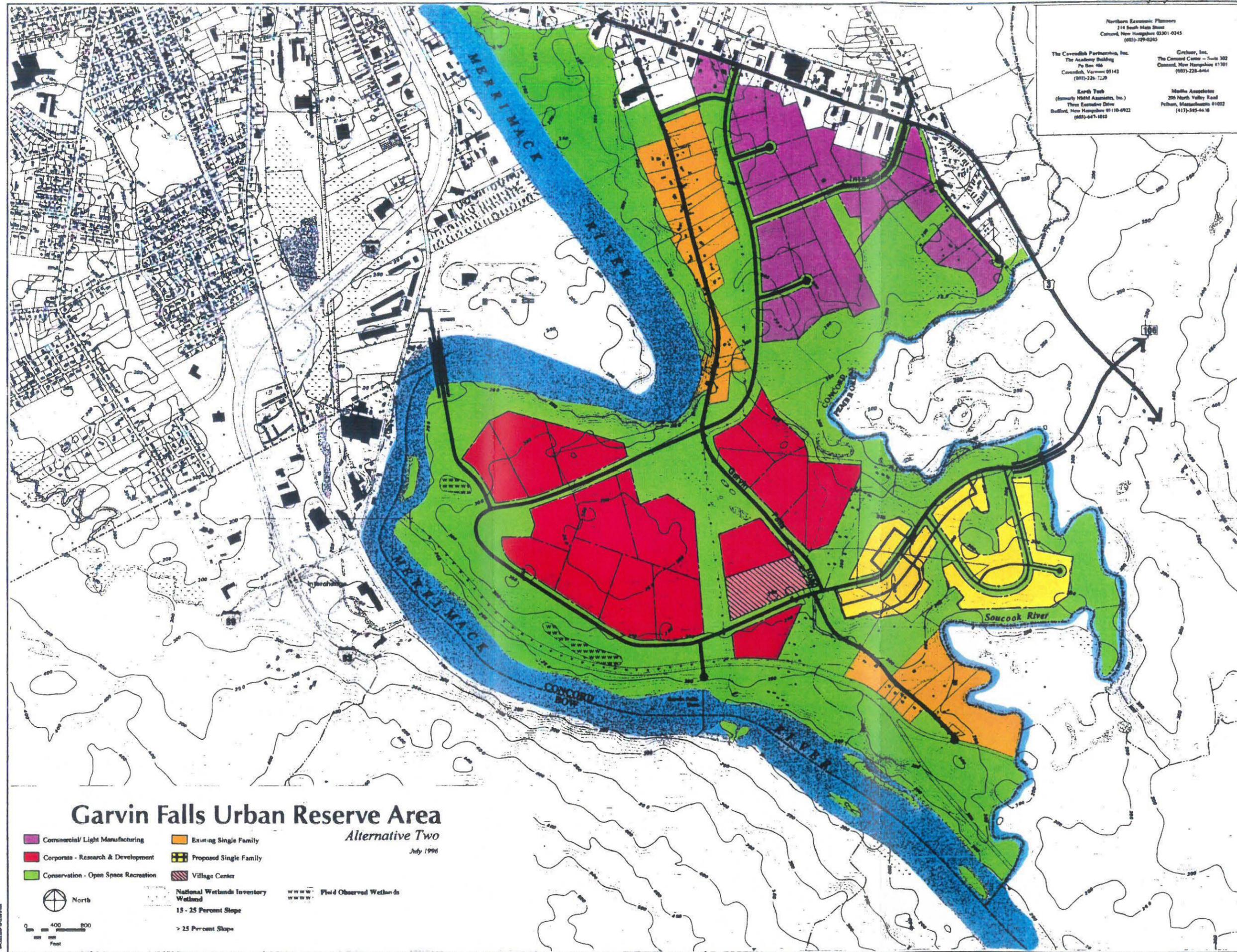
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### Garvin Falls Urban Reserve Area Alternative Two

July 1996

- Commercial/ Light Manufacturing
  - Corporate - Research & Development
  - Conservation - Open Space Recreation
  - Existing Single Family
  - Proposed Single Family
  - Village Center
  - National Wetlands Inventory Wetland
  - Field Observed Wetlands
  - 15 - 25 Percent Slope
  - > 25 Percent Slope
- North
- 0 400 800  
Foot
- www Field Observed Wetlands

Table 7 (above) summarizes the development which would occur in these four phases under the second development alternative. The total developable area of 397.3 acres would take 54.6 years to fill under the high growth scenario (until the year 2051), or 11 years sooner than under the first development alternative. The median growth scenario would take 67.8 years (until 2064), or 16.4 years sooner than under the first development alternative. The low growth scenario would take 73.1 years to fill (until the year 2069), or 17.1 years sooner than under the first development alternative. Table 8 (below) summarizes the timetable for the second development alternative.

**Table 8: Projected Timetable for the Second Development Alternative**

Phase	Low	Median	High
1	28.6	26.2	19.8
2	10.8	10.1	8.8
3	33.7	31.5	25.7
4	11.0	9.0	7.0
<b>Total</b>	<b>73.1</b>	<b>67.8</b>	<b>54.3</b>

**Notes for Table 8:**

1. Phase 4 occurs at same time as Phase 3.
2. Data shown are in years.

The number of jobs at this site is projected to total 7,520 under the high growth projection, 7,689 under the median projection and 7,767 under the low projection. This is an annual average increase in employment of 138 jobs per year under the high projection, 113 jobs per year under the median projection and 106 jobs per year under the low projection.

As stated above, there were found to be 485 developable acres in the study area. Of these 485 acres: 44 would be under public streets and walkways; 223 acres would be under parking lots, buildings, driveways and private walkways; and 218 acres would be landscaping, lawns, woods and small wetland areas. There is 26 percent more green space under the second development alternative within the 485 developable acres than under the first development alternative.

## CONCLUSIONS AND RECOMMENDATIONS

The complete development of this study area will take much longer than most people have thought possible, given the assumptions used in this report. It would take 65 years to fill the 397.3 developable acres under the high growth projection, 84 years under the median growth projection and 90 years under the high growth projection under the first development alternative. Undertaking residential development in the Phase 4 area instead of business park development will shorten this development time-frame by about 11 to 17 years.

Clearly, it is very hard for anyone to predict more than twenty years into the future as technologies, types of employment and business organizational structures undergo continual change. By that point in time, corporations may be ready to build 100 acre campuses for their office and research facilities in Concord. If so, development may occur much more quickly at this study area than projected in this report.

Alternatively, far more people may work at home and tele-commute to work in 2015 than has been assumed in this report and shown in Table 2. In this situation, it may take even longer to completely fill the developable land at the Garvins Falls Urban Reserve, even if part of the area should be in the form of residential development.

While it is important to establish the zoning and development standards for the entire study area, it is most likely that only the first phase with 140 usable acres (and 112 developable acres) nearest to Manchester Street will be developed over the next 20 years. This assumption is true only if street access is not provided to any new development in the interior sections of the study area by using the existing Garvins Falls Road. A new road to the interior sections will be expensive to build and can be supported only if built incrementally or if a very large development is proposed for an interior section. If this study area is developed in phases recommended above, then the areas nearest the rivers will be developed last. It is not likely that any developable section nearest the two rivers will be needed for any development for at least 30 years.

The Garvins Falls Urban Reserve Area needs to be developed at a relatively low density if environmentally sensitive areas are to be protected and if forested areas (instead of parking lots) are to separate the buildings from each other. In the interior portion of the park coverage ratios should not exceed 60 percent. A maximum building height of four stories and a floor area ratio of 0.20 will favor the construction of office buildings which do not dominate the forest. The zoning for this area should permit only office and manufacturing research and development uses and a narrow range of commercial uses that would support the primary types of businesses in this zone. The first class office park portion should have a minimum lot size of six acres. There should be added development standards which encourage a campus style development with maintenance of natural areas and wildlife corridors. An alternative to lessen traffic impacts on Routes 3 and 106, speed up the rate of development and increase the amount of green space would be to permit some residential development in the Urban Reserve Area.

Higher density development and the addition of all manufacturing (except heavy manufacturing) uses and warehousing and transportation land uses, along with office uses, within those two developable sections of the study area nearest to Manchester Street will meet the current mix of non-retail demand for space in Concord. Slightly higher coverage ratios (75 percent) and floor area ratios (0.25), but a lower building height of three stories, will better serve this broader range of land uses for this area nearest to Manchester Street. This more traditional mixed-use business park should have a two acre minimum lot size.

The lower densities which will result from these recommended levels of development in contrast with the current MB zoning for the study area should help ensure that the traffic flows generated do not overwhelm Manchester Street and Routes 3 and 106. Traffic flows under both development alternatives will require bridges across the Merrimack and Soucook Rivers with a connecting roadway between Hall Street and Route 106. The second development alternative has smaller off-site traffic and development impacts and provides more on-site green space than does the first development alternative.

## **GARVINS FALLS URBAN RESERVE AREA INFRA-STRUCTURE EVALUATION AND COST ESTIMATES**

The Garvins Falls Urban Reserve Area is situated in an area of Concord where the transportation facilities are sensitive to capacity related problems. Even with the upgrades proposed or under construction by NHDOT for the I-93 Exit 13 project, there is only so much additional capacity available. Likewise, the project site is in relatively close proximity to water distribution mains and sanitary sewer mains but only a small fraction of the project site can be served without a significant extension of these systems. The purpose of this portion of the Garvins Falls Urban Reserve Area Development Feasibility Study is the evaluation of the project's potential impacts upon transportation, water and sewer infra-structure systems and the estimation of costs associated with servicing each phase of the project.

Two development alternatives were evaluated for the Garvins Falls Urban Reserve Area. The first development alternative includes a main entrance boulevard or access road from Manchester Street opposite Old Suncook Road and calls for the extension of Integra Drive to intersect with this main entrance access road. The main access road would continue in a southerly direction ultimately intersecting with Garvins Falls Road. The main access road would then continue to the east, crossing the Soucook River and ultimately intersecting with NH Route 3 opposite NH Route 106 in Pembroke. There is an additional road that will loop off Garvins Falls Road paralleling the Merrimack River. A new bridge over the Merrimack River would be constructed to link this loop road with Hall Street near the City's waste water treatment plant. The second development alternative includes the same basic road and infra-structure systems as the first development alternative with the exception that Phase 4 includes development of a residential community instead of the commercial development included in the first development alternative. Each of these development alternatives was broken down into 4 phases.

### **INFRA-STRUCTURE ASSESSMENT**

#### **Sewer**

Manchester Street, which establishes the northern boundary of the project, is currently served by a 15 inch diameter clay pipe sewer. An 8 inch diameter sewer lateral extends southerly along Garvins Falls Road to the Concord Racquet Club. The topography of the Garvins Falls Urban Reserve Area places all the developable acreage at elevations that are either level with Manchester Street or as much as 50 feet lower. As a result only a portion of Phase 1 of the project can be served by gravity sewer extensions and all subsequent Phases will require the construction of pump stations and force mains.

A conceptual sewer layout was developed for the site and broken into two main segments based on the ability to provide gravity service to the extent possible. The first segment consists of Phase 1, which includes the lots that extended off Integra Drive and the lots located along the main entrance road from Manchester St. Waste water generated from the western portion of Phase 1 will flow through a gravity sewer into the existing sewer

system located along Integra Drive and Manchester St. Providing service to the Broken Ridge Road section of Phase 1 will require a pump station and force main. The second segment consists of Phases 2 through 4 at the southerly portion of the study area. There are two options for this segment, one would consist of pumping the flow to the gravity system for Phase 1 and the other would consist of pumping across the Merrimack River directly to the Hall Street Wastewater Treatment Plant. The same conceptual sewer layout was found to work for both Development Alternatives.

The Hall Street Waste Water Treatment plant currently has excess capacity and could accommodate the projected flows associated with this project if it was developed in its entirety in 1996. The project's estimated buildout range of 50 to 90 years likely exceeds the life expectancy of the current treatment facility, in conjunction with background population growth and redevelopment of existing properties, it is not possible to state with certainty that adequate capacity will exist 50 or more years into the future. Pipe length and invert data were obtained from the city's sewer construction record drawings and were utilized to perform a capacity analysis for the existing Manchester Street sewer. Waste water generation estimates were developed for each phase of the project based on the employment projections and per capita generation rates. Just under 1 million gallons of waste water would be generated on an average day by each of the alternatives. Since industrial flows typically are not subject to increases between average daily and maximum daily flows we have not applied a peaking factor to this estimated flow. Based upon the capacity analysis of the Manchester Street sewer it appears that sufficient capacity currently exists. However, it is not possible to state with certainty that adequate capacity will exist 50 or more years into the future.

## **Water**

Manchester Street, which establishes the northern boundary of the project, is currently served by a 10 inch diameter water distribution main. An 8 inch diameter water main stub extends southerly along Garvins Falls Road to the Passaconoway Club and a 12 inch diameter water main extends southerly along Integra Drive. The conceptual water system layout developed for the project consists a looped system that is functional for both alternatives. The system will have two connections at Manchester Street and a connection at NH Route 3 and NH Route 106. Kentucky Pipe water system modeling software was utilized to size the on-site distribution system consisting of 8", 10" and 12" distribution mains. All indications are that at the time this development will be constructed there will be an adequate water supply to service the development.

## **TRANSPORTATION ASSESSMENT**

### **Trip Generation**

The employment projections developed by Northern Economic Planners, presented in Table 5 for the first development alternative and Table 7 for the second development alternative, were analyzed for their trip generating characteristics. The number of employees for each phase by specific land use category was used to calculate trip generation for daily and peak

hour periods. The amount of traffic expected to be generated was calculated using the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (5th Edition). Specifically ITE Case Studies by Land Use were selected to match types of development anticipated at Garvins Falls. It should be noted that during the projects anticipated 50 to 90 year buildout the transportation alternatives available in New Hampshire and Concord are likely to expand significantly. This coupled with likely changes in behavioral characteristics of travelers (where they go, how they go there, when they go there, how far they are willing to travel, where else they go along the way, etc.) will change the trip generation characteristics of developments presented in the ITE Case Studies. The trip generation calculations made for this study have not attempted adjustments to reflect these potential future changes.

The first development alternative (see Table 5) projects more than 9,500 employees at full build-out, and will generate more than 30,000 vehicle trips per day upon completion as shown in Table 9 which is presented on the following page. The addition of between 3,700 and 4,100 vehicles per hour during the AM and PM peak hours would be expected with this alternative. In contrast, the second development alternative (see Table 7) projects approximately 7,700 employees at full build-out, or approximately 20% fewer than the first development alternative, as shown in Table 10 which follows. This alternative will generate approximately 28,000 vehicle trips per day and the peak hour volumes are expected to range between 3,200 and 3,400 vehicles per hour. Although the difference in daily trip generation is not significant, upon comparison of the two Development Alternatives, the peak hour difference is noticeable and will make a difference in roadway operating characteristics. The difference between the two Development Alternatives occurs in Phases 2 and 3. Phase 1 is the same under both alternatives, with more than 2,500 employees adding approximately 1,000 peak hour trips to the local roadway network. The first development alternative adds approximately 1,450 peak hour trips during Phases 2 and 3, while the second development alternative adds approximately 750 peak hour trips. Phase 4 is similar under both alternatives, with approximately 1,500 additional peak hour trips. Summary tables of this information are included in the Appendices to this report.

### **Trip Distribution**

To determine where these potential trips may originate from, the 1990 US. Census "Journey to Work" information for Concord, New Hampshire was analyzed. The home communities of those working in the city were identified, and a statistically significant portion of the data was used to assign distribution percentages to routes to and from the Garvins Falls site. The specific journey to work data is included in the Appendices to this report. Peak hour traffic for the total project buildout under both development alternatives (described in the Market Study chapter of this report) was distributed over the roadway system serving the site. Traffic was assigned to logical routes based upon home community. In the case of workers living in Concord itself, traffic projections for the I-93 Exit 13 study were used to calculate local distribution percentages. Diagrams identifying the peak hour traffic distribution to the roadways leading to and from the site are included in the Appendices to this report.

Table 9: Employment and Trip Generation for First Development Alternative

Phase and Expenditure	Developable Acres	Total Employees			Average Weekday Traffic AWDT			AM Peak Hour Traffic			PM Peak Hour Traffic		
		Low	Median	High	Low	Median	High	Low	Median	High	Low	Median	High
<b>PHASE 1</b>	112												
Office Space		2,800	2,314	1,660	7,585	6,472	4,909	1,143	970	727	970	834	640
Manufacturing		0	122	115	0	255	240	0	52	49	0	48	45
Research and Development		0	286	268	0	1,026	975	0	143	136	0	144	137
Transportation/Warehousing		0	0	510	0	0	1,862	0	0	245	0	0	282
<b>PHASE 1 TOTALS</b>	<b>112</b>	<b>2,800</b>	<b>2,722</b>	<b>2,553</b>	<b>7,585</b>	<b>7,753</b>	<b>7,986</b>	<b>1,143</b>	<b>1,165</b>	<b>1,157</b>	<b>970</b>	<b>1,026</b>	<b>1,104</b>
<b>PHASE 2</b>	54												
Office Space		1,030	1,030	1,030	3,481	3,481	3,481	512	512	512	429	429	429
Manufacturing		26	26	26	54	54	54	11	11	11	10	10	10
Research and Development		230	230	230	865	865	865	122	122	122	122	122	122
Transportation/Warehousing		0	0	0	0	0	0	0	0	0	0	0	0
<b>PHASE 2 TOTALS</b>	<b>54</b>	<b>1,286</b>	<b>1,286</b>	<b>1,286</b>	<b>4,400</b>	<b>4,400</b>	<b>4,400</b>	<b>645</b>	<b>645</b>	<b>645</b>	<b>561</b>	<b>561</b>	<b>561</b>
<b>PHASE 3</b>													
Office Space		2,955	2,955	2,955	10,729	10,729	10,729	1,116	1,116	1,116	1,074	1,074	1,074
Manufacturing		59	59	59	123	123	123	25	25	25	23	23	23
Research and Development		531	531	531	1,666	1,666	1,666	229	229	229	229	229	229
Hotel		100	100	100	574	574	574	28	28	28	32	32	32
Daycare		70	70	70	465	465	465	74	74	74	72	72	72
Healthclub		35	35	35	659	659	659	25	25	25	76	76	76
<b>PHASE 3 TOTALS</b>	<b>0</b>	<b>3,750</b>	<b>3,750</b>	<b>3,750</b>	<b>14,216</b>	<b>14,216</b>	<b>14,216</b>	<b>1,497</b>	<b>1,497</b>	<b>1,497</b>	<b>1,506</b>	<b>1,506</b>	<b>1,506</b>
<b>PHASE 4</b>	74												
Office Space		1,860	1,537	1,103	5,397	4,605	3,494	803	681	511	701	602	463
Manufacturing		0	81	76	0	169	159	0	35	33	0	32	30
Research and Development		0	190	178	0	744	707	0	105	100	0	106	101
Transportation/Warehousing		0	0	339	0	0	0	0	0	0	0	0	0
<b>PHASE 4 TOTALS</b>	<b>74</b>	<b>1,860</b>	<b>1,808</b>	<b>1,696</b>	<b>5,397</b>	<b>5,518</b>	<b>4,360</b>	<b>803</b>	<b>821</b>	<b>644</b>	<b>701</b>	<b>740</b>	<b>594</b>
<b>PROJECT TOTALS</b>	<b>240</b>	<b>9,696</b>	<b>9,566</b>	<b>9,285</b>	<b>31,598</b>	<b>31,887</b>	<b>30,962</b>	<b>4,088</b>	<b>4,128</b>	<b>3,943</b>	<b>3,738</b>	<b>3,833</b>	<b>3,765</b>

Table 10: Employment and Trip Generate for the Second Development Alternative

Phase and Expenditure	Developable Acres	Total Employees			Average Weekday Traffic AWDI			AM Peak Hour Traffic			PM Peak Hour Traffic		
		Low	Median	High	Low	Median	High	Low	Median	High	Low	Median	High
<b>PHASE 1</b>	112												
Office Space		2,800	2,722	2,553	7,585	6,472	4,909	1,143	970	727	970	834	640
Manufacturing		0	122	115	0	255	240	0	52	49	0	48	45
Research and Development		0	286	268	0	1,026	975	0	143	136	0	144	137
Transportation/Warehousing		0	0	510	0	0	1,862	0	0	245	0	0	282
<b>PHASE 1 TOTALS</b>	<b>112</b>	<b>2,800</b>	<b>3,130</b>	<b>3,446</b>	<b>7,585</b>	<b>7,753</b>	<b>7,986</b>	<b>1,143</b>	<b>1,165</b>	<b>1,157</b>	<b>970</b>	<b>1,026</b>	<b>1,104</b>
<b>PHASE 2</b>	54												
Office Space		915	915	915	3,067	3,067	3,067	463	463	463	386	386	386
Manufacturing		23	23	23	48	48	48	10	10	10	9	9	9
Research and Development		204	204	204	787	787	787	111	111	111	112	112	112
Retail		25	25	25	60	60	60	6	6	6	12	12	12
Consumer Services		25	25	25	60	60	60	6	6	6	12	12	12
<b>PHASE 2 TOTALS</b>	<b>54</b>	<b>1,192</b>	<b>1,192</b>	<b>1,192</b>	<b>4,022</b>	<b>4,022</b>	<b>4,022</b>	<b>596</b>	<b>596</b>	<b>596</b>	<b>531</b>	<b>531</b>	<b>531</b>
<b>PHASE 3</b>													
Office Space		3,025	3,025	3,025	11,000	11,000	11,000	1,132	1,132	1,132	1,096	1,096	1,096
Manufacturing		60	60	60	125	125	125	26	26	26	23	23	23
Research and Development		544	544	544	1,698	1,698	1,698	233	233	233	233	233	233
Hotel		72	72	72	459	459	459	20	20	20	23	23	23
Daycare		49	49	49	325	325	325	52	52	52	50	50	50
Healthclub		25	25	25	470	470	470	18	18	18	54	54	54
<b>PHASE 3 TOTALS</b>	<b>0</b>	<b>3,775</b>	<b>3,775</b>	<b>3,775</b>	<b>14,077</b>	<b>14,077</b>	<b>14,077</b>	<b>1,481</b>	<b>1,481</b>	<b>1,481</b>	<b>1,479</b>	<b>1,479</b>	<b>1,479</b>
<b>PHASE 4</b>	74												
Residential Units		215	215	215	2,089	2,089	2,089	157	157	157	215	215	215
<b>PHASE 4 TOTALS</b>	<b>74</b>	<b>215</b>	<b>215</b>	<b>215</b>	<b>2,089</b>	<b>2,089</b>	<b>2,089</b>	<b>157</b>	<b>157</b>	<b>157</b>	<b>215</b>	<b>215</b>	<b>215</b>
<b>Project Total Acreage</b>	<b>240</b>												
<b>Project Employment Totals</b>		<b>7,767</b>	<b>8,097</b>	<b>8,413</b>	<b>25,684</b>	<b>25,852</b>	<b>26,085</b>	<b>3,220</b>	<b>3,242</b>	<b>3,234</b>	<b>2,980</b>	<b>3,036</b>	<b>3,114</b>
<b>Project Residential Unit Totals</b>		<b>215</b>	<b>215</b>	<b>215</b>	<b>2,089</b>	<b>2,089</b>	<b>2,089</b>	<b>157</b>	<b>157</b>	<b>157</b>	<b>215</b>	<b>215</b>	<b>215</b>
<b>Project Totals</b>					<b>27,773</b>	<b>27,941</b>	<b>28,174</b>	<b>3,377</b>	<b>3,399</b>	<b>3,391</b>	<b>3,195</b>	<b>3,251</b>	<b>3,329</b>

## **Access Alternatives Considered**

Once the additional traffic related to this project was distributed onto the local road network it became evident that significant capacity problems would occur on Manchester Street and its tributaries. To reduce this impact, two alternatives were considered to reduce the project related peak hour trips that Manchester Street would be required to carry. These alternatives, which are discussed briefly below, included a highway connection linking I-89 at Bow Junction with the NH Route 106 and US Route 3 junction in Pembroke and a highway connection linking the projects internal circulation roads with Hall Street near the Concord Wastewater Treatment facility.

### ***I-89 Connector***

The concept of extending I-89 from Route 3A near Bow Junction to connect with NH Route 106 and US Route 3 in Pembroke was studied, albeit at a conceptual level of detail, in the late 1980's by RKG Associates and Kimball Chase Co., Inc. EARTH TECH conducted a brief review of topographic maps and conditions in the field and found that this connection is complicated by a number of factors that influence both feasibility and cost. The I-89 junction with Route 3A is located approximately 1,000 feet east of the I-93 overpass and associated interchange ramps and approximately 2,500 feet east of the I-89 Bow Mills interchange. The Merrimack River and the B&M Railroad that roughly parallel Route 3A are both located within 100 feet to the east of the I-89 and Route 3A junction. An I-89 to Route 106 connector, extending directly from the existing I-89 terminal, would need to vertically clear the B&M Railroad crossing by a minimum of 22 feet, provide grade separation with I-93 and Route 3A, maintain functionality of the I-93 and Bow Mills interchange ramps, and provide access to Route 3A. It appears that technical and economic feasibility depends upon identifying a less challenging routing for the connector.

Although from a transportation planning perspective this connector may make sense for system connectivity, the sheer magnitude of the required design, permitting and construction effort places it beyond the reasonable capabilities of the city's resources. If it indeed is an essential link to complete the state highway network, then it belongs in the State Ten Year Transportation Program. The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) requires the NH Department of Transportation to have a short and long range Statewide Transportation Plan for the purpose of identifying future transportation goals and objectives. Within this framework the Statewide Transportation Improvement Program is developed. This program is a three year project scheduling tool that is a component of the State Ten Year Transportation Program. To place this connector into the program will require the city to work with the Regional Planning Commission as it begins development of the Regional Transportation Improvement Program in the fall of even numbered years.

### ***Hall Street Connector***

As part of this study the concept of connecting the projects internal circulation roads with Hall Street, near the Concord Wastewater Treatment facility, was explored. A conceptual layout plan and profile were developed for both alternatives and the projects structural consultant, Greiner, refined the bridge locations and estimated construction costs.

The bridge location modifications recommended by Greiner are indicated as "preferred alignment" in their Bridge Type Study Estimates. EARTH TECH analyzed the impact this connector would have on trip distribution and found that its greatest effect would be on traffic oriented between the site and I-89, as well as areas served by Route 3A and local neighborhoods convenient to Hall Street. Based upon this review of the project's trip distribution with and without the Hall Street Connector it was found that the Connector would divert a sufficient volume of traffic to extend the life of improvements either under construction or programmed for Manchester Street.

### **Conclusions from Transportation Assessments**

A review of the trip distribution diagrams indicates that when the first development alternative is completed well over 2,000 vehicles per hour will be added to the segment of Manchester Street between the site and the I-93 Exit 13 interchange. This increase will outstrip the capacity provided by a future expansion of Manchester Street to a four-lane cross-section. The provision of a direct Hall Street connection to the site, with a bridge across the Merrimack River, should divert approximately 30% of the traffic expected to use the I-93 Exit 13 interchange and Manchester Street, and would eliminate the obvious need for further improvements to Manchester Street beyond the four-lane section with turn lanes. Travel demand management and general economies associated with the development density are likely to assist in limiting additional needs.

The second development alternative is lower in intensity, yet would also be expected to exceed the traffic-carrying capabilities of a four-lane Manchester Street. It is possible that travel demand management and site density economies would allow the entire development plan to be accommodated without the need for further improvements. The provision of a direct Hall Street connection would eliminate any questions regarding the ability of a four-lane Manchester Street to accommodate the traffic demands of the second development alternative. The completion of Phase 1 of either scenario will add peak hour traffic volumes representing the full amount of traffic growth anticipated in the design of the I-93 Exit 13 interchange improvements. The provision of the Hall Street connector by the end of Phase 1 would serve to maintain the integrity of the interchange design. This connector will definitely be needed by the mid-point of the development of Phase 2 under either development alternative.

These conclusions are consistent with those included within the Concord Transportation Master Plan Update (1990). Under the Buildout Scenario of the Update, capacity deficiencies on Manchester Street were still anticipated with a four-lane section in place, due to employment projections of over 8,800 employees for the Garvins Falls Urban Reserve Area. The subsequent sub-area analysis performed for the Garvins Falls area for this study indicates that the roadway network (including the four-lane section) would be able to accommodate employment levels only in the range of 3,800 employees in the Garvins Falls study area.

## **INFRA-STRUCTURE REQUIREMENTS AND COSTS BY PHASE**

The typical internal access and circulation roadway cross-section for the project will include paved 12 foot wide travel lanes and 5 foot wide shoulders with 5 foot wide sidewalks on each side. These roads will be constructed within a 60 foot (minimum) wide right-of-way. In addition to the internal roadways there are several off-site improvements that will be needed to accommodate the project's anticipated traffic. As part of the NHDOT I-93 Exit 13 project Manchester Street will be widened between Interstate 93 and Garvins Falls Road. Approximately 1,000 feet of Manchester Street, westerly from Garvins Falls Road, will be widened to two lanes with turn lanes. From there to I-93, Manchester Street will be widened to four lanes with turn lanes.

When approximately 40 percent of Phase 1 of this project is developed, Manchester Street will need to be widened to four lanes with turn lanes 1,000 feet west of Garvins Falls Road to NH Route 106. Approximately halfway through the development of Phase 2, a new bridge over the Merrimack River connecting with Hall Street would be needed along with several off-site improvements. Hall Street would need to be rehabilitated and widened to accommodate the increased level of traffic and to improve the quality of the road. A signalized intersection would be constructed where the bridge intersects with Hall Street and the existing traffic signal at Hall Street and Route 3A will require improvements to accommodate the project related turning movements. A bridge across the Soucook River and a connecting road to the NH Route 106 and U.S. Route 3 interchange will be required at the beginning of Phase 3. The existing traffic signal at the NH Route 106 and U.S. Route 3 interchange will require improvements to accommodate the new connector road and project related turning movements. The infra-structure requirements for each Phase of the Garvins Falls Urban reserve Area are discussed below and estimated construction costs for each Phase are presented in Table 11 (below).

### **PHASE 1**

Phase 1 will include the construction of the project's main entrance and main access boulevard off Manchester Street opposite Old Suncook Road. The construction of this entrance will require the addition of a traffic signal at the Manchester Street intersection to control traffic flow. In addition, Manchester Street will need to be upgraded from two multi-purpose lanes to a total of four travel lanes and one center turn lane. This upgrade of Manchester Street will begin just west of Garvins Falls Road and continue easterly to Airport Road. The existing Integra Drive will be extended to meet with the new boulevard. In addition to the main entrance traffic signals will also be required at the intersections of Integra Drive and Broken Bridge Road with Manchester Street.

As part of this construction, the intersection with Airport Road and Manchester Street will be relocated to align with Integra Drive. The existing Integra Drive water main will be extended through Phase 1 to Manchester Street opposite Old Suncook Road, forming a complete loop. A sewer main will be extended along the main boulevard, from Manchester Street opposite Old Suncook Road, to service the proposed Phase 1 lots and currently unserved lots along Integra Drive. A new collection system and pump station will be built on Broken Bridge Road with a force main conveying flows to Manchester Street at the Airport

Road intersection. The widening of Manchester Street with the aforementioned intersection improvements will be needed when approximately 40 percent of Phase 1 has been developed.

## **PHASE 2**

As part of Phase 2, the main boulevard will be extended southerly to meet with the existing Garvins Falls Road near the Passaconoway Club. The boulevard will then extend westerly from the northern portion of Phase 2 along the Merrimack River. The section that crosses the Merrimack River and connects with Hall Street will be built approximately mid-way through the Phase 2 build-out. To prevent project related through traffic in existing Garvins Falls neighborhoods, the northerly portion of Garvins Falls Road will be dead ended just south of the Concord Racquet Club. A connection with the main boulevard will be made at this location to allow local access. The section of Garvins Falls Road south of the main boulevard intersection will be reconstructed for the Phase 2 development. With the connection of the main boulevard to Hall Street, Hall Street will need to be reconstructed to accommodate the increased traffic flow. The intersection of the boulevard and Hall Street will need to be signalized and the existing signalized intersection of Hall Street and Route 3A will need to be upgraded to accommodate the project's turning movement demand.

The water system will be extended through this portion of the project and connected with the existing Garvins Falls Road water main. The water main will continue along the boulevard and the Merrimack River Bridge connecting with the Hall Street water main. A sewer pump station will be constructed near the intersection of the main boulevard and Garvins Falls Road to convey sanitary sewer flows from Phase 2, 3 and 4 across the Merrimack River Bridge to the waste water treatment plant on Hall Street. The water and sewer improvements, including the river crossing are required at the middle of Phase 2, except that the pump station and a temporary force main to the Phase 1 sewer system are required at the beginning of Phase 2.

## **PHASE 3**

The main road will be extended from its Phase 3 limit to connect with Route 3 opposite Route 106. This will provide a through connection from Hall Street to Route 3 and Route 106, and will decrease the traffic impacts on Manchester Street. The existing 3-way signalized intersection at Route 3 and Route 106 will need to be upgraded to a 4-way signalized intersection to accommodate the added roadway. Phase 4 will also complete the construction of the projects internal roadway and infra-structure. This involves extending the main boulevard from the intersection with Garvins Falls Road, at the northerly end of Phase 2, paralleling the Merrimack River and connecting before the bridge crossing the Merrimack River. Additional sewer and water mains will be constructed through this portion to service the lots along the road.

## **PHASE 4**

The Phase 4 loop road will be built early in Phase 4. The water main will continue from Garvins Falls Road at southerly end of Phase 2 and loop through Phase 4. A sewer pump station will be need to be installed to transport the sanitary sewer flows from Phase 4 to the sewer main constructed as part of Phase 2. Under the second development alternative, 10,350

feet of residential streets will be built instead of 3,500 feet of industrial park streets. The additional costs for this longer street length and longer water and sewer lines is \$670,500.

**Table 11: Construction Cost Estimates by Year and Phase**

YEAR OF PHASE	QUANTITY	UNIT	ITEM DESCRIPTION	UNIT COST	ITEM COST
<b>Phase 1 Construction Costs</b>					
1	7,300	LF	New Roadway	\$200	\$1,460,000
10	2,400	LF	New Roadway	\$200	\$480,000
1	7,300	LF	Sanitary Sewer Main	\$80	\$584,000
10	2,400	LF	Sanitary Sewer Main	\$80	\$192,000
1	5,300	LF	Water Main	\$80	\$424,000
10	2,400	LF	Water Main	\$80	\$192,000
10	1	LS	Sanitary Sewer Pump Station	\$280,000	\$280,000
1	3	LS	Signalized Intersection	\$150,000	\$450,000
5	1	LS	Manchester Street Upgrade (ROW not included)	\$3,000,000	\$3,000,000
<b>Total Phase 1 Cost</b>					<b>\$7,062,000</b>
<b>Phase 2 Construction Costs</b>					
1	3,400	LF	New Roadway	\$200	\$680,000
5	7,500	LF	New Roadway	\$200	\$1,500,000
1	7,400	LF	Sanitary Sewer Main	\$80	\$592,000
5	4,000	LF	Sanitary Sewer Main	\$80	\$320,000
1	1,800	LF	Sanitary Sewer Main for River Crossing	\$80	\$144,000
1	600	LF	Sanitary Sewer Main for River Crossing	\$150	\$90,000
1	3,400	LF	Water Main	\$80	\$272,000
5	4,000	LF	Water Main	\$80	\$320,000
1	1	LS	Sanitary Sewer Pump Station	\$280,000	\$280,000
1	1	LS	Signalized Intersections	\$150,000	\$150,000
5	1	LS	Hall Street Upgrade	\$500,000	\$500,000
5	1	LS	Merrimack River Bridge @ Hall Street	\$3,900,000	\$3,900,000
<b>Total Phase 2 Cost</b>					<b>\$8,748,000</b>
<b>Phase 3 Construction Costs</b>					
1	7,100	LF	New Roadway	\$200	\$1,420,000
1	7,100	LF	Sanitary Sewer Main	\$80	\$568,000
1	7,100	LF	Water Main	\$80	\$568,000
1	1	LS	Sanitary Sewer Pump Station	\$280,000	\$280,000
1	1	LS	Signalized Intersection	\$150,000	\$150,000
1	1	LS	Soucook River Bridge	\$1,400,000	\$1,400,000
<b>Total Phase 3 Cost</b>					<b>\$4,386,000</b>
<b>Phase 4 Construction Costs</b>					
1	9,000	LF	New Roadway	\$200	\$1,800,000
1	2,300	LF	New Roadway	\$200	\$460,000
1	6,200	LF	Sanitary Sewer Main	\$80	\$496,000
1	1	LS	Sanitary Sewer Pump Station	\$280,000	\$280,000
1	6,200	LF	Water Main	\$80	\$496,000
<b>Total Phase 4 Cost</b>					<b>\$3,532,000</b>
<b>Total Project Cost</b>					<b>\$23,728,000</b>

**Notes for Table 11:**

1. Year of phase represents start of construction for median growth
2. Cost estimates for Hall Street and Manchester Street do not include costs of Right of Way
3. Cost estimates have not been adjusted for inflation
4. New road costs include drainage and assume private utilities will be extended at no project cost
5. Additional costs for the residential option in Phase 4 total \$670,500

## FISCAL IMPACT ANALYSIS

The Garvins Falls study area contains about 1,000 acres of which 485 are developable. Of these 485 acres, 397 acres would be sold for development and 43 acres retained for public streets and 45 acres used for green space under the first development alternative. Under the second development alternative, 388 acres would be sold for development, 46 acres retained for public streets, and 51 acres used for green space. Detailed information on the 1995 budgets for the City of Concord and the Concord School District, demographic and economic information for Concord in 1995, and details of the two proposed development alternatives are included in the Appendices.

### **First Development Alternative**

Under the median projection for the first development alternative, there would be 9,566 jobs located on 397 acres and most of these jobs would be in office buildings. Over half of the site (211 acres) would be a first class office park, with the remaining 186 acres as a business park. The first class office park portion would also contain a hotel, a day care center and a fitness center.

The first class office park would have a minimum six acre lot size and most office buildings would be over 20,000 square feet in size. Buildings could be up to four stories tall, but the combined coverage ratio for buildings and parking would be a maximum of 60 percent. The business park would have a minimum two acre lot size and most buildings would be 5,000 to 15,000 square feet in size. Buildings could be up to three stories tall and the coverage ratio would be a maximum of 75 percent.

The first development alternative would cause significant off-site development in Concord. The businesses at Garvins Falls would have suppliers located elsewhere in Concord and the employees at Garvins Falls would shop for goods and services elsewhere in Concord. There are estimated to be an additional 6,091 jobs off-site elsewhere in Concord as a result of the on-site development, including 155 employees in City government and 281 at the Concord School District. This off-site impact includes employees of companies involved in on-site and off-site construction. There would be 4,806 new houses and apartments built elsewhere in Concord for residents who take these new jobs both in Garvins Falls and elsewhere in the City. Total population in the City would increase by 11,620 and there would be 1,991 additional students in the Concord School District and 230 new students in the Merrimack Valley School District.

The development described above, if it were to have happened in 1995, would have:

1. increased the City's equalized valuation by 60 percent;
2. increased employment in the City by 39.7 percent;
3. increased the total number of housing units by 29.6 percent;
4. increased City population by 30.1 percent;
5. increased the total number of resident students in Concord by 36.4 percent;
6. increased enrollment at the Concord School District by 36.5 percent; and
7. increased employment by City government of 33.7 percent.

Under the median growth scenario, the on-site development would have paid \$10,348,094 in additional property taxes annually to the City which also collects taxes on behalf of Merrimack County and the Concord School District. The City would have received \$192,311 in additional revenue annually from other taxes and fees from this on-site development, not including water and sewer fees. Out of the property taxes paid, the City would have forwarded \$612,607 to Merrimack County. The added cost to City government to provide City services (except for water and sewer) to this on-site development would have been \$1,728,511, including the salaries and benefits of 32 new City employees. This leaves a balance of \$8,199,287 in property taxes which can be forwarded to the Concord School District and/or used to reduce property taxes. There are no costs to the School District from the on-site development as there are no on-site students. Thus, if only on-site development is considered, this project has a very positive fiscal impact on the City and the Concord School District. This is true under the "worst case" projections for revenues and expenses as well.

As indicated above, there will also be major off-site development as a secondary impact of new business at Garvins Falls. Under the median projection, this off-site development would pay \$22,101,626 in property taxes to the City and an additional \$1,006,100 in other fees and taxes, not including water and sewer fees. Out of the property taxes collected by the City for this new development, the City would have forwarded \$1,308,416 to Merrimack County. The cost to City government to provide City services (except for water and sewer) to this new off-site development would have been \$6,432,843, including the salaries and benefits of 123 new City employees. This leaves a balance of \$15,366,467 in property taxes which can be forwarded to the Concord School District and/or used to reduce property taxes. The estimated cost to the Concord School District for educating the 1,991 new students from the off-site development is \$12,965,392, including the salaries and benefits of 281 new employees. The off-site property tax revenues available for the School District exceeds the costs (under this median scenario) by \$2,401,075.

By using 1995 data for property values, taxes paid, commuting patterns, household size, household employment, students per household, City costs per employee and household and Concord School District costs per student, a median growth projection as well as a "best case" projection and a "worst case" projection can be constructed. Provided below are the findings:

- ***Under the median growth projection*** the total fiscal impact produces \$10,600,362 more in revenues than it creates in costs. This could reduce the City and School District share of the tax rate by 19.8 percent. For a single family home assessed by the city in 1995 at \$100,000, this would mean a reduction in property taxes of \$668.
- ***Under the "best case" projection***, the revenues would be \$17,180,984 higher than the costs, or a reduction of 32.1 percent in the City and School District share of the tax rate, a savings in taxes of \$1,082 for a \$100,000 single family home.
- ***Under the "worst case" projection***, the revenues would be only \$29,591 higher than the costs, or a reduction of 0.1 percent in the City and School District share of the tax rate, a savings of only \$3 in property taxes for a \$100,000 single family home.

***The Garvins Falls Reserve Area development project would not be worthwhile for the City to support under the "worst case" projection. The "worst case" projection could occur if two of the following take place:***

1. property values are ten percent lower than under the median projection;
2. less than 56 percent of the job-holders are out-commuters (the current rate is estimated at 64 percent);
3. the average number of children per family increases by 20 percent;
4. jobs in Concord for resident Concord households decreases by ten percent;
5. the cost of City government per household increases by 20 percent; or
6. the cost per student is 20 percent higher than the figure of \$7,333 used in the analysis for the "worst case" projection.

### **Second Development Alternative**

Under the median projection for the second development alternative, there would be 7,689 jobs and 215 houses located on 388 acres. Most of these jobs would be in office buildings. Over half of the site (211 acres) would be a first class office park, with 112 acres as a business park and 65 acres in the residential area. The first class office park portion would also contain a small neighborhood retail and services center, a hotel, a day care center and a fitness center.

The first class office park would have a minimum six acre lot size and most office buildings would be over 20,000 square feet in size. Buildings could be up to four stories tall, but the combined coverage ratio for buildings and parking would be a maximum of 60 percent. The business park would have a minimum two acre lot size and most buildings would be 5,000 to 15,000 square feet in size. Buildings could be up to three stories tall and the coverage ratio would be a maximum of 75 percent. The residential area would include 120 two and three bedroom houses in a traditional neighborhood design on 7,500 square foot lots and 95 three and four bedroom houses on 20,000 square foot lots in a suburban style area nearest the golf course.

The second development alternative would also cause significant off-site development, but at only 76 percent of the level for off-site development projected to result from the first development alternative. There are estimated to be an additional 4,674 jobs elsewhere in Concord as a result of the on-site development, including 130 employees in City government and 207 new employees at the Concord School District. This off-site impact also includes employees of companies involved in the on-site and off-site construction.

There would be 3,628 new houses and apartments built elsewhere in Concord for residents who take these new on-site and off-site jobs. Total population in the City would increase by 9,333 and there would be 1,606 additional students in the Concord School District and 186 new students in the Merrimack Valley School District.

The development described above, if it were to have happened in 1995, would have:

1. increased the City's equalized valuation by 49.2 percent;
2. increased employment in the City by 31.8 percent;
3. increased the total number of housing units by 23.7 percent;

4. increased City population by 24.2 percent;
5. increased the total number of resident students in Concord by 29.3 percent;
6. increased enrollment at the Concord School District by 29.4 percent; and
7. increased employment by City government of 28.2 percent.

Under the median growth scenario, the on-site development would have paid \$9,755,252 in additional property taxes annually to the City. The City would have received \$201,580 in additional revenue annually from other taxes and fees from this on-site development, not including water and sewer fees. Out of the property taxes collected, the City would have forwarded \$577,522 to Merrimack County. The cost to City government to provide City services (except for water and sewer) to this on-site development would have been \$1,734,116, including the salaries and benefits of 33 new City employees. This leaves a balance of \$7,645,205 in property taxes which can be forwarded to the Concord School District and/or used to reduce property taxes. There are estimated to be 103 students at the Concord School District from on-site development at a cost of \$670,736, leaving a balance of \$6,974,469. Thus, if only on-site development is considered, this project has a very positive fiscal impact on the City and the Concord School District. This is also true under the "worst case" projections for revenues and expenses.

As indicated above, there is also major off-site development which is a direct result of the on-site development of Garvins Falls. Under the median projection, this off-site development under the second development alternative would pay \$16,838,898 in property taxes to the City and an additional \$774,400 in other fees and taxes, not including water and sewer fees. Out of the property taxes collected for this off-site development, the City would have forwarded to Merrimack County \$996,863. The cost to City government to provide City services (except for water and sewer) to this off-site development would have been \$5,095,252, including the salaries and benefits of 97 new City employees. This leaves a balance of \$11,521,183 in property taxes which can be forwarded to the Concord School District and/or used to reduce property taxes. The estimated cost to the Concord School District for educating the 1,503 new students from the off-site development is \$9,787,536. Total new employment at the Concord School District for on-site and off-site residential development is estimated to be 207 employees. The off-site property tax revenues to the School District exceeds the costs (under this median scenario) by \$1,733,647.

By using 1995 data for property values, taxes paid, commuting patterns, household size, household employment, students per household, City costs per employee and household and Concord School District costs per student, a median growth projection as well as a "best case" projection and a "worst case" projection can be constructed. Provided below are the findings:

**Under the median growth projection,** the total fiscal impact produces \$8,708,116 more in revenues than it creates in costs. This could reduce the City and School District share of the tax rate by 16.3 percent. This would decrease property taxes on a single family home assessed by the City in 1995 at \$100,000 by \$550.

**Under the "best case" projection,** the revenues would be \$14,080,981 higher than the costs, or a reduction of 26.3 percent in the City and School District share of the tax rate, resulting in a reduction in taxes on a \$100,000 single family home of \$887.

Under the "worst case" projection, the revenues would be only \$52,740 higher than the costs, or a reduction of 0.1 percent in the City and School District share of the tax rate, resulting in a savings of only \$3 in property taxes on a \$100,000 single family home.

***The Garvins Falls Reserve Area development project would not be worthwhile for the City to support under the "worst case" projection. The "worst case" projection could occur if two of the following take place:***

1. property values are ten percent lower than under the median projection;
2. less than 56 percent of the job-holders are out-commuters (the current rate is estimated at 64 percent);
3. the average number of children per family increases by 20 percent;
4. jobs in Concord for resident Concord households decreases by ten percent;
5. the cost of City government per household increases by 20 percent; or
6. the cost per student is 20 percent higher than the figure of \$7,333 used in the analysis for the "worst case" projection.

## **Conclusion**

***Under both the median and "best case" projections for the development of Garvins Falls, either of the two development alternatives (principally as a first class office park) would have a positive fiscal impact for the City and its taxpayers.*** Only a very small share (less than four percent) of the total jobs which result from this project would be located in tax-free facilities in contrast with the current situation where over one-fourth of all employment in the City is in tax free facilities. In the above analysis it has been assumed that the private sector will pay for all necessary off-site road improvements through a development impact fee and that off-site water and sewer improvements and operations will be paid by fees and charges levied under those enterprise funds. The cost of maintaining and replacing on-site roads has been included in the general services portion of the city operating budget in the above analysis. The City may need to establish a tax increment financing district to pay for the cost of improvements to Manchester Street, Hall Street, and the new bridge over the Merrimack River if the project is to occur, as discussed in the Cash Flow Analysis chapter. In this situation, the payment of the construction bonds by the tax increment on new development served by these facilities might cause property taxes elsewhere in the City not to decline as much as shown above in this chapter.

***The increase in population and student enrollments in comparison with the employment increase under the "worst case" projection would not be positive enough to encourage the City to support this development.*** The underlying economic forces which would cause the "worst case" projection to occur would also most likely cause the private sector to either not start this project or to abandon it. These forces would include: increases in energy costs which would cause major life style changes, much higher interest rates than at present, further major decreases in average annual household income, depreciating property values, and long term job creation at an annual rate below one percent in the Concord labor market area. These events would be comparable to a major economic depression nationally and, while possible, are not likely to occur.

The second development alternative has proportionally less impact on traffic, employment and housing elsewhere in Concord and has slightly more green space in comparison with the first development alternative.

It should be noted that under the current MB, industrial park, zoning for this area there could be even greater levels of on-site development with 12,000 to 15,000 jobs in the Garvins Falls Urban Reserve and much higher off-site development impacts than discussed above.

This project and its on-site and off-site impacts will result in:

1. a city with over 50,000 people;
2. a city with over 55,000 jobs;
3. four or five new schools;
4. significant traffic volumes not only on Route 3 and Hall Street, but also in other parts of the City;
5. development near Garvins Falls; and
6. the possibility of a 16 to 20 percent decrease in the property tax rate.

It is important to realize that these impacts will occur over at least a fifty year period. However, other development sites in Concord, including the downtown, the rail yard, Loudon Road, and Route 106 will also be developed further during this time period.

## CASH FLOW ANALYSIS

### Introduction

Current land values for fully-serviced business and office park land of \$42,000 to \$80,000 per acre are not high enough to support the extensive infrastructure development needed both on-site and off-site for this development to move forward. Existing developable lots on City streets and with water and sewer services are available elsewhere in Concord at prices which are more attractive. Should the market price for raw developable land in the Garvins Falls study area increase by 35 to 40 percent, the investment in infrastructure can be supported by a patient developer, provided the City pays for all off-site improvements to current City streets and one-half of the on-site water and sewer improvements.

Even at \$75,000 to \$110,000 per acre this development cannot support major investments in upgrading existing City streets off-site. However, at these higher land values, the City should be able to obtain enough property tax revenues that a tax increment finance district can be used to fund these off-site improvements. Including the cost of widening Manchester Street to five lanes between Old Turnpike Road and Airport Road (estimated at \$3,000,000) as a development cost solely for the Garvins Falls development to pay for from its cash flow in the tenth year of the project would cause this project not to move forward under any scenario. More details on the infrastructure scheduling and costs are provided in the infrastructure chapter contained in this report.

### Project Feasibility

The cash flow analysis for Phase 1 and the first half of Phase 2 at Garvins Falls (see Tables 12 and 13) shows that this project cannot be undertaken by a private developer at current land prices, even if the City were to pay for all off-site improvements and one-half of the on-site water and sewer improvements. At current land price levels, the project never gets out of a deficit position during its first 30 years and faces a significant infrastructure cost in the Year 31.

The cash flow analysis with much higher land prices for Phase 1 (\$75,000 per acre) and the first half of Phase 2 (\$110,000 per acre) at Garvins Falls (see Tables 14 and 15) shows that this project might be undertaken by a private developer, but only if the City were to pay for all off-site improvements and one-half of the on-site water and sewer improvements. There is a significant investment of over six million dollars (in 1996 dollars) in infrastructure costs which must be made in Year 31, which cannot be supported unless the City pays for one-half of on-site water and sewer costs and off-site improvements to Manchester Street and Hall Street. The six million dollar investment in Year 31 includes the road from Phase 2 to Hall Street with a new bridge over the Merrimack River and a sewer line under the Merrimack River to the Wastewater Treatment Facility. Thus, there is a crucial decision point before Year 31 which sets the stage for developing the second half of Phase 2 and all of Phases 3 and 4.

Table 16 shows the cash flow for the full build-out under the first development alternative with the higher land prices and with the City paying for one-half of the on-site water and sewer costs and the full cost of improvements to Manchester and Hall Streets. Table 17

shows the cash flow for the full build-out under the second development alternative with the higher land prices and with the City paying for one-half of the on-site water and sewer costs and the full cost of improvements to Manchester and Hall Streets.

The cash flow appears to be slightly more favorable for the first development alternative as the Phase 4 residential area under the second development alternative requires more infrastructure and thus generates less profit per acre. The project does not become really profitable for the developer until about the fiftieth year of construction under either development alternative, even with the higher land values because of the high up-front investment in on-site infrastructure.

### **Summary**

In conclusion, the current market for office and industrial land does not support development in the Garvins Falls study area except along existing streets such as Integra Drive and Broken Bridge Road. Much higher land prices are needed if this project is to move forward. The City will need to carefully consider how off-site road improvements are to be funded if this project is to move ahead once market demand and land price levels increase. Clearly, a tax increment finance district would be more favorable for the developer and be more likely to result in the construction of a first class office park than if impact fees are to be charged to pay for off-site road improvements and on-site water and sewer improvements. The land values used in Tables 12 and 13 were the same values used in the Fiscal Impact Analysis chapter. Though, if the 35 to 40 percent higher land values used in Tables 14 through 17 can be obtained in the marketplace, the City could adopt a tax increment finance district at Garvins Falls to pay for all off-site costs and half of the on-site water and sewer construction and could still achieve the property tax reductions projected in the Fiscal Impact Analysis.

### **Explanation of Tables 12 through 17**

In Tables 12 through 17, the first column shows the year after the beginning of the development. The second column shows the on-site infrastructure costs to be paid by the developer. It has been assumed that these costs increase by three percent per year. The third column is the final balance for the end of the previous year. The fourth column shows the value of the land sold each year by the developer. This value increases by three percent per year during the first ten years and by four percent per year thereafter.

The fifth column shows the cost to the developer of developing the land, including property taxes, land use change taxes and brokerage fees. It does not include estimates of state and federal business profits taxes. The sixth column is the total of columns two through five for that year. The seventh column shows the interest paid on loans (at 9.5 percent per year) or received on deposits (at 6.5 percent per year). The eighth column is the total of the sixth and seventh columns for each year.

Table 12 shows the cash flow for the project at current land prices and with the developer paying for all on-site infrastructure costs. This includes new signalized intersections; on-site roads, water and sewer; and the roads and bridges needed to reach Route 106 and Hall Street. It does not include improvements to Manchester Street and Hall Street, estimated at \$3.0 million in today's dollars.

Table 13 is the same as Table 12 except that the City pays for one-half of the on-site water and sewer facilities costs.

Table 14 is the same as Table 12 except that higher land values are used.

Table 15 is the same as Table 14 except that the City pays for one-half of the on-site water and sewer facilities costs.

Table 16 shows the median development scenario for the first development alternative, but with the higher land prices and with the City paying for one-half of the on-site water and sewer facilities costs. It is an extension of Table 15. If the rate of development were faster, the project would be more profitable for the developer than shown in Table 5. If the rate of development were slower, the project would be less profitable for the developer than shown in Table 5.

Table 17 shows the median development scenario for the second development alternative, but with the higher land prices and with the City paying for one-half of the on-site water and sewer facilities costs. It is an extension of Table 15. If the rate of development were faster, the project would be more profitable for the developer than shown in Table 6. If the rate of development were slower, the project would be less profitable for the developer than shown in Table 6.

Table 12: Cash Flow Analysis for First and Second Development Alternatives – Current Land Value \*

Phase	Year	Capital Cost	Balance Carried	Receipts	Other Costs	Balance	Interest	Final Balance
One	1	\$2.913	\$0.000	\$0.180	\$0.036	(\$2.769)	\$0.000	(\$2.769)
	2	\$0.000	(\$2.769)	\$0.185	\$0.037	(\$2.621)	(\$0.263)	(\$2.884)
	3	\$0.000	(\$2.884)	\$0.191	\$0.038	(\$2.731)	(\$0.274)	(\$3.005)
	4	\$0.000	(\$3.005)	\$0.197	\$0.039	(\$2.848)	(\$0.285)	(\$3.133)
	5	\$0.000	(\$3.133)	\$0.203	\$0.041	(\$2.971)	(\$0.298)	(\$3.269)
	6	\$0.000	(\$3.269)	\$0.209	\$0.042	(\$3.102)	(\$0.311)	(\$3.412)
	7	\$0.000	(\$3.412)	\$0.215	\$0.043	(\$3.240)	(\$0.324)	(\$3.564)
	8	\$0.000	(\$3.564)	\$0.221	\$0.044	(\$3.387)	(\$0.339)	(\$3.726)
	9	\$0.000	(\$3.726)	\$0.228	\$0.046	(\$3.543)	(\$0.354)	(\$3.897)
	10	\$1.493	(\$3.897)	\$0.235	\$0.047	(\$5.203)	(\$0.370)	(\$5.573)
	11	\$0.000	(\$5.573)	\$0.244	\$0.049	(\$5.377)	(\$0.529)	(\$5.907)
	12	\$0.000	(\$5.907)	\$0.254	\$0.051	(\$5.704)	(\$0.561)	(\$6.265)
	13	\$0.000	(\$6.265)	\$0.264	\$0.053	(\$6.053)	(\$0.595)	(\$6.649)
	14	\$0.000	(\$6.649)	\$0.275	\$0.055	(\$6.429)	(\$0.632)	(\$7.060)
	15	\$0.000	(\$7.060)	\$0.286	\$0.057	(\$6.832)	(\$0.671)	(\$7.503)
	16	\$0.000	(\$7.503)	\$0.297	\$0.059	(\$7.265)	(\$0.713)	(\$7.978)
	17	\$0.000	(\$7.978)	\$0.309	\$0.062	(\$7.730)	(\$0.758)	(\$8.488)
	18	\$0.000	(\$8.488)	\$0.321	\$0.064	(\$8.231)	(\$0.806)	(\$9.037)
	19	\$0.000	(\$9.037)	\$0.334	\$0.067	(\$8.770)	(\$0.859)	(\$9.629)
	20	\$0.000	(\$9.629)	\$0.348	\$0.070	(\$9.350)	(\$0.915)	(\$10.265)
	21	\$0.000	(\$10.265)	\$0.362	\$0.072	(\$9.976)	(\$0.975)	(\$10.951)
	22	\$0.000	(\$10.951)	\$0.376	\$0.075	(\$10.650)	(\$1.040)	(\$11.691)
	23	\$0.000	(\$11.691)	\$0.391	\$0.078	(\$11.378)	(\$1.111)	(\$12.488)
	24	\$0.000	(\$12.488)	\$0.407	\$0.081	(\$12.163)	(\$1.186)	(\$13.349)
	25	\$0.000	(\$13.349)	\$0.423	\$0.085	(\$13.011)	(\$1.268)	(\$14.279)
	26	\$0.000	(\$14.279)	\$0.440	\$0.088	(\$13.927)	(\$1.357)	(\$15.284)
Two	27	\$4.763	(\$15.284)	\$0.956	\$0.191	(\$19.282)	(\$1.452)	(\$20.734)
	28	\$0.000	(\$20.734)	\$0.994	\$0.199	(\$19.939)	(\$1.970)	(\$21.908)
	29	\$0.000	(\$21.908)	\$1.034	\$0.207	(\$21.081)	(\$2.081)	(\$23.162)
	30	\$0.000	(\$23.162)	\$1.075	\$0.215	(\$22.302)	(\$2.200)	(\$24.503)

**Notes for Table 12:**

- 1) Phase 1 is \$42,000 per acre and Phase 2 is \$80,000 per acre, adjusted for inflation.
- 2) \* Amounts shown in millions of dollars.

**Table 13: Cash Flow Analysis for First and Second Development Alternatives  
Current Land Value and Shared Costs \***

Phase	Year	Capital Cost	Balance Carried	Receipts	Other Costs	Balance	Interest	Final Balance
One	1	\$2.409	\$0.000	\$0.180	\$0.036	(\$2.265)	\$0.000	(\$2.265)
	2	\$0.000	(\$2.265)	\$0.185	\$0.037	(\$2.117)	(\$0.215)	(\$2.332)
	3	\$0.000	(\$2.332)	\$0.191	\$0.038	(\$2.179)	(\$0.222)	(\$2.401)
	4	\$0.000	(\$2.401)	\$0.197	\$0.039	(\$2.243)	(\$0.228)	(\$2.471)
	5	\$0.000	(\$2.471)	\$0.203	\$0.041	(\$2.309)	(\$0.235)	(\$2.544)
	6	\$0.000	(\$2.544)	\$0.209	\$0.042	(\$2.377)	(\$0.242)	(\$2.619)
	7	\$0.000	(\$2.619)	\$0.215	\$0.043	(\$2.447)	(\$0.249)	(\$2.696)
	8	\$0.000	(\$2.696)	\$0.221	\$0.044	(\$2.519)	(\$0.256)	(\$2.775)
	9	\$0.000	(\$2.775)	\$0.228	\$0.046	(\$2.592)	(\$0.264)	(\$2.856)
	10	\$1.060	(\$2.856)	\$0.235	\$0.047	(\$3.728)	(\$0.271)	(\$3.999)
	11	\$0.000	(\$3.999)	\$0.244	\$0.049	(\$3.804)	(\$0.380)	(\$4.184)
	12	\$0.000	(\$4.184)	\$0.254	\$0.051	(\$3.980)	(\$0.397)	(\$4.378)
	13	\$0.000	(\$4.378)	\$0.264	\$0.053	(\$4.167)	(\$0.416)	(\$4.582)
	14	\$0.000	(\$4.582)	\$0.275	\$0.055	(\$4.363)	(\$0.435)	(\$4.798)
	15	\$0.000	(\$4.798)	\$0.286	\$0.057	(\$4.569)	(\$0.456)	(\$5.025)
	16	\$0.000	(\$5.025)	\$0.297	\$0.059	(\$4.787)	(\$0.477)	(\$5.265)
	17	\$0.000	(\$5.265)	\$0.309	\$0.062	(\$5.018)	(\$0.500)	(\$5.518)
	18	\$0.000	(\$5.518)	\$0.321	\$0.064	(\$5.261)	(\$0.524)	(\$5.785)
	19	\$0.000	(\$5.785)	\$0.334	\$0.067	(\$5.517)	(\$0.550)	(\$6.067)
	20	\$0.000	(\$6.067)	\$0.348	\$0.070	(\$5.789)	(\$0.576)	(\$6.365)
	21	\$0.000	(\$6.365)	\$0.362	\$0.072	(\$6.076)	(\$0.605)	(\$6.681)
	22	\$0.000	(\$6.681)	\$0.376	\$0.075	(\$6.380)	(\$0.635)	(\$7.015)
	23	\$0.000	(\$7.015)	\$0.391	\$0.078	(\$6.702)	(\$0.666)	(\$7.368)
	24	\$0.000	(\$7.368)	\$0.407	\$0.081	(\$7.043)	(\$0.700)	(\$7.743)
	25	\$0.000	(\$7.743)	\$0.423	\$0.085	(\$7.404)	(\$0.736)	(\$8.140)
	26	\$0.000	(\$8.140)	\$0.440	\$0.088	(\$7.788)	(\$0.773)	(\$8.561)
Two	27	\$3.276	(\$8.561)	\$0.956	\$0.191	(\$11.072)	(\$0.813)	(\$11.886)
	28	\$0.000	(\$11.886)	\$0.994	\$0.199	(\$11.090)	(\$1.129)	(\$12.219)
	29	\$0.000	(\$12.219)	\$1.034	\$0.207	(\$11.392)	(\$1.161)	(\$12.553)
	30	\$0.000	(\$12.553)	\$1.075	\$0.215	(\$11.693)	(\$1.193)	(\$12.885)

**Notes for Table 13:**

- 1) Phase 1 is \$42,000 per acre and Phase 2 is \$80,000 per acre, adjusted for inflation.
- 2) \* Amounts shown in millions of dollars.
- 3) City pays half of all water and sewer construction costs.

Table 14: Cash Flow Analysis for First and Second Development Alternatives – Higher Land Values \*

Phase	Year	Capital Cost	Balance Carried	Receipts	Other Costs	Balance	Interest	Final Balance
<b>One</b>	1	\$2.913	\$0.000	\$0.321	\$0.064	(\$2.656)	\$0.000	(\$2.656)
	2	\$0.000	(\$2.656)	\$0.331	\$0.066	(\$2.392)	(\$0.252)	(\$2.644)
	3	\$0.000	(\$2.644)	\$0.341	\$0.068	(\$2.372)	(\$0.251)	(\$2.623)
	4	\$0.000	(\$2.623)	\$0.351	\$0.070	(\$2.342)	(\$0.249)	(\$2.591)
	5	\$0.000	(\$2.591)	\$0.361	\$0.072	(\$2.302)	(\$0.246)	(\$2.548)
	6	\$0.000	(\$2.548)	\$0.372	\$0.074	(\$2.251)	(\$0.242)	(\$2.493)
	7	\$0.000	(\$2.493)	\$0.383	\$0.077	(\$2.186)	(\$0.237)	(\$2.423)
	8	\$0.000	(\$2.423)	\$0.395	\$0.079	(\$2.107)	(\$0.230)	(\$2.337)
	9	\$0.000	(\$2.337)	\$0.407	\$0.081	(\$2.012)	(\$0.222)	(\$2.234)
	10	\$1.493	(\$2.234)	\$0.419	\$0.084	(\$3.392)	(\$0.212)	(\$3.604)
	11	\$0.000	(\$3.604)	\$0.436	\$0.087	(\$3.256)	(\$0.342)	(\$3.598)
	12	\$0.000	(\$3.598)	\$0.453	\$0.091	(\$3.236)	(\$0.342)	(\$3.578)
	13	\$0.000	(\$3.578)	\$0.471	\$0.094	(\$3.201)	(\$0.340)	(\$3.541)
	14	\$0.000	(\$3.541)	\$0.490	\$0.098	(\$3.149)	(\$0.336)	(\$3.485)
	15	\$0.000	(\$3.485)	\$0.510	\$0.102	(\$3.077)	(\$0.331)	(\$3.409)
	16	\$0.000	(\$3.409)	\$0.530	\$0.106	(\$2.985)	(\$0.324)	(\$3.308)
	17	\$0.000	(\$3.308)	\$0.551	\$0.110	(\$2.867)	(\$0.314)	(\$3.182)
	18	\$0.000	(\$3.182)	\$0.573	\$0.115	(\$2.723)	(\$0.302)	(\$3.025)
	19	\$0.000	(\$3.025)	\$0.596	\$0.119	(\$2.549)	(\$0.287)	(\$2.836)
	20	\$0.000	(\$2.836)	\$0.620	\$0.124	(\$2.340)	(\$0.269)	(\$2.609)
	21	\$0.000	(\$2.609)	\$0.645	\$0.129	(\$2.094)	(\$0.248)	(\$2.341)
	22	\$0.000	(\$2.341)	\$0.671	\$0.134	(\$1.805)	(\$0.222)	(\$2.027)
	23	\$0.000	(\$2.027)	\$0.697	\$0.139	(\$1.470)	(\$0.193)	(\$1.662)
	24	\$0.000	(\$1.662)	\$0.725	\$0.145	(\$1.082)	(\$0.158)	(\$1.240)
	25	\$0.000	(\$1.240)	\$0.754	\$0.151	(\$0.636)	(\$0.118)	(\$0.754)
	26	\$0.000	(\$0.754)	\$0.784	\$0.157	(\$0.127)	(\$0.072)	(\$0.198)
<b>Two</b>	27	\$4.763	(\$0.198)	\$1.315	\$0.263	(\$3.909)	(\$0.019)	(\$3.928)
	28	\$0.000	(\$3.928)	\$1.368	\$0.274	(\$2.834)	(\$0.373)	(\$3.207)
	29	\$0.000	(\$3.207)	\$1.422	\$0.284	(\$2.069)	(\$0.305)	(\$2.374)
	30	\$0.000	(\$2.374)	\$1.479	\$0.296	(\$1.191)	(\$0.226)	(\$1.416)

**Notes for Table 13:**

- 1) Phase 1 is \$75,000 per acre and Phase 2 is \$110,000 per acre, adjusted for inflation.
- 2) \* Amounts shown in millions of dollars.

**Table 15: Cash Flow Analysis for First and Second Development Alternatives  
Higher Land Value and Shared Costs \***

Phase	Year	Capital Cost	Balance Carried	Receipts	Other Costs	Balance	Interest	Final Balance
<b>One</b>	1	\$2.409	\$0.000	\$0.321	\$0.064	(\$2.152)	\$0.000	(\$2.152)
	2	\$0.000	(\$2.152)	\$0.331	\$0.066	(\$1.888)	(\$0.204)	(\$2.092)
	3	\$0.000	(\$2.092)	\$0.341	\$0.068	(\$1.820)	(\$0.199)	(\$2.018)
	4	\$0.000	(\$2.018)	\$0.351	\$0.070	(\$1.738)	(\$0.192)	(\$1.930)
	5	\$0.000	(\$1.930)	\$0.361	\$0.072	(\$1.641)	(\$0.183)	(\$1.824)
	6	\$0.000	(\$1.824)	\$0.372	\$0.074	(\$1.526)	(\$0.173)	(\$1.699)
	7	\$0.000	(\$1.699)	\$0.383	\$0.077	(\$1.393)	(\$0.161)	(\$1.554)
	8	\$0.000	(\$1.554)	\$0.395	\$0.079	(\$1.238)	(\$0.148)	(\$1.386)
	9	\$0.000	(\$1.386)	\$0.407	\$0.081	(\$1.061)	(\$0.132)	(\$1.192)
	10	\$1.060	(\$1.192)	\$0.419	\$0.084	(\$1.917)	(\$0.113)	(\$2.031)
	11	\$0.000	(\$2.031)	\$0.436	\$0.087	(\$1.682)	(\$0.193)	(\$1.875)
	12	\$0.000	(\$1.875)	\$0.453	\$0.091	(\$1.513)	(\$0.178)	(\$1.691)
	13	\$0.000	(\$1.691)	\$0.471	\$0.094	(\$1.314)	(\$0.161)	(\$1.475)
	14	\$0.000	(\$1.475)	\$0.490	\$0.098	(\$1.083)	(\$0.140)	(\$1.223)
	15	\$0.000	(\$1.223)	\$0.510	\$0.102	(\$0.815)	(\$0.116)	(\$0.931)
	16	\$0.000	(\$0.931)	\$0.530	\$0.106	(\$0.507)	(\$0.088)	(\$0.596)
	17	\$0.000	(\$0.596)	\$0.551	\$0.110	(\$0.155)	(\$0.057)	(\$0.211)
	18	\$0.000	(\$0.211)	\$0.573	\$0.115	\$0.247	(\$0.020)	\$0.227
	19	\$0.000	\$0.227	\$0.596	\$0.119	\$0.704	\$0.015	\$0.719
	20	\$0.000	\$0.719	\$0.620	\$0.124	\$1.215	\$0.047	\$1.261
	21	\$0.000	\$1.261	\$0.645	\$0.129	\$1.777	\$0.082	\$1.859
	22	\$0.000	\$1.859	\$0.671	\$0.134	\$2.396	\$0.121	\$2.517
	23	\$0.000	\$2.517	\$0.697	\$0.139	\$3.074	\$0.164	\$3.238
	24	\$0.000	\$3.238	\$0.725	\$0.145	\$3.818	\$0.210	\$4.029
	25	\$0.000	\$4.029	\$0.754	\$0.151	\$4.632	\$0.262	\$4.894
	26	\$0.000	\$4.894	\$0.784	\$0.157	\$5.522	\$0.318	\$5.840
<b>Two</b>	27	\$3.276	\$5.840	\$1.315	\$0.263	\$3.616	\$0.380	\$3.995
	28	\$0.000	\$3.995	\$1.368	\$0.274	\$5.089	\$0.260	\$5.349
	29	\$0.000	\$5.349	\$1.422	\$0.284	\$6.487	\$0.348	\$6.835
	30	\$0.000	\$6.835	\$1.479	\$0.296	\$8.018	\$0.444	\$8.462

**Notes for Table 15:**

- 1) Phase 1 is \$75,000 per acre and Phase 2 is \$110,000 per acre, adjusted for inflation.
- 2) \* Amounts shown in millions of dollars.
- 3) City pays half of all water and sewer construction costs.

Table 16: Cash Flow Analysis for First Development Alternative – Higher Land Value and Shared Costs \*

Phase	Year	Capital Cost	Balance Carried	Receipts	Other Costs	Balance	Interest	Final Balance
<b>One</b>	1	\$2.409	\$0.000	\$0.321	\$0.064	(\$2.152)	\$0.000	(\$2.152)
	2	\$0.000	(\$2.152)	\$0.331	\$0.066	(\$1.888)	(\$0.204)	(\$2.092)
	3	\$0.000	(\$2.092)	\$0.341	\$0.068	(\$1.820)	(\$0.199)	(\$2.018)
	4	\$0.000	(\$2.018)	\$0.351	\$0.070	(\$1.738)	(\$0.192)	(\$1.930)
	5	\$0.000	(\$1.930)	\$0.361	\$0.072	(\$1.641)	(\$0.183)	(\$1.824)
	6	\$0.000	(\$1.824)	\$0.372	\$0.074	(\$1.526)	(\$0.173)	(\$1.699)
	7	\$0.000	(\$1.699)	\$0.383	\$0.077	(\$1.393)	(\$0.161)	(\$1.554)
	8	\$0.000	(\$1.554)	\$0.395	\$0.079	(\$1.238)	(\$0.148)	(\$1.386)
	9	\$0.000	(\$1.386)	\$0.407	\$0.081	(\$1.061)	(\$0.132)	(\$1.192)
	10	\$1.060	(\$1.192)	\$0.419	\$0.084	(\$1.917)	(\$0.113)	(\$2.031)
	11	\$0.000	(\$2.031)	\$0.436	\$0.087	(\$1.682)	(\$0.193)	(\$1.875)
	12	\$0.000	(\$1.875)	\$0.453	\$0.091	(\$1.513)	(\$0.178)	(\$1.691)
	13	\$0.000	(\$1.691)	\$0.471	\$0.094	(\$1.314)	(\$0.161)	(\$1.475)
	14	\$0.000	(\$1.475)	\$0.490	\$0.098	(\$1.083)	(\$0.140)	(\$1.223)
	15	\$0.000	(\$1.223)	\$0.510	\$0.102	(\$0.815)	(\$0.116)	(\$0.931)
	16	\$0.000	(\$0.931)	\$0.530	\$0.106	(\$0.507)	(\$0.088)	(\$0.596)
	17	\$0.000	(\$0.596)	\$0.551	\$0.110	(\$0.155)	(\$0.057)	(\$0.211)
	18	\$0.000	(\$0.211)	\$0.573	\$0.115	\$0.247	(\$0.020)	\$0.227
	19	\$0.000	\$0.227	\$0.596	\$0.119	\$0.704	\$0.015	\$0.719
	20	\$0.000	\$0.719	\$0.620	\$0.124	\$1.215	\$0.047	\$1.261
	21	\$0.000	\$1.261	\$0.645	\$0.129	\$1.777	\$0.082	\$1.859
	22	\$0.000	\$1.859	\$0.671	\$0.134	\$2.396	\$0.121	\$2.517
	23	\$0.000	\$2.517	\$0.697	\$0.139	\$3.074	\$0.164	\$3.238
	24	\$0.000	\$3.238	\$0.725	\$0.145	\$3.818	\$0.210	\$4.029
	25	\$0.000	\$4.029	\$0.754	\$0.151	\$4.632	\$0.262	\$4.894
	26	\$0.000	\$4.894	\$0.784	\$0.157	\$5.522	\$0.318	\$5.840
<b>Two</b>	27	\$3.276	\$5.840	\$1.315	\$0.263	\$3.616	\$0.380	\$3.995
	28	\$0.000	\$3.995	\$1.368	\$0.274	\$5.089	\$0.260	\$5.349
	29	\$0.000	\$5.349	\$1.422	\$0.284	\$6.487	\$0.348	\$6.835
	30	\$0.000	\$6.835	\$1.479	\$0.296	\$8.018	\$0.444	\$8.462
	31	\$13.882	\$8.462	\$1.538	\$0.308	(\$4.189)	\$0.550	(\$3.639)
	32	\$0.000	(\$3.639)	\$1.600	\$0.320	(\$2.359)	(\$0.346)	(\$2.705)
	33	\$0.000	(\$2.705)	\$1.664	\$0.333	(\$1.374)	(\$0.257)	(\$1.631)
	34	\$0.000	(\$1.631)	\$1.730	\$0.346	(\$0.246)	(\$0.155)	(\$0.401)
	35	\$0.000	(\$0.401)	\$1.800	\$0.360	\$1.039	(\$0.038)	\$1.000
	36	\$0.000	\$1.000	\$1.872	\$0.374	\$2.498	\$0.065	\$2.563
	37	\$0.000	\$2.563	\$1.947	\$0.389	\$4.120	\$0.167	\$4.287

**Notes on Table 16:**

- 1) Phases 1 and 3 are \$75,000 per acre and Phases 2 and 4 are \$110,000 per acre, adjusted for inflation.
- 2) \* Amounts shown in millions of dollars.
- 3) City pays half of all water and sewer construction costs.
- 4) Present value of final balance is \$51,111,000.

**Table 16 (con't): Cash Flow Analysis for First Development Alternative  
Higher Land Value and Shared Costs \***

Phase	Year	Capital Cost	Balance Carried	Receipts	Other Costs	Balance	Interest	Final Balance
Three	38	\$10.979	\$4.287	\$1.947	\$0.389	(\$5.135)	\$0.279	(\$4.856)
	39	\$0.000	(\$4.856)	\$2.025	\$0.405	(\$3.236)	(\$0.461)	(\$3.698)
	40	\$0.000	(\$3.698)	\$2.106	\$0.421	(\$2.013)	(\$0.351)	(\$2.364)
	41	\$0.000	(\$2.364)	\$2.190	\$0.438	(\$0.612)	(\$0.225)	(\$0.837)
	42	\$0.000	(\$0.837)	\$2.278	\$0.456	\$0.985	(\$0.079)	\$0.906
	43	\$0.000	\$0.906	\$2.369	\$0.474	\$2.801	\$0.059	\$2.860
	44	\$0.000	\$2.860	\$2.464	\$0.493	\$4.831	\$0.186	\$5.017
	45	\$0.000	\$5.017	\$2.562	\$0.512	\$7.066	\$0.326	\$7.392
	46	\$0.000	\$7.392	\$2.665	\$0.533	\$9.524	\$0.481	\$10.005
	47	\$0.000	\$10.005	\$2.771	\$0.554	\$12.222	\$0.650	\$12.872
	48	\$0.000	\$12.872	\$2.882	\$0.576	\$15.178	\$0.837	\$16.014
	49	\$0.000	\$16.014	\$2.997	\$0.599	\$18.412	\$1.041	\$19.453
	50	\$0.000	\$19.453	\$3.117	\$0.623	\$21.947	\$1.264	\$23.211
	51	\$0.000	\$23.211	\$3.242	\$0.648	\$25.805	\$1.509	\$27.313
	52	\$0.000	\$27.313	\$3.372	\$0.674	\$30.011	\$1.775	\$31.786
	53	\$0.000	\$31.786	\$3.506	\$0.701	\$34.591	\$2.066	\$36.657
	54	\$0.000	\$36.657	\$3.790	\$0.758	\$39.689	\$2.383	\$42.072
	55	\$0.000	\$42.072	\$3.942	\$0.788	\$45.225	\$2.735	\$47.960
	56	\$0.000	\$47.960	\$4.099	\$0.820	\$51.239	\$3.117	\$54.357
	57	\$0.000	\$54.357	\$4.263	\$0.853	\$57.767	\$3.533	\$61.301
	58	\$0.000	\$61.301	\$4.434	\$0.887	\$64.848	\$3.985	\$68.832
	59	\$0.000	\$68.832	\$4.611	\$0.922	\$72.521	\$4.474	\$76.995
	60	\$0.000	\$76.995	\$4.796	\$0.959	\$80.832	\$5.005	\$85.836
	61	\$0.000	\$85.836	\$4.987	\$0.997	\$89.826	\$5.579	\$95.406
	62	\$0.000	\$95.406	\$5.187	\$1.037	\$99.555	\$6.201	\$105.756
	63	\$0.000	\$105.756	\$5.394	\$1.079	\$110.072	\$6.874	\$116.946
	64	\$0.000	\$116.946	\$5.610	\$1.122	\$121.434	\$7.601	\$129.036
65	\$0.000	\$129.036	\$5.835	\$1.167	\$133.703	\$8.387	\$142.091	
66	\$0.000	\$142.091	\$6.068	\$1.214	\$146.945	\$9.236	\$156.181	
67	\$0.000	\$156.181	\$6.311	\$1.262	\$161.229	\$10.152	\$171.381	
Four	68	\$20.984	\$171.381	\$4.074	\$0.815	\$153.656	\$11.140	\$164.796
	69	\$0.000	\$164.796	\$4.237	\$0.847	\$168.186	\$10.712	\$178.897
	70	\$0.000	\$178.897	\$4.406	\$0.881	\$182.422	\$11.628	\$194.051
	71	\$0.000	\$194.051	\$4.583	\$0.917	\$197.717	\$12.613	\$210.330
	72	\$0.000	\$210.330	\$4.766	\$0.953	\$214.143	\$13.671	\$227.814
	73	\$0.000	\$227.814	\$4.957	\$0.991	\$231.780	\$14.808	\$246.588
	74	\$0.000	\$246.588	\$5.155	\$1.031	\$250.712	\$16.028	\$266.740
	75	\$0.000	\$266.740	\$5.361	\$1.072	\$271.029	\$17.338	\$288.367
	76	\$0.000	\$288.367	\$5.576	\$1.115	\$292.827	\$18.744	\$311.571
	77	\$0.000	\$311.571	\$5.799	\$1.160	\$316.210	\$20.252	\$336.462
	78	\$0.000	\$336.462	\$6.031	\$1.206	\$341.287	\$21.870	\$363.157
	79	\$0.000	\$363.157	\$6.272	\$1.254	\$368.174	\$23.605	\$391.779
	80	\$0.000	\$391.779	\$6.523	\$1.305	\$396.997	\$25.466	\$422.463
	81	\$0.000	\$422.463	\$6.784	\$1.357	\$427.890	\$27.460	\$455.350
	82	\$0.000	\$455.350	\$7.055	\$1.411	\$460.994	\$29.598	\$490.591
	83	\$0.000	\$490.591	\$7.337	\$1.467	\$496.461	\$31.888	\$528.349
	84	\$0.000	\$528.349	\$7.631	\$1.526	\$534.454	\$34.343	\$568.797
	85	\$0.000	\$568.797	\$7.936	\$1.587	\$575.145	\$36.972	\$612.117

**Notes on Table 16:**

- 1) Phases 1 and 3 are \$75,000 per acre and Phases 2 and 4 are \$110,000 per acre, adjusted for inflation.
- 2) \* Amounts shown in millions of dollars.
- 3) City pays half of all water and sewer construction costs.
- 4) Present value of final balance is \$51,111,000.

Table 17: Cash Flow Analysis for Second Development Alternative – Higher Land Value and Shared Costs \*

Phase	Year	Capital Cost	Balance Carried	Receipts	Other Costs	Balance	Interest	Final Balance
<b>One</b>	1	\$2.409	\$0.000	\$0.321	\$0.064	(\$2.152)	\$0.000	(\$2.152)
	2	\$0.000	(\$2.152)	\$0.331	\$0.066	(\$1.888)	(\$0.204)	(\$2.092)
	3	\$0.000	(\$2.092)	\$0.341	\$0.068	(\$1.820)	(\$0.199)	(\$2.018)
	4	\$0.000	(\$2.018)	\$0.351	\$0.070	(\$1.738)	(\$0.192)	(\$1.930)
	5	\$0.000	(\$1.930)	\$0.361	\$0.072	(\$1.641)	(\$0.183)	(\$1.824)
	6	\$0.000	(\$1.824)	\$0.372	\$0.074	(\$1.526)	(\$0.173)	(\$1.699)
	7	\$0.000	(\$1.699)	\$0.383	\$0.077	(\$1.393)	(\$0.161)	(\$1.554)
	8	\$0.000	(\$1.554)	\$0.395	\$0.079	(\$1.238)	(\$0.148)	(\$1.386)
	9	\$0.000	(\$1.386)	\$0.407	\$0.081	(\$1.061)	(\$0.132)	(\$1.192)
	10	\$1.060	(\$1.192)	\$0.419	\$0.084	(\$1.917)	(\$0.113)	(\$2.031)
	11	\$0.000	(\$2.031)	\$0.436	\$0.087	(\$1.682)	(\$0.193)	(\$1.875)
	12	\$0.000	(\$1.875)	\$0.453	\$0.091	(\$1.513)	(\$0.178)	(\$1.691)
	13	\$0.000	(\$1.691)	\$0.471	\$0.094	(\$1.314)	(\$0.161)	(\$1.475)
	14	\$0.000	(\$1.475)	\$0.490	\$0.098	(\$1.083)	(\$0.140)	(\$1.223)
	15	\$0.000	(\$1.223)	\$0.510	\$0.102	(\$0.815)	(\$0.116)	(\$0.931)
	16	\$0.000	(\$0.931)	\$0.530	\$0.106	(\$0.507)	(\$0.088)	(\$0.596)
	17	\$0.000	(\$0.596)	\$0.551	\$0.110	(\$0.155)	(\$0.057)	(\$0.211)
	18	\$0.000	(\$0.211)	\$0.573	\$0.115	\$0.247	(\$0.020)	\$0.227
	19	\$0.000	\$0.227	\$0.596	\$0.119	\$0.704	\$0.015	\$0.719
	20	\$0.000	\$0.719	\$0.620	\$0.124	\$1.215	\$0.047	\$1.261
	21	\$0.000	\$1.261	\$0.645	\$0.129	\$1.777	\$0.082	\$1.859
	22	\$0.000	\$1.859	\$0.671	\$0.134	\$2.396	\$0.121	\$2.517
	23	\$0.000	\$2.517	\$0.697	\$0.139	\$3.074	\$0.164	\$3.238
	24	\$0.000	\$3.238	\$0.725	\$0.145	\$3.818	\$0.210	\$4.029
	25	\$0.000	\$4.029	\$0.754	\$0.151	\$4.632	\$0.262	\$4.894
	26	\$0.000	\$4.894	\$0.784	\$0.157	\$5.522	\$0.318	\$5.840
<b>Two</b>	27	\$3.276	\$5.840	\$1.315	\$0.263	\$3.616	\$0.380	\$3.995
	28	\$0.000	\$3.995	\$1.368	\$0.274	\$5.089	\$0.260	\$5.349
	29	\$0.000	\$5.349	\$1.422	\$0.284	\$6.487	\$0.348	\$6.835
	30	\$0.000	\$6.835	\$1.479	\$0.296	\$8.018	\$0.444	\$8.462
	31	\$13.882	\$8.462	\$1.538	\$0.308	(\$4.189)	\$0.550	(\$3.639)
	32	\$0.000	(\$3.639)	\$1.600	\$0.320	(\$2.359)	(\$0.346)	(\$2.705)
	33	\$0.000	(\$2.705)	\$1.664	\$0.333	(\$1.374)	(\$0.257)	(\$1.631)
	34	\$0.000	(\$1.631)	\$1.730	\$0.346	(\$0.246)	(\$0.155)	(\$0.401)
	35	\$0.000	(\$0.401)	\$1.800	\$0.360	\$1.039	(\$0.038)	\$1.000
	36	\$0.000	\$1.000	\$1.872	\$0.374	\$2.498	\$0.065	\$2.563
	37	\$0.000	\$2.563	\$1.947	\$0.389	\$4.120	\$0.167	\$4.287

**Notes on Table 17:**

- 1) Phases 1 and 3 are \$75,000 per acre and Phases 2 and 4 are \$110,000 per acre, adjusted for inflation.
- 2) \* Amounts shown in millions of dollars.
- 3) City pays half of all water and sewer construction costs.
- 4) Present value of final balance is \$24,234,000.

**Table 17 (con't): Cash Flow Analysis for Second Development Alternative  
Higher Land Value and Shared Costs \***

Phase	Year	Capital Cost	Balance Carried	Receipts	Other Costs	Balance	Interest	Final Balance
<b>Three &amp; Four</b>	38	\$19.623	\$4.287	\$3.279	\$0.656	(\$12.713)	\$0.279	(\$12.435)
	39	\$0.000	(\$12.435)	\$3.410	\$0.682	(\$9.706)	(\$1.181)	(\$10.888)
	40	\$0.000	(\$10.888)	\$3.547	\$0.709	(\$8.050)	(\$1.034)	(\$9.085)
	41	\$0.000	(\$9.085)	\$3.688	\$0.738	(\$6.134)	(\$0.863)	(\$6.997)
	42	\$1.690	(\$6.997)	\$3.836	\$0.767	(\$5.618)	(\$0.665)	(\$6.283)
	43	\$0.000	(\$6.283)	\$3.989	\$0.798	(\$3.092)	(\$0.597)	(\$3.688)
	44	\$0.000	(\$3.688)	\$4.149	\$0.830	(\$0.369)	(\$0.350)	(\$0.720)
	45	\$0.000	(\$0.720)	\$4.315	\$0.863	\$2.732	(\$0.068)	\$2.664
	46	\$0.000	\$2.664	\$4.488	\$0.898	\$6.254	\$0.173	\$6.427
	<b>Three only</b>	47	\$0.000	\$6.427	\$2.880	\$0.576	\$8.731	\$0.418
48		\$0.000	\$9.149	\$2.995	\$0.599	\$11.545	\$0.595	\$12.140
49		\$0.000	\$12.140	\$3.115	\$0.623	\$14.632	\$0.789	\$15.421
50		\$0.000	\$15.421	\$3.240	\$0.648	\$18.012	\$1.002	\$19.015
51		\$0.000	\$19.015	\$3.369	\$0.674	\$21.710	\$1.236	\$22.946
52		\$0.000	\$22.946	\$3.504	\$0.701	\$25.749	\$1.491	\$27.241
53		\$0.000	\$27.241	\$3.644	\$0.729	\$30.156	\$1.771	\$31.927
54		\$0.000	\$31.927	\$3.790	\$0.758	\$34.959	\$2.075	\$37.034
55		\$0.000	\$37.034	\$3.941	\$0.788	\$40.187	\$2.407	\$42.594
56		\$0.000	\$42.594	\$4.099	\$0.820	\$45.874	\$2.769	\$48.642
57		\$0.000	\$48.642	\$4.263	\$0.853	\$52.053	\$3.162	\$55.214
58		\$0.000	\$55.214	\$4.434	\$0.887	\$58.761	\$3.589	\$62.350
59		\$0.000	\$62.350	\$4.611	\$0.922	\$66.039	\$4.053	\$70.092
60		\$0.000	\$70.092	\$4.795	\$0.959	\$73.928	\$4.556	\$78.484
61		\$0.000	\$78.484	\$4.987	\$0.997	\$82.474	\$5.101	\$87.575
62		\$0.000	\$87.575	\$5.187	\$1.037	\$91.725	\$5.692	\$97.417
63		\$0.000	\$97.417	\$5.394	\$1.079	\$101.732	\$6.332	\$108.065
64		\$0.000	\$108.065	\$5.610	\$1.122	\$112.552	\$7.024	\$119.577
65	\$0.000	\$119.577	\$5.834	\$1.167	\$124.244	\$7.772	\$132.017	
66	\$0.000	\$132.017	\$6.068	\$1.214	\$136.871	\$8.581	\$145.452	
67	\$0.000	\$145.452	\$6.310	\$1.262	\$150.500	\$9.454	\$159.955	
68	\$0.000	\$159.955	\$6.563	\$1.313	\$165.205	\$10.397	\$175.602	

**Notes on Table 17:**

- 1) Phases 1 and 3 are \$75,000 per acre and Phases 2 and 4 are \$110,000 per acre, adjusted for inflation.
- 2) \* Amounts shown in millions of dollars.
- 3) City pays half of all water and sewer construction costs.
- 4) Present value of final balance is \$24,234,000.

## RECOMMENDED DEVELOPMENT STANDARDS

The Master Plan should be changed so that the designation for the Garvins Falls Urban Reserve area will be industrial or business park in the Phase 1 area and first class office park in the Phase 2, 3 and 4 areas instead of the current industrial park designation. The boundaries between these developable areas and the environmentally sensitive areas should be adjusted on the master plan land use map.

Alternatives to consider when amending the Master Plan are:

1. to permit residential uses in the Phase 4 area; or
2. to keep the three phase areas south of Integra Drive in their existing use as conservation and low density residential areas.

At a minimum the zoning map for this area should be adjusted so that the environmentally sensitive areas are in the RE, Agricultural District, zone. Consideration should be given as to whether or not the RF, Conservation District, zone is more appropriate for this environmentally sensitive area. Any new development should be discouraged in these areas. Some thought should be given to acquiring development easements for the most sensitive environmental and archeological sites.

Only the owners of the largest parcels in the Garvins Falls area have expressed any interest in keeping the current MB, Industrial Park, zoning designation. Such a designation would enable them to develop their property in the shortest period of time and possibly obtain relatively high value per acre. However, continuing this MB zoning designation for the 485 developable acres would permit far higher employment levels in this study area than shown in the previous chapters of this report and would clearly lead toward four lane highways for Hall Street, Airport Road, Route 3 between Airport Road and Route 106 and Route 106 between Route 3 and I-393. There would be between 12,000 to 15,000 jobs in the study area with continued MB zoning.

The residents of the neighborhood support a change in zoning for the area from the current MB zoning designation. They want new development to have a minimal impact on their homes in terms of noise, light and traffic. While not really supportive of any new development in the study area, a first class office park at lower development densities is preferable to the current MB zoning.

Based on the preceding chapters the following zoning standards are recommended for the developable area:

1. for the Phase 1 area nearest Manchester Street, which is to be developed first and where manufacturing, transportation and warehousing uses are to be permitted as well as offices; the current MB zoning should be modified so that building height limit would be a maximum of 35 feet, a maximum floor area ratio of 0.25, a maximum coverage ratio (for building footprint, parking lot and walkways) of 75 percent, and a minimum lot size of two acres; and
2. for the remainder of the Garvins Falls site where the primary uses are to be offices and research and development facilities for manufacturers (with supporting hotel,

conference center, day care and recreation facilities), create a new office park zone with the building height limit of 48 feet, a maximum floor area ratio of 0.20, a maximum coverage ratio of 60 percent, and a minimum lot size of six acres. Twenty percent of the lot should remain as managed woodlands. There should be 100 foot setbacks from wetlands and 150 foot setbacks from the cleared edge of electrical transmission lines. An alternative is that the Phase 4 area might be developed as a traditional neighborhood housing area (similar to the RA zone, but single family only) and as an RC suburban housing zone instead of as a first class office park.

Given the off-site traffic impacts from developing Phases 2, 3 and 4, the City should look further at the issue as to whether these three phases should be developed at all. Development of these three phases would require a new road and bridge system parallel to Manchester Street between Hall Street and the Route 106 interchange.

The market place does not currently support development of Phases 2, 3, and 4. If a city impact fee system were instituted that required any developer of property in Phases 2, 3 and 4 to contribute toward the cost of upgrading Manchester Street and Hall Street, the City Council could rezone the entire study area as outlined above and it would still be very unlikely that any development would occur in Phases 2, 3 and 4 for at least ten years, if ever. However, the City would have achieved its goal of having a first class office park area designated should a large company with significant resources come forward to develop this area.

## **Report Appendices**

**Appendix A: Water and Sewer—Supporting Information**

**Appendix B: Traffic Assessment—Supporting Information**

**Appendix C: Bridge Assessment—Supporting Information**

**Appendix D: Fiscal Impact Analysis—Supporting Information**

**Appendix A:**

**Water and Sewer Assessment—Supporting Information**

**On-Site Sanitary Sewer Demands**

**Manchester Street Sewer Capacity**

**On-Site Water Distribution**

**Appendix A:**  
**Water and Sewer Assessment—Supporting Information**

**On-Site Sanitary Sewer Demands**  
**Manchester Street Sewer Capacity**  
**On-Site Water Distribution**

**Appendix C:**  
**Bridge Assessment—Supporting Information**

# Greiner

**Greiner, Inc.**  
The Concord Center, Suite 302  
10 Ferry Street, Unit 12  
Concord, New Hampshire 03301  
(603) 228-4464  
FAX: (603) 228-4851

April 15, 1996



ATT: Brian Clogston, P.E.  
Earth Tech  
3 Executive Park Drive  
Bedford, NH 03110

**Subject:**        *Concord, New Hampshire  
Garvins Falls Road - Commercial Access Road  
Bridge Type Study Estimates  
Greiner Project No. F401253.01*

Dear Brian:

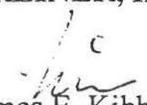
Enclosed is one (1) copy of our "TSL" bridge estimates for the two (2) bridges for which you have forwarded to us the preliminary location information, according to Task D of the Work Program/Scope of Services for this project.

We understand that we may be further involved with the public participation process for this project at some time in the future.

If there are any questions, please call me.

Very truly yours,

**GREINER, INC.**

  
James E. Kibby, P.E.  
Senior Project Engineer

JEK/ajr  
C:\OFFICE\WPWIN\WPDOCS\MISC\ET0415A.LTR

Job CONCORD - GARVINS FALLS ROAD Project No. F401253.01 Sheet 1 of 10  
Description BRIDGE ESTIMATE Computed By JEK Date 3/21/96  
BRIDGE NO. 1 Checked By JHK Date 3/29/96

BRIDGE NO. 1: Commercial Access Road over Merrimack River

Bridge Data: (Per Tal Allen of Earth Tech)

WIDTH: 1- 8' Combination sidewalk/Bike Path  
2- 4' Shoulders  
2- 12' Travel Lanes  
2- 1'-9" Fascias for Bridge Rails

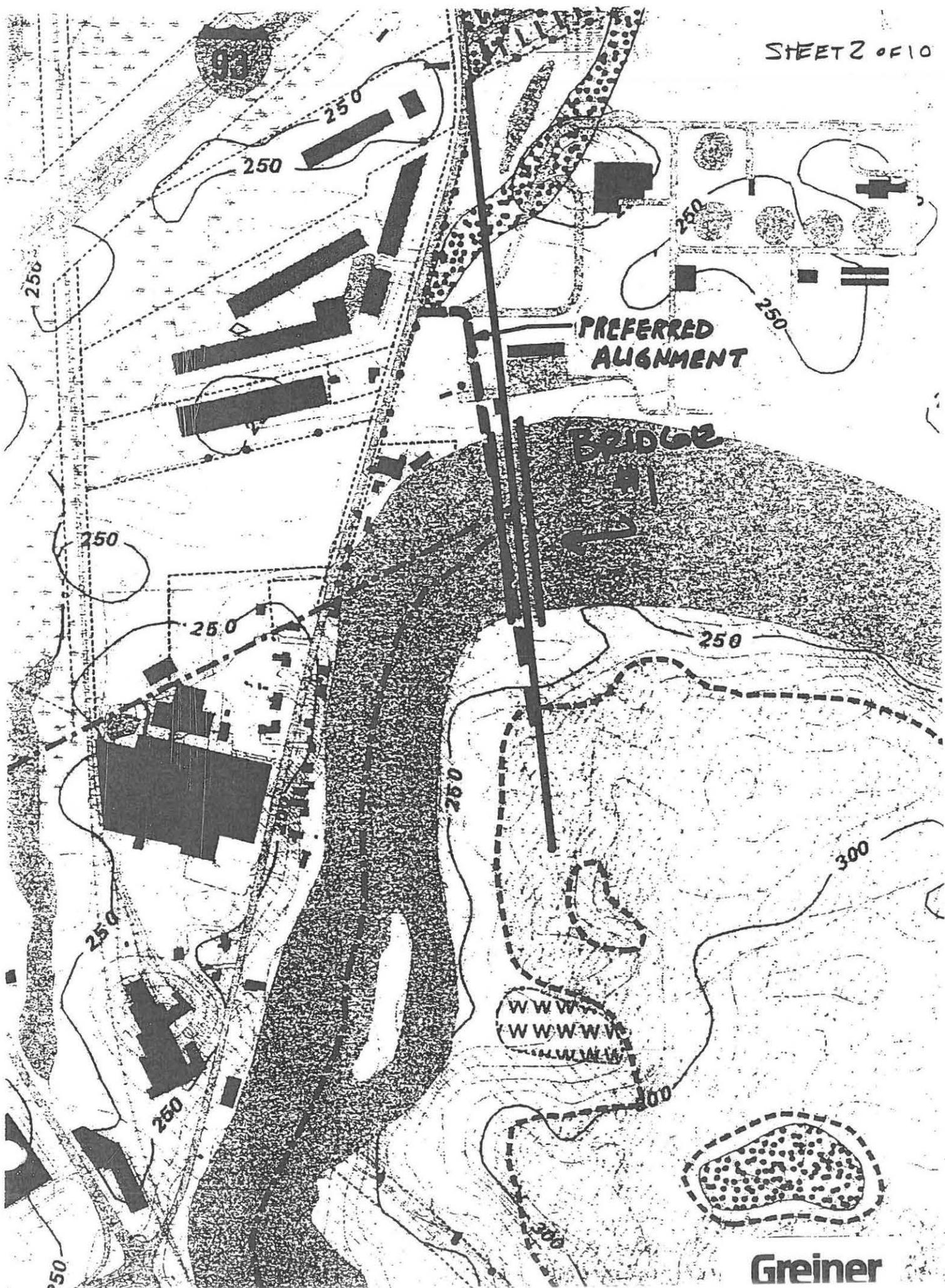
$$\text{ALT. A: } 2 @ 1.75' + 2 @ 12' + 2 @ 4' + 8' = \underline{\underline{43.5'}}$$

Preferred Width:

2- 12' Travel Lanes  
2- 5' Shoulders  
2- 5' Sidewalks  
2- 1'-9" Fascias for Bridge Rails

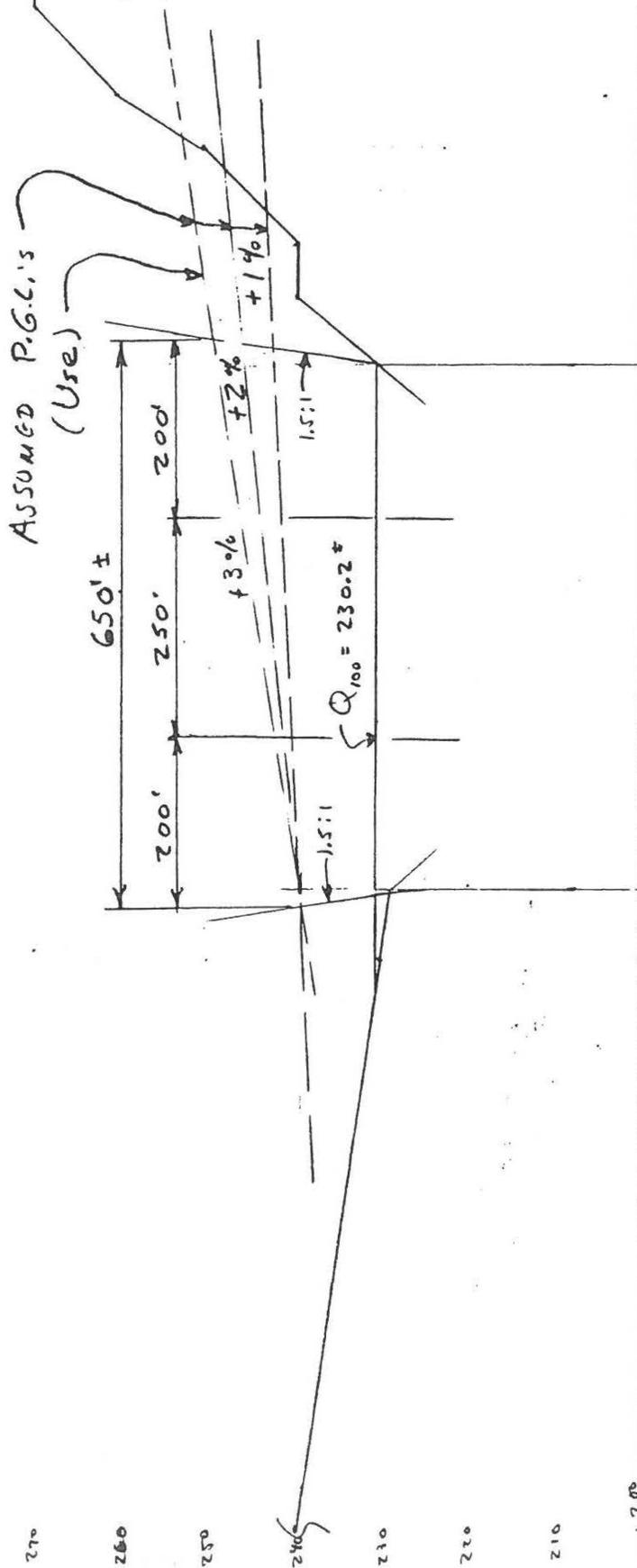
$$\text{ALT. B: } 2 @ 1.75' + 2 @ 12' + 2 @ 5' + 2 @ 5' = \underline{\underline{47.5'}}$$

- NOTES :
- 1) Revise alignment to partially use existing Treatment Plant Drive and provide better (90°±) intersection with Hall Street.
  - 2) All bridges in urban settings should have two sidewalks (and two bike shoulders), to reduce the number of pedestrian / bike crossings of the roadway.
  - 3) Flood Elevation Data taken from FEMA Flood Map for this area.
  - 4) Bridge Length Based on Assumed Profile Grade to Best Fit the existing topography.
  - 5) Bridge Type Estimate Based on "NHDOT" SLOPE INTERCEPT" Method for early TSL Estimates.
  - 6) Estimate based on 3-span continuous (200'±-250'±-200'±), With Two Piers in the water.





Job Concord - Garvins Falls Road Project No. F401253.01 Sheet 4 of 10  
 Description Bridge No. One Computed By JEK Date 3-21-96  
Commercial Access Rd./Merrimack R. Checked By LHK Date 3/29/96



H: 1" = 200'  
 V: 1" = 20'

Job CONCORD - GARDNER FALLS ROAD Project No. F401253.01 Sheet 5 of 10  
 Description Bridge Estimate Computed By JEK Date 3/22/96  
Bridge No. 1 Checked By \_\_\_\_\_ Date \_\_\_\_\_

Length (See Assumed Profile, sheet 4) = 650'  
 Width (ALT. A) x 43.5'

Area = 28,275 SF  
 EST. COST PER SQ. FT. \* = \$125/SF  
\$3,534,375.  
 SAY \$3.6 MILLION

Length  
 Width

(ALT. B)

= 650'  
 = x 47.5  
 Area = 30,875 SF  
x \$125/SF  
\$3,859,375.  
 SAY \$3.9 MILLION

\* From Concord Exit 13, Manchester Street over Merrimack River = 690' long x 95'-2" wide, 5 span continuous welded plate girder bridge, estimated at \$121.7/SF. Estimated cost is in 1996 dollars.

Job CONCORD - GARVINS FALLS ROAD Project No. F40125301 Sheet 6 of 10  
Description BRIDGE ESTIMATE Computed By JEK Date 3/22/96  
BRIDGE NO. TWO Checked By LHK Date 3/29/96

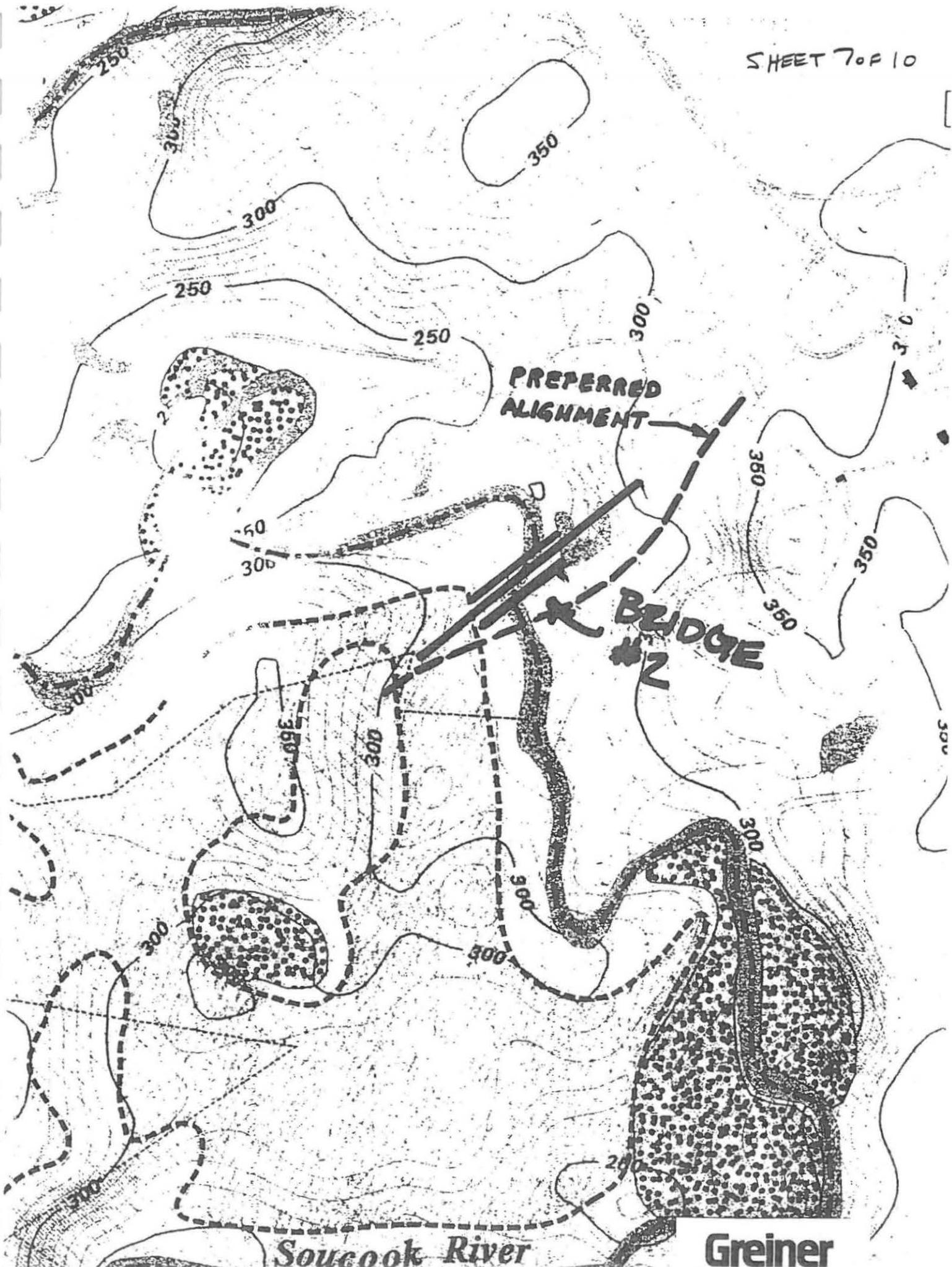
BRIDGE NO. 2: Commercial Access Road over Soucook River

Bridge Data: (Ref. Bridge No. 1)

ACT. A Width = 43.5'

ACT. B Width = 47.5'

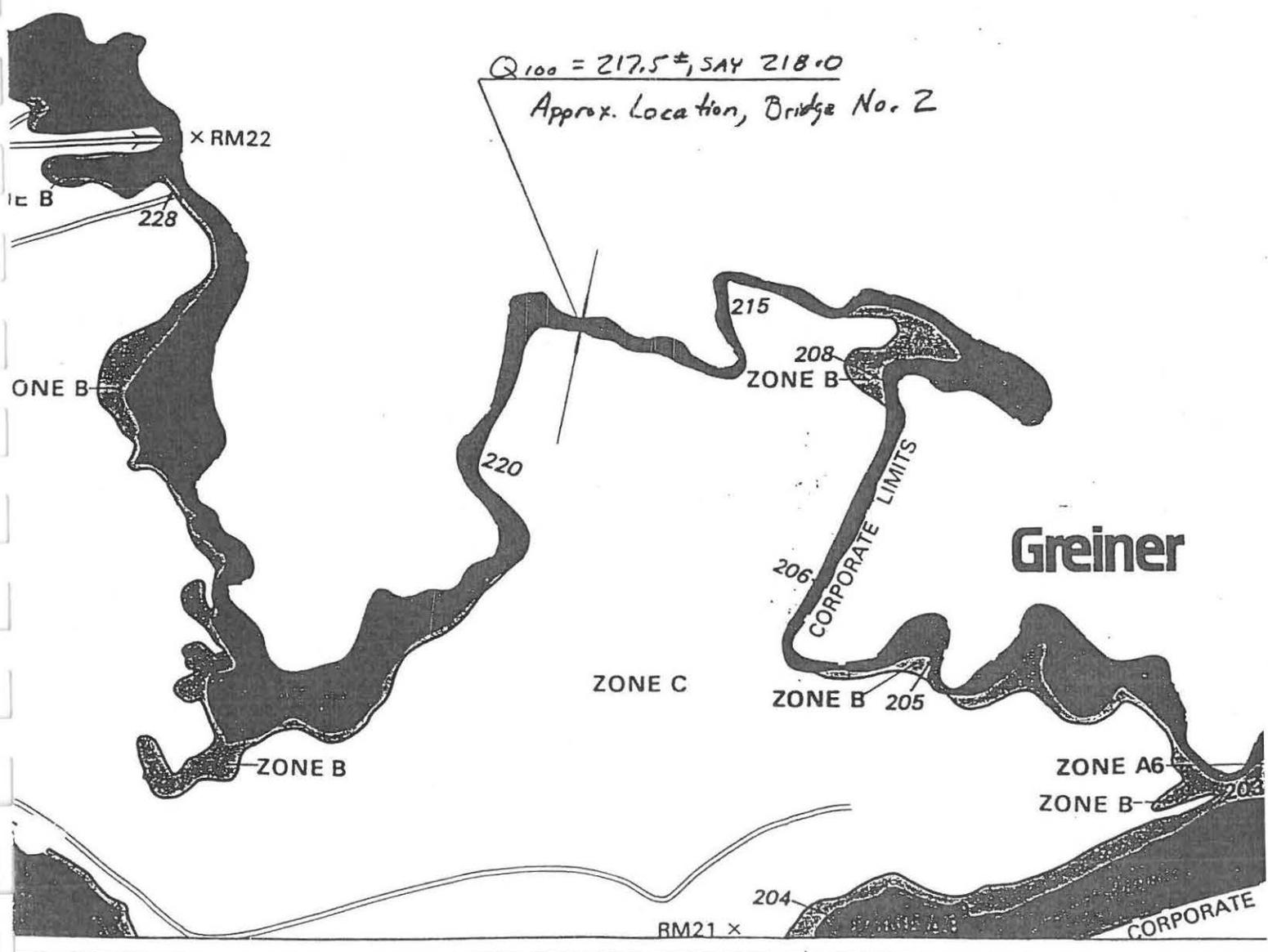
- NOTES :
- 1) Revise Alignment to avoid river "Ox-Bow" bend and to provide better ( $90^{\circ} \pm$ ) intersection with River flow direction.
  - 2) Flood Elevation Data taken from FEMA Flood Map for this area.
  - 3) Bridge Length Based on Assumed Profile Grade to Best Fit the existing topography.
  - 4) Bridge Type Estimate Based on NHDOT "SLOPE INTERCEPT" Method for early TSL Estimates.
  - 5) Estimate based on a three span continuous bridge with  $71.5' \pm 87' \pm 71.5'$  spans, and two piers, one on each riverbank.
  - 6) Assumed vertical alignment chosen to minimize the sag vertical curve in the bridge area.



Soucook River

Greiner

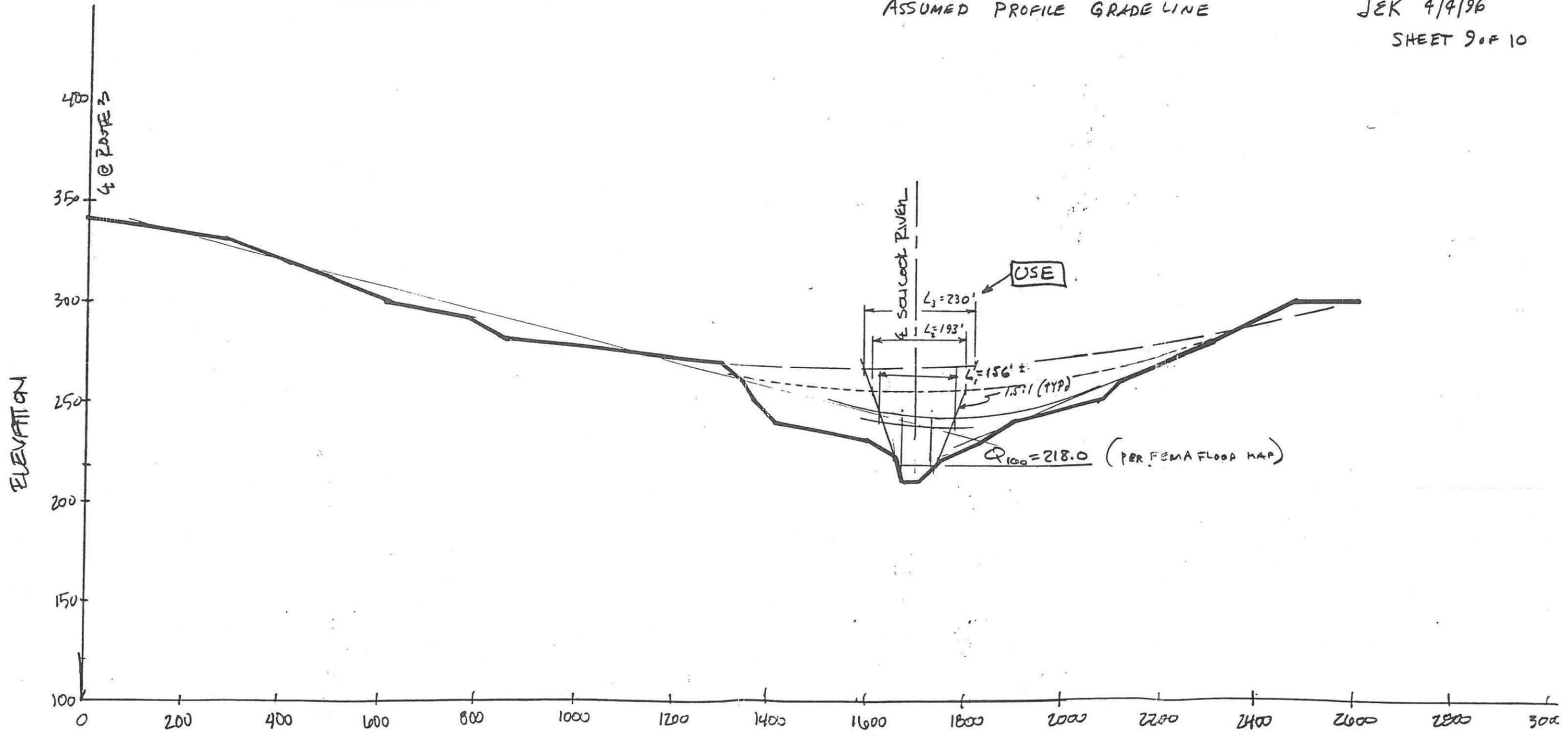
$Q_{100} = 217.5 \neq$ , SAY 218.0  
Approx. Location, Bridge No. 2



PROJECT	GARDNER FALLS URBAN RESERVE STUDY	JOB NO.	9704
SUBJECT	PROFILE AT SOUCCOAT RIVER CROSSING	SHEET NO.	1 OF 1
		DATE	4/2/96
		COMP.	CHECK

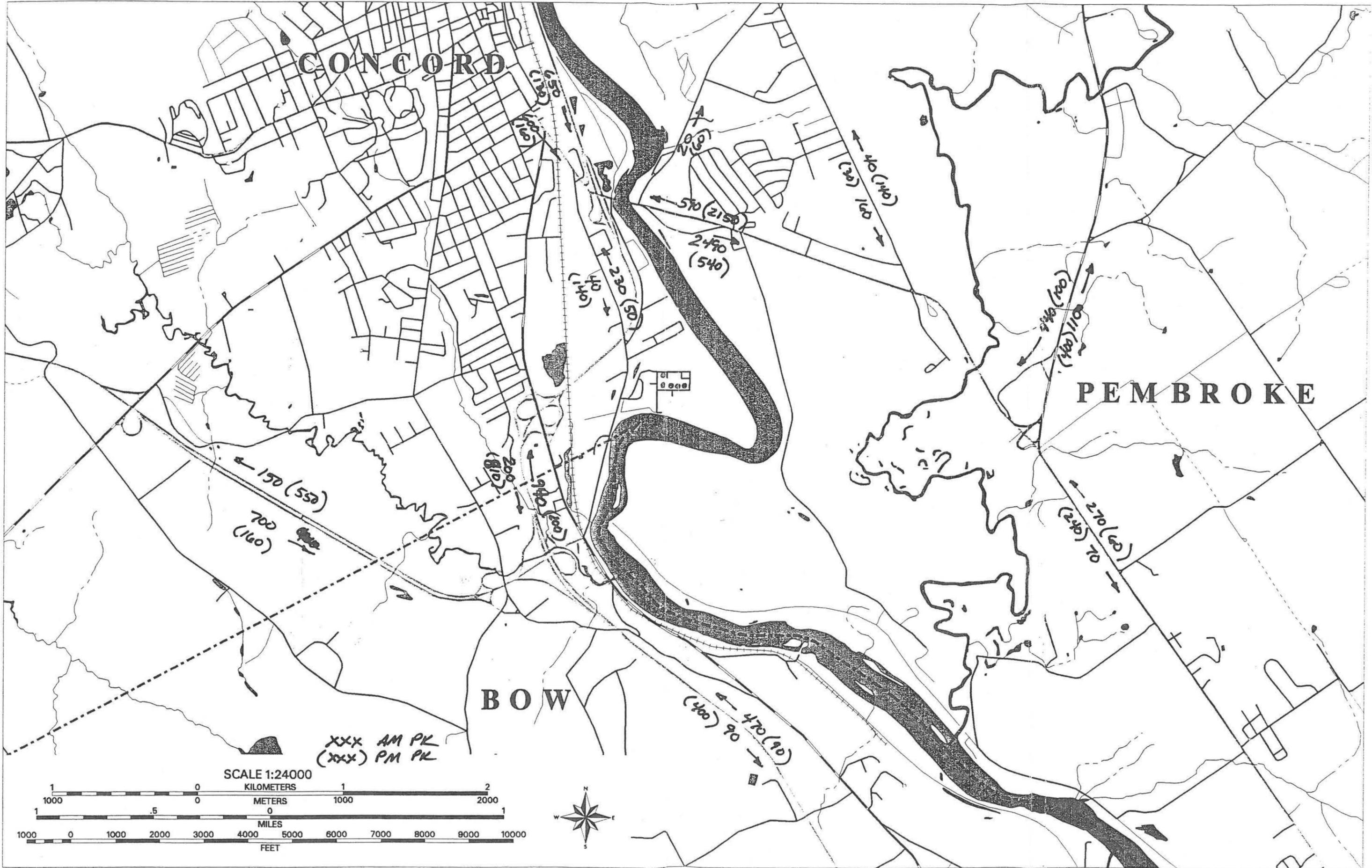
BRIDGE NO. 2  
ASSUMED PROFILE GRADE LINE

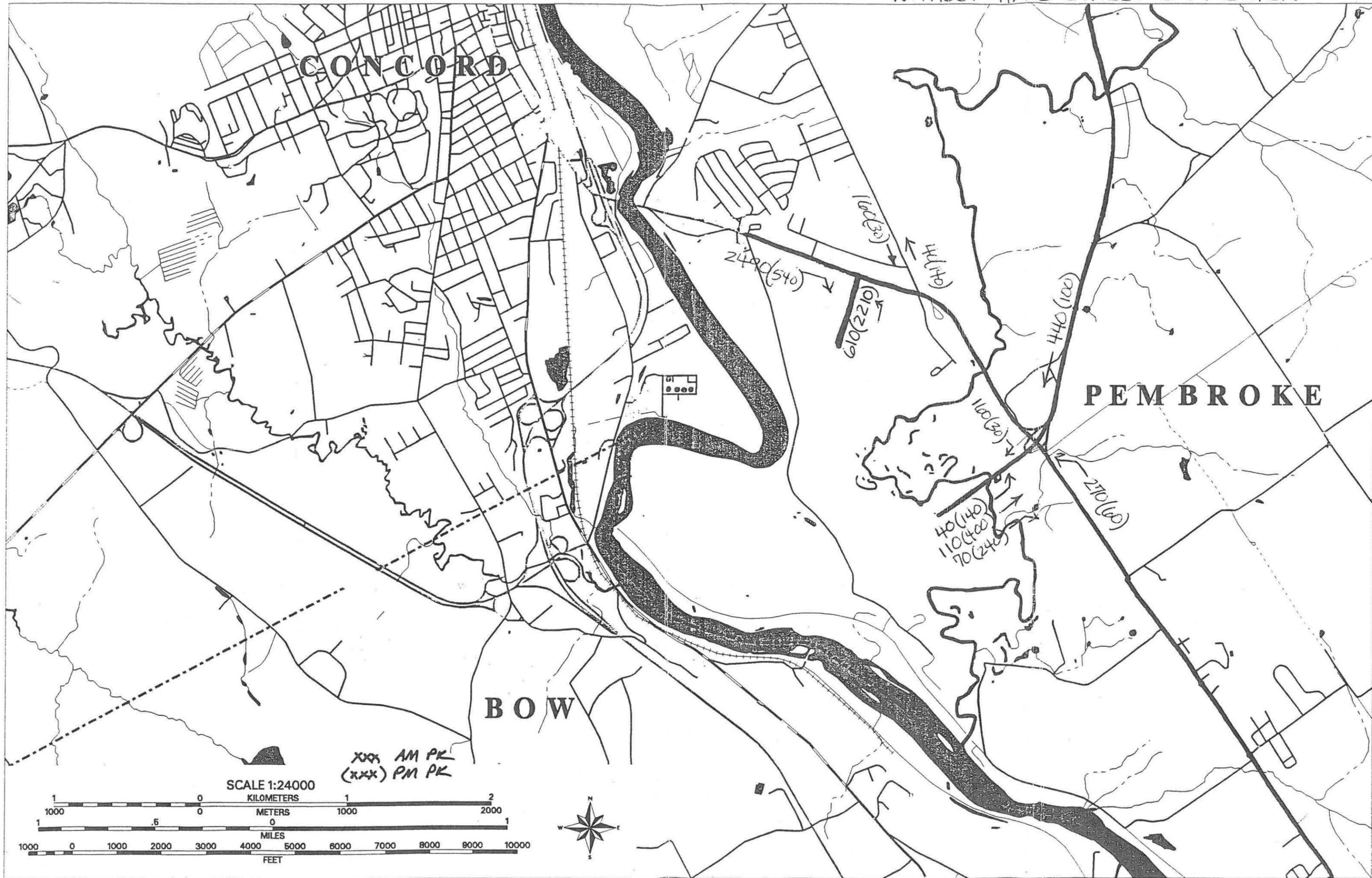
JEK 4/4/96  
SHEET 9 OF 10



V: 1" = 50'  
H: 1" = 200'

FIGURE





CONCORD

PEMBROKE

BOW

XXX AM PK  
(XXX) PM PK

SCALE 1:24000

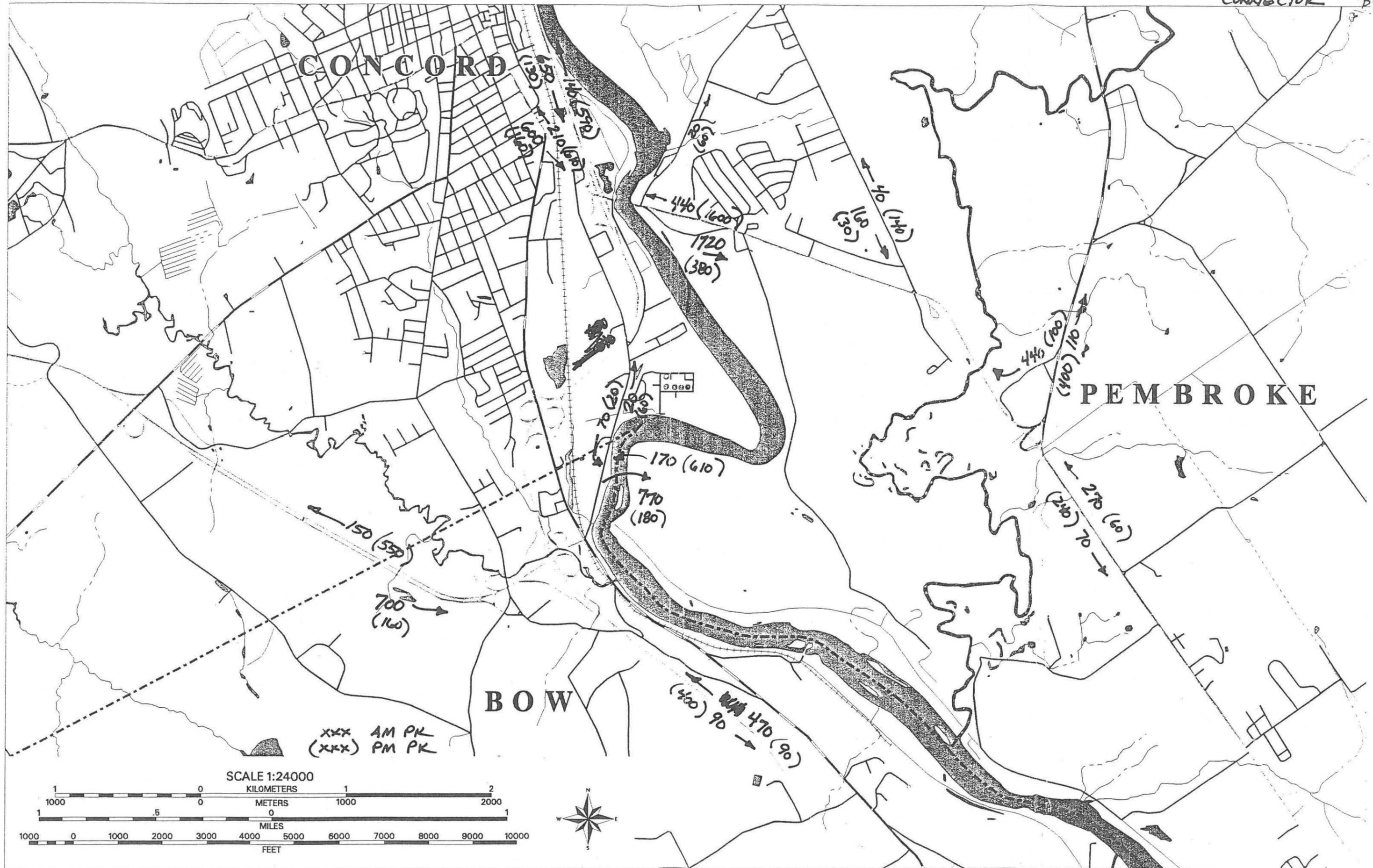
KILOMETERS

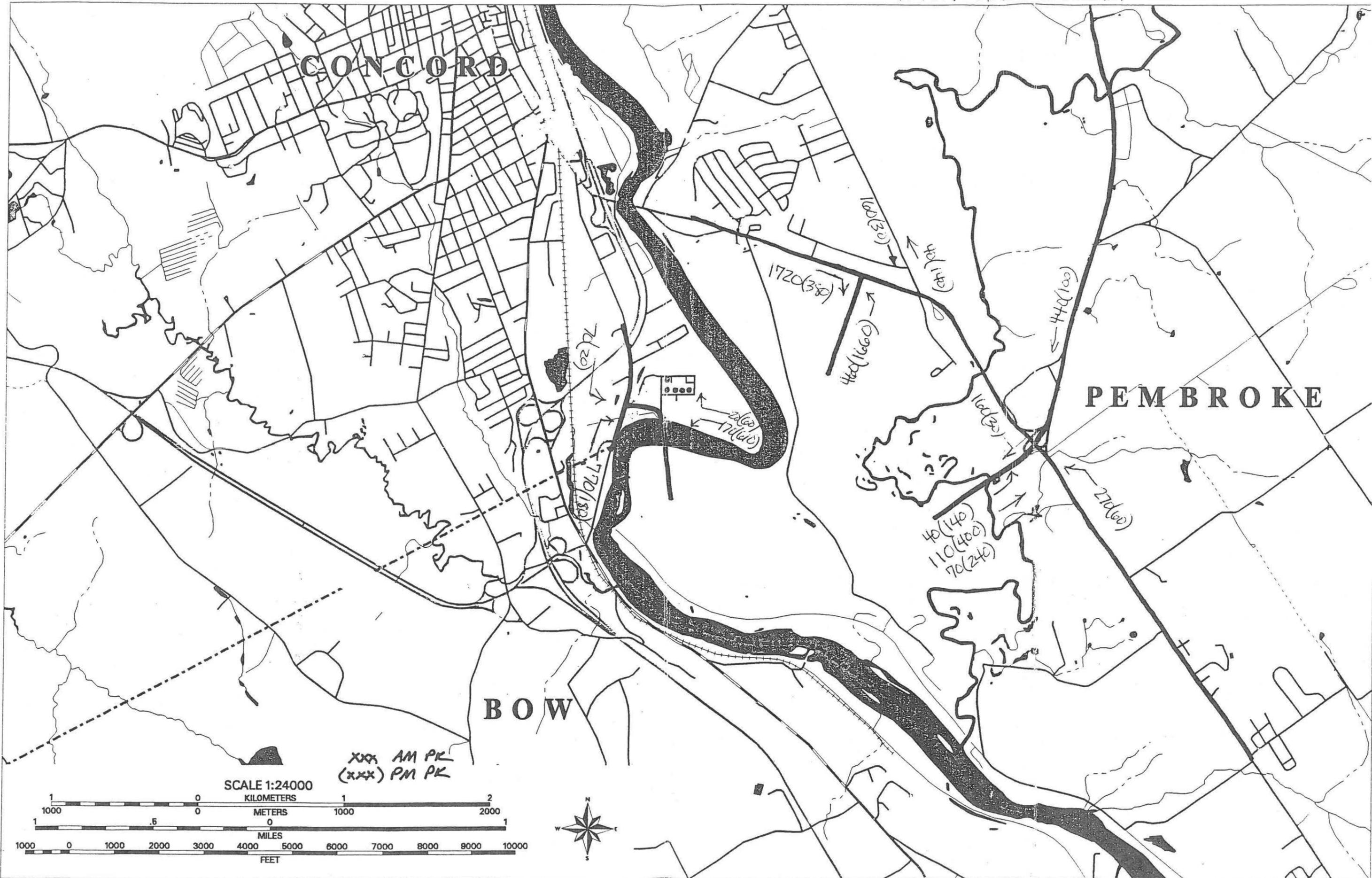
METERS

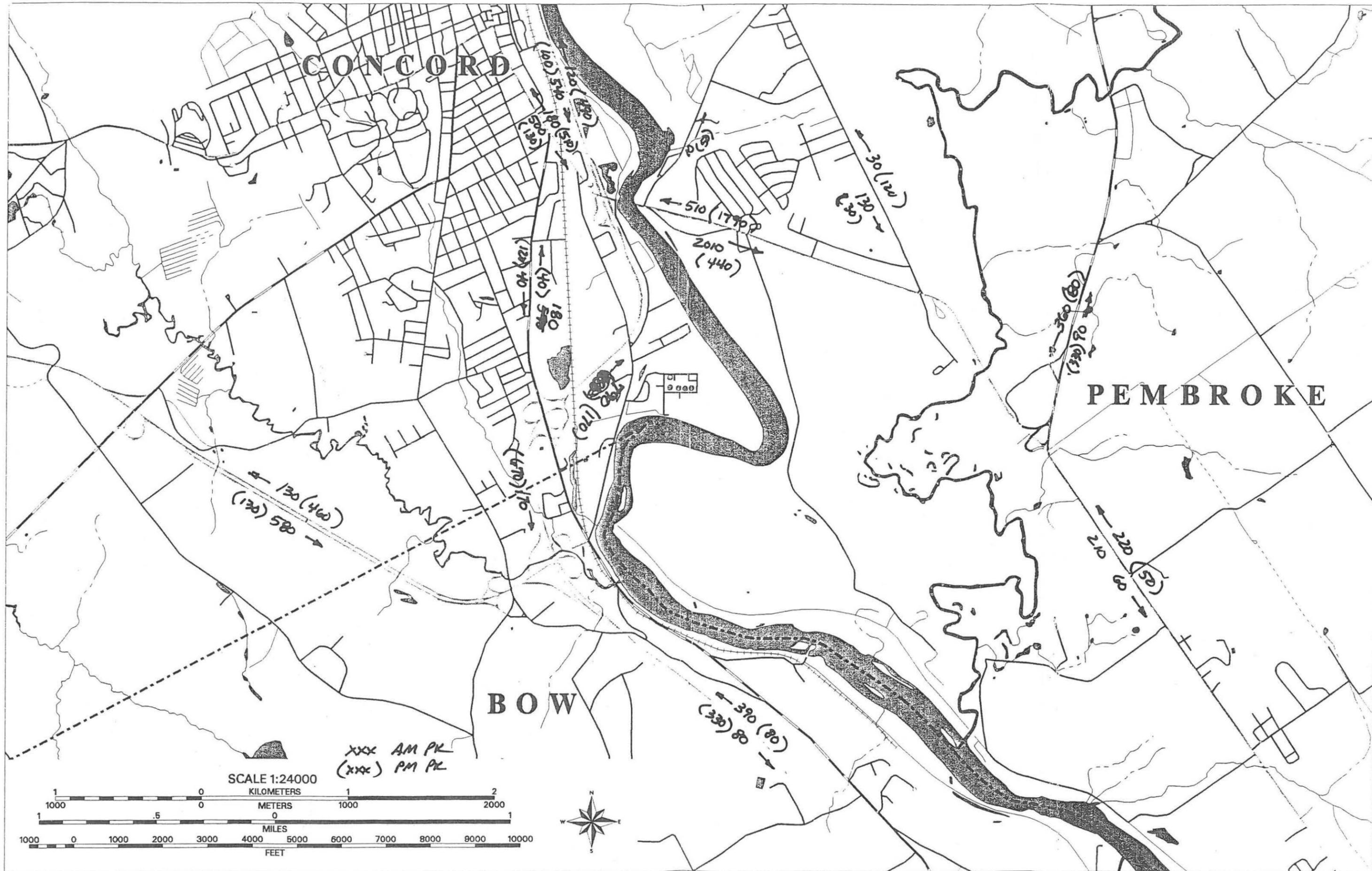
MILES

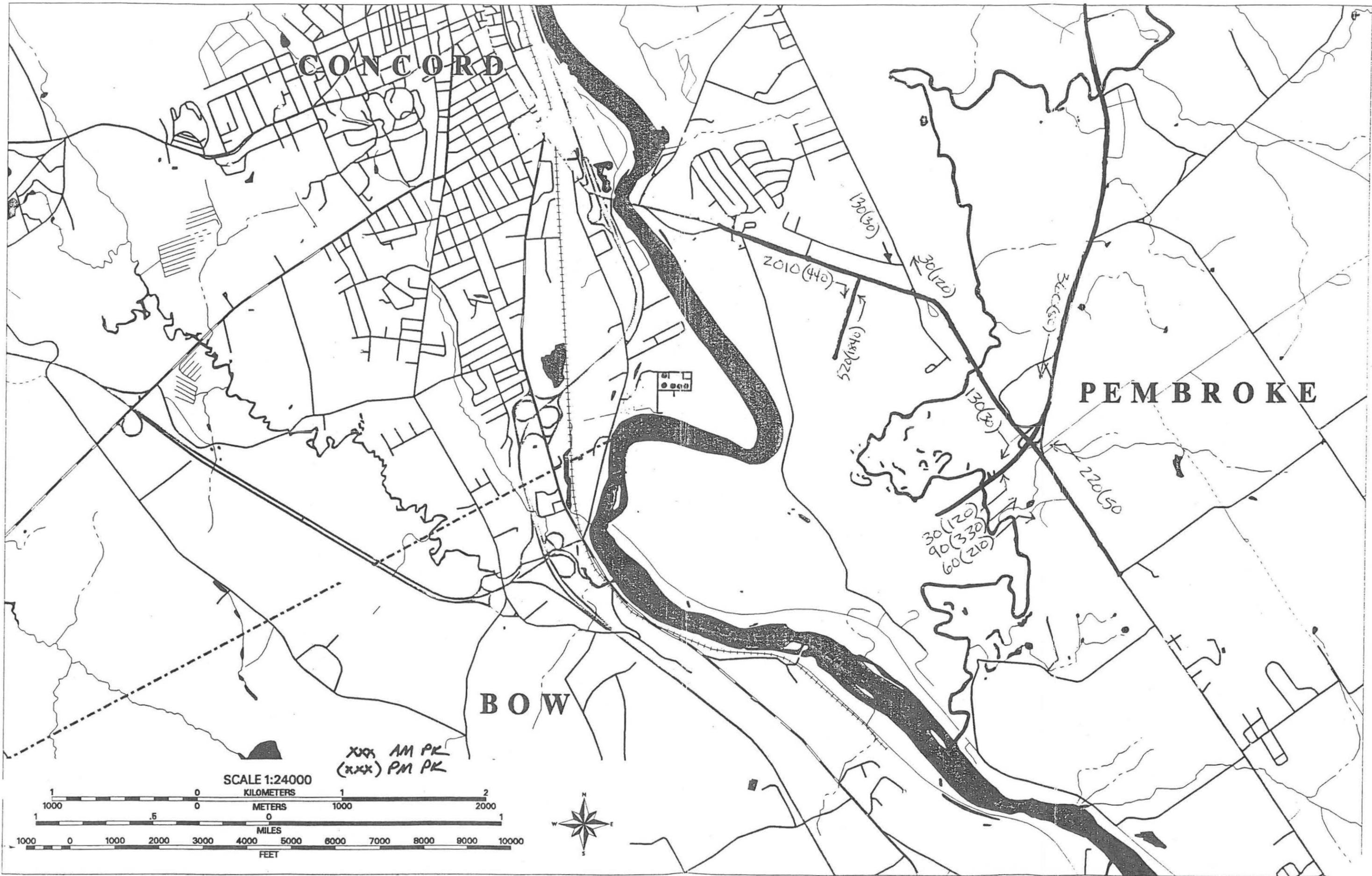
FEET



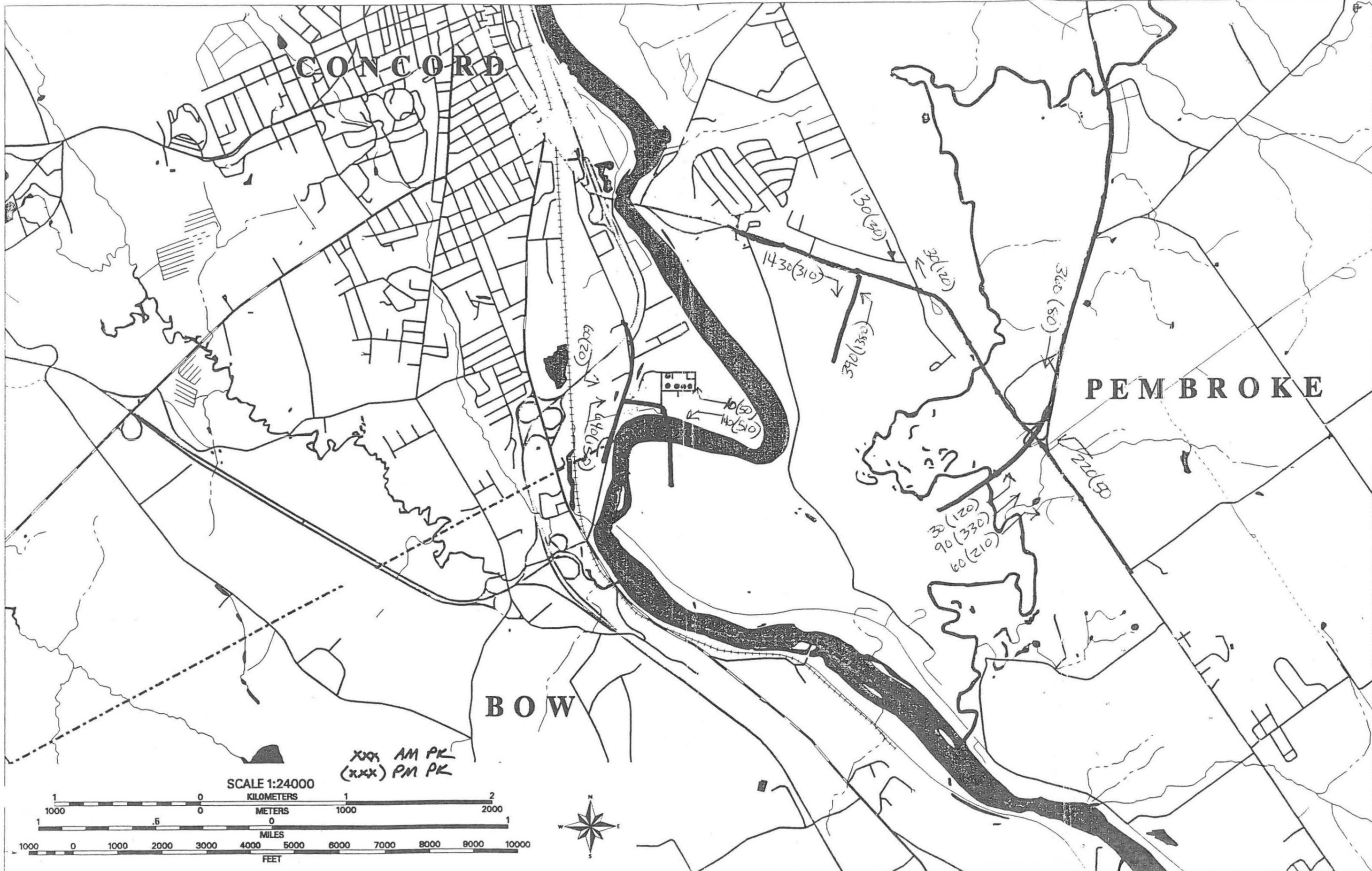












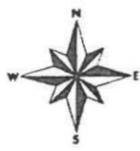
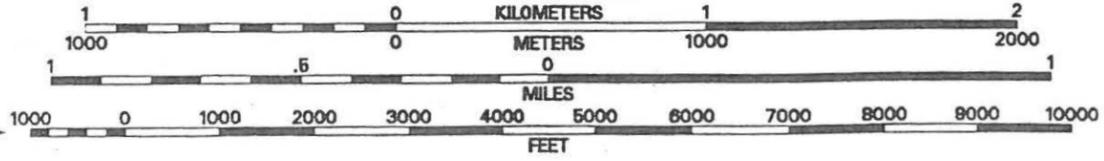
CONCORD

PEMBROKE

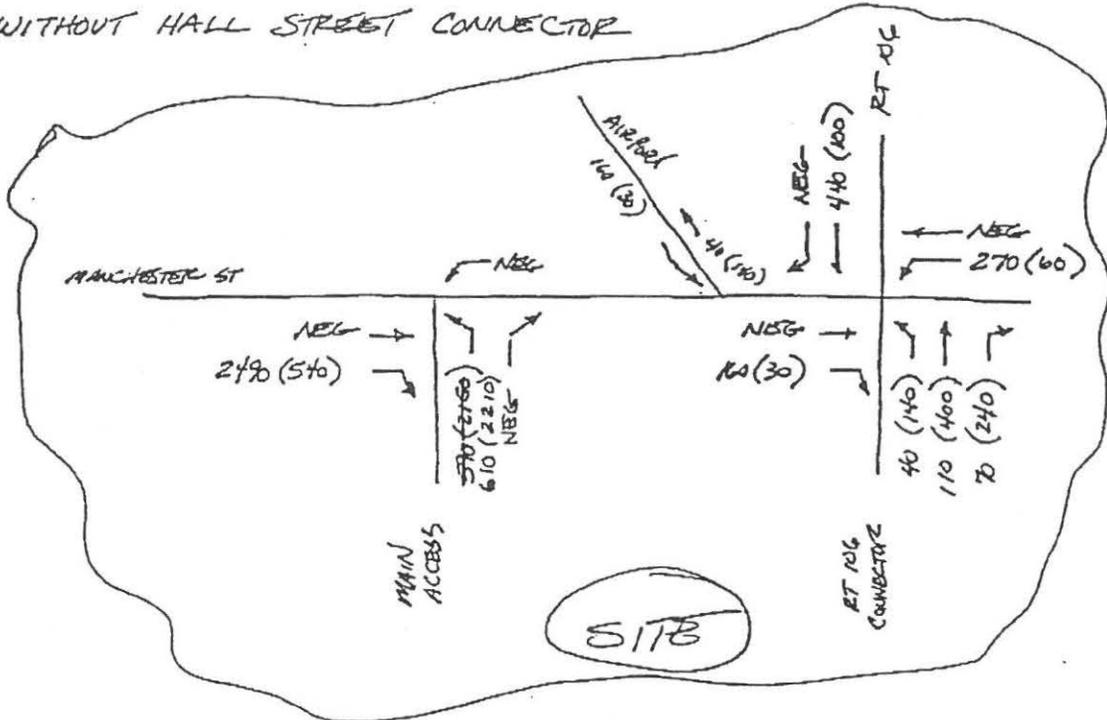
BOW

XXX AM PK  
(XXX) PM PK

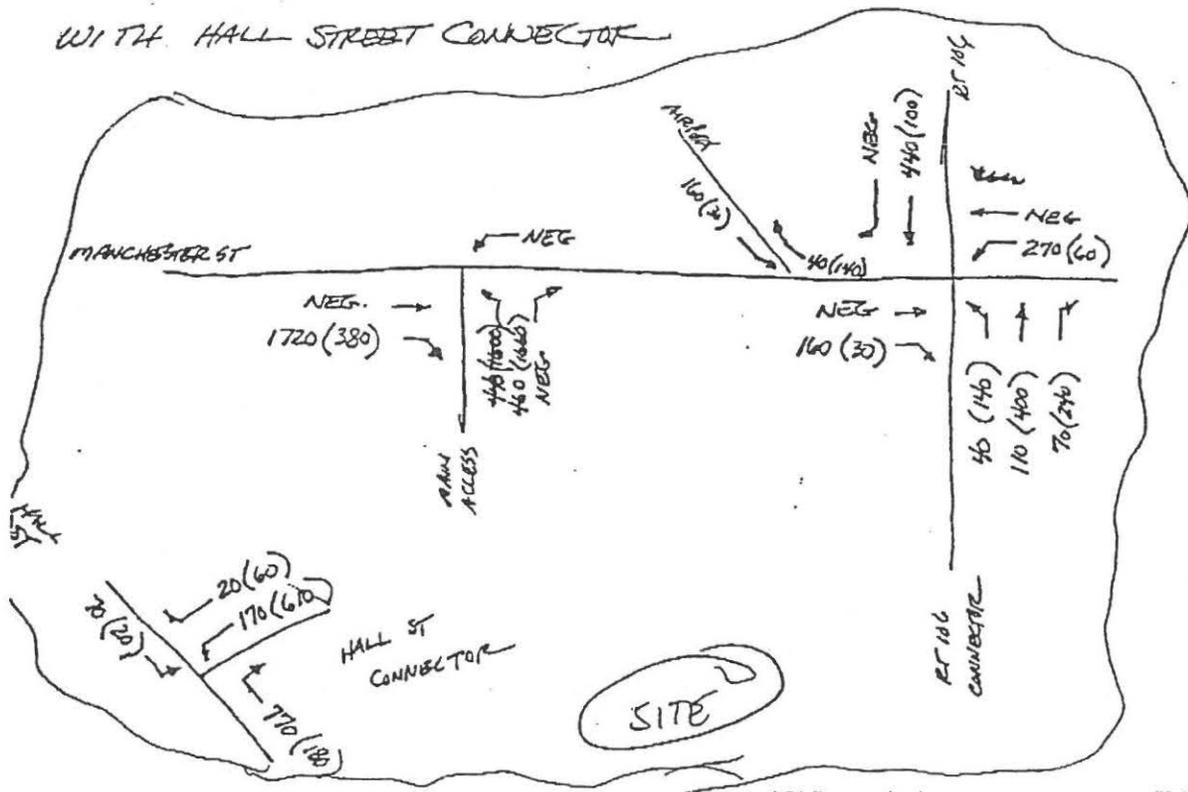
SCALE 1:24000



WITHOUT HALL STREET CONNECTOR

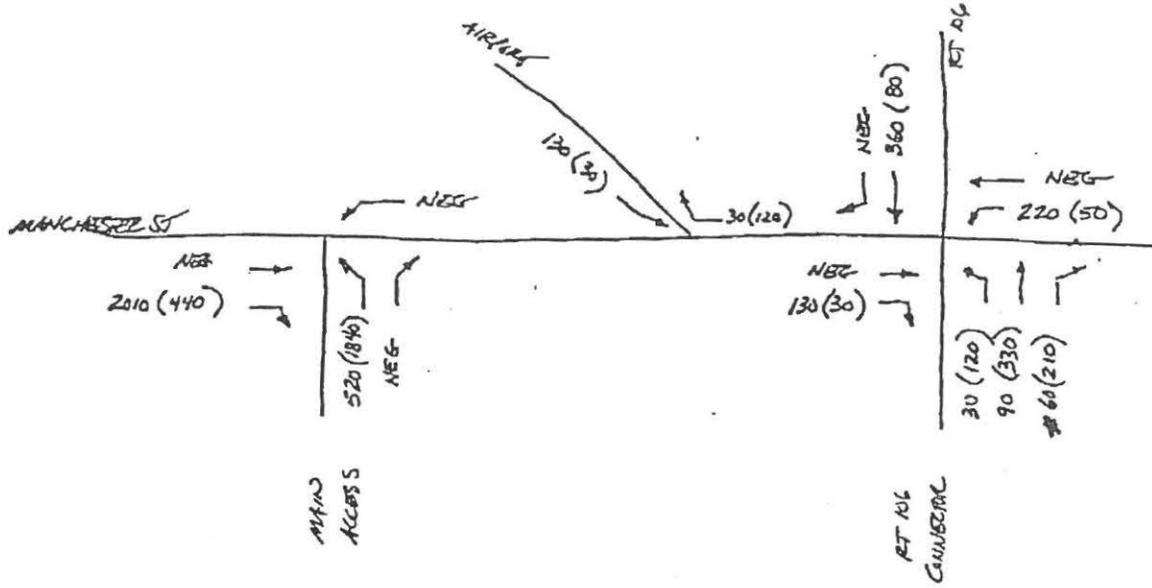


WITH HALL STREET CONNECTOR

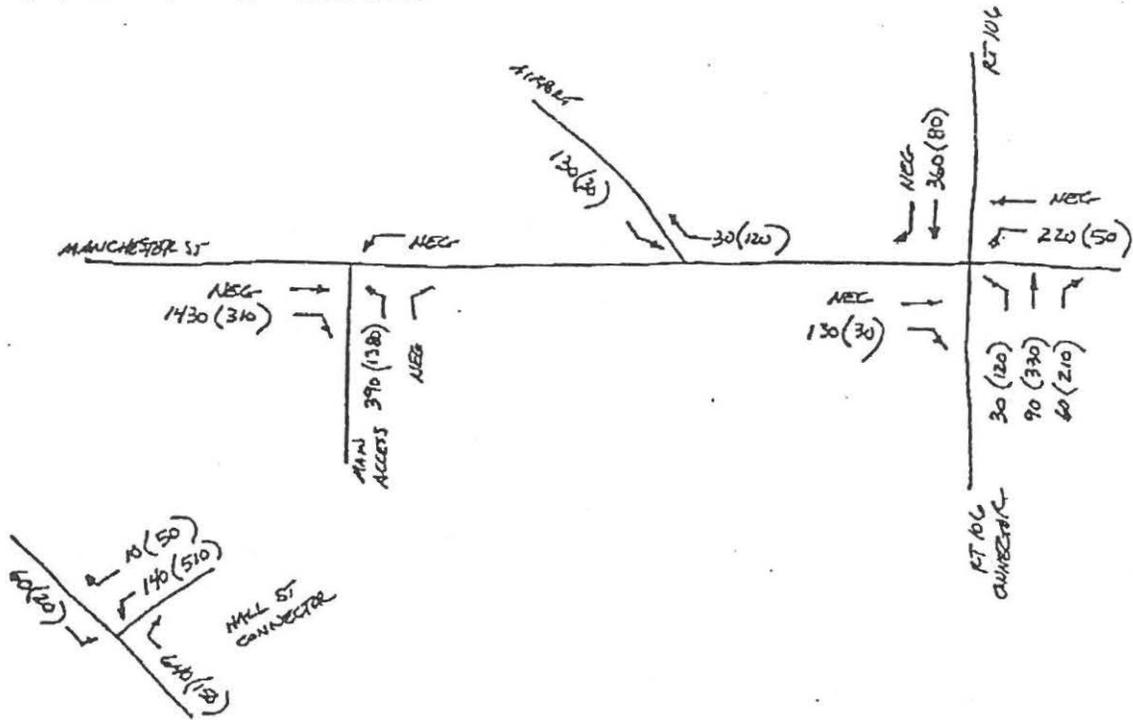


2nd Alternative VOLUMES - SITE TRIPS  
 WITHOUT HALL ST. CONNECTOR

xxx = AM PK (xxx) = PM PK



WITH HALL ST CONNECTOR



**Appendix D:**

**Fiscal Impact Analysis—Supporting Information**

## FISCAL IMPACT ANALYSIS - SUPPORTING INFORMATION

### Current Conditions

The following assumptions are made about population, housing and employment in the City of Concord in 1995. The total population was 38,620 and the household population was 35,585. The average household size was 2.31 people, resulting in 15,415 households. The total number of housing units in the city in 1995 was 16,225, resulting in a vacancy rate of 5.0 percent. The total number of households in the city with a head of household under the age of 65 is estimated at 12,579. These households (head under 65) had an average size of 2.55 members and an average school enrollment of 0.506 students per household, with 0.575 students for each occupied three bedroom housing unit. Eighty-six percent of the school-aged residents of Concord were enrolled in the Concord School District and 9.9 percent were enrolled in the Merrimack Valley School District. The other 4.1 percent of the students were not enrolled in public schools.

There were 38,915 jobs located in Concord in 1995. Concord residents held 17,878 of these jobs, or 39 percent. In the fiscal impact analysis in this report, it was assumed that 36 percent of the new jobs located in Concord will be held by Concord residents. There would be 1.22 jobs in Concord held by each household in Concord where the age of the household head was under 65. The City government had 460 employees and the Concord School District had 753 employees in 1995. There were 5,472 students enrolled in the Concord School District in 1995.

The total equalized valuation of the City in 1995 was \$1,507,947,142 and the equalized tax rates per \$1,000 in the Concord School District portion of the City were: Merrimack County, \$2.12; City government, \$11.35; and Concord School District, \$22.37. The total property taxes collected by the City in 1995 for use by the City government, Concord School District, Merrimack Valley School District and Merrimack County equaled \$53,516,929. The land within the study area is estimated to have had a taxable value of 5.2 million dollars and paid property taxes of \$183,838 in 1995. This does not include the PSNH power lines or dam. The current property value and taxes collected are not included in the calculations which follow and were not included in the Fiscal Impact Analysis chapter in this report.

The tables at the end of this Appendix are taken from City of Concord and Concord School District budgets and show both revenues and expenses. For the City this information is also presented in terms of costs per City employee at the Department level. For the Concord School District the costs and revenues are shown on a per student basis. This level of detail enables estimates of cost and revenue impacts of proposed new development on the City and Concord School District.

The impact of each development alternative on City government is discussed in more detail below. The impact on City government was based on the estimate of the number of new employees at the department level which would be needed to serve the additional households and employment located in the City under each development alternative. Interviews were conducted with department budget staff to allocate department operating

costs to residential versus non-residential development in the city. This survey showed that almost all city government departments spend more money and staff time serving residential land uses than non-residential land uses.

The impact on the Concord School District is measured in terms of the total number of students which would be result from each development alternative. The first development alternative would result in 1,991 additional students in the Concord School District while the second development alternative would have 1,606 additional students.

The 1995 cost per student in the Concord School District for all costs including school meals and out-of-district placements was \$6,876. Of this amount, \$5,458 per student came from property taxes collected by the City government and forwarded to the Concord School District. Property taxes were 79 percent of total student receipts in 1995.

Additional students in the Concord School District will require the construction of new facilities, as the current facilities are at capacity. Because of the cost of new buildings and equipment, it is estimated that the cost of each new student will be \$7,373, or \$497 more per student than 1995 average costs, assuming these facilities were available in 1995 to accommodate these new students. Several categories of state and federal aid are not likely to change or will not increase proportionally for these additional students. For this reason it is estimated that each new student will require \$6,512 from property taxes, or \$1,054 more from property taxes per new student than existing students receive from property taxes. The cost of the new students will be 88 percent supported by the property tax.

As a result, the 1,991 additional students in the Concord School District under the first development alternative are estimated to cost \$12,965,392 in property taxes. There would be 281 new employees at the Concord School District to serve these added students under the first development alternative. The 1,606 additional students in the Concord School District under the second development alternative are estimated to cost \$10,458,272 in property taxes. There would be 207 new employees at the Concord School District to serve these added students under the second development alternative.

### **First Development Alternative**

Under the median projection for the first development alternative, there would be 9,566 jobs located on these 397 acres and most of these jobs would be in office buildings. Over half of the site (211 acres) would be a first class office park, with the remaining 186 acres as a business park. The first class office park portion would also contain a hotel, a day care center and a fitness center.

The following land values were assumed for on-site development under this alternative: 415 acres at \$100 per acre; 88 acres at no taxable value per acre; 100 acres at \$1,000 per acre; 186 acres at \$42,000 per acre; and 211 acres at \$80,000 per acre.

It is assumed that 1.7 million square feet of building space have been built at \$70 per square foot and 1.6 million square feet at \$90 per square foot. These building values

include parking and driveway improvements, but do not include utilities which have a taxable value of 2.6 million dollars. The total additional valuation for the study area (on-site) under the first development alternative is \$288.7 million, which produces an estimated \$10,348,094 in added property taxes for the City. Table D-1 shows the median case on-site fiscal impacts on City government for the first development alternative in more detail.

**Table D-1: First Development Alternative - Median Case  
 City Government Impacts On-Site**

Revenue or Cost Category	Employees	Amounts
<b>Revenues</b>		
Property tax	-----	\$10,348,094
Land use Change Tax*	-----	28,311
Motor Vehicle Tax	-----	72,000
Building Permits*	-----	34,800
Highway Block Grant	-----	10,200
Department Charges**	-----	32,000
Airport fees	-----	15,000
<b>Total Revenues</b>	-----	<b>\$10,540,405</b>
<b>Costs</b>		
Administration	3	183,225
Code Enforcement*	2	116,569
Planning/Development*	2	114,350
Library	0	12,000
Recreation	0	14,000
Police	7	344,521
Fire	5	274,420
General Services**	13	669,435
<b>Total Costs</b>	<b>32</b>	<b>1,728,511</b>
<i>Payment to Merrimack County</i>	-----	<i>612,607</i>
<i>Balance for Concord School District and/or Tax Reduction</i>	-----	<i>\$ 8,199,287</i>

**Notes for Table D-1:**

\* Annualized revenues and costs from this development

\*\* Does not include water and sewer funds or employees

The first development alternative would also cause significant off-site development in Concord. There are estimated to be an additional 6,091 jobs elsewhere in Concord as a result of the on-site development, including 155 employees in City government and 281 at the Concord School District. There would be 4,806 new houses and apartments built elsewhere in Concord for residents who take these new jobs both on and off-site. Total population in the City would increase by 11,620 and there would be 1,991 additional students in the Concord School District and 230 new students in the Merrimack Valley School District. The additional taxable valuation of off-site business development would be \$140.9 million, with an additional \$475.8 million for off-site residential development. This produces an estimated \$22,101,626 in added property taxes for the City collected off-site. Table D-2 shows the median case off-site fiscal impacts on City government for the first development alternative in more detail.

A comparison of Tables D-1 and D-2 shows the much higher costs of serving residential land uses than non-residential land uses by City government. The impacts are particularly great for the police and fire departments and for the City Library and parks and recreation programs.

**Table D-2: First Development Alternative - Median Case  
 City Government Impacts Off-Site**

Revenue or Cost Category	Employees	Amounts
<b>Revenue</b>		
Property tax	-----	\$22,101,626
Land use Change Tax*	-----	28,700
Motor Vehicle Tax	-----	703,350
Building Permits*	-----	50,550
Highway Block Grant	-----	15,800
Department Charges**	-----	176,700
Airport fees	-----	31,000
<b>Total Revenues</b>	-----	<b>\$23,107,726</b>
<b>Costs</b>		
Administration	6	366,450
Code Enforcement*	4	233,138
Planning/Development*	4	228,700
Library	7.5	321,458
Recreation	3	102,609
Police	23	1,131,968
Fire	55	3,018,620
General Services**	20	1,029,900
<b>Total Costs</b>	<b>122.5</b>	<b>\$ 6,432,843</b>
<b>Payment to Merrimack County</b>	-----	<b>\$ 1,308,416</b>
<b>Balance for Concord School District and/or Tax Reduction</b>	-----	<b>\$15,366,467</b>

**Notes for Table D-2:**

\* Annualized revenues and costs from this development

\*\* Does not include water and sewer funds or employees

Table D-3 shows the net revenues and costs for City government and for the Concord School District under three different scenarios: best case, median case, and worst case. It also shows the effect of the proposed on-site and off-site development on the property tax rate for property owners within the Concord School District portion of the City for each scenario.

The "best case" scenario in Table D-3 has tax revenues and fees received ten percent higher and the costs of serving this development ten percent lower for both the Concord School District and the City government than under the median case scenario. Merrimack County would also receive ten percent more revenues from the on-site and off-site developments under this first development alternative under the best case scenario than under the median case scenario.

**Table D-3: Three Fiscal Impacts for the First Development Alternative**

	Best Case	Median Case	Worst Case
On-site Balance	\$ 9,364,918	\$ 8,188,287	\$ 5,868,025
Off-site Balance	18,189,682	15,366,467	9,720,036
Total Balance	27,554,600	23,565,754	15,588,061
Concord S. D. Costs	10,373,616	12,965,392	15,558,470
Remaining Balance	\$17,180,984	\$10,600,362	\$ 29,951
<b>Reduction in Tax Rate</b>	<b>32.1 %</b>	<b>19.8 %</b>	<b>0.1 %</b>
<b>Tax Reduction on \$100,000 Single Family Home</b>	<b>\$1,083</b>	<b>\$668</b>	<b>\$3</b>

The "worst case" scenario in Table D-3 has tax revenues and fees received twenty percent lower and the costs of serving this development twenty percent higher for both the Concord School District and the City government than under the median case scenario. Merrimack County would receive twenty percent less revenues from the on-site and off-site developments under this first development alternative under the worst case scenario than for the median case scenario.

### Second Development Alternative

Under the median projection for the second development alternative, there would be 7,689 jobs and 215 houses located on these 388 acres and most of these jobs would be in office buildings. Over half of the site (211 acres) would be a first class office park, with 112 acres as a business park and 65 acres in the residential area. The first class office park portion would also contain a small neighborhood retail and services center, a hotel, a day care center and a fitness center.

The following land values were assumed for on-site development under this second alternative: 427 acres at \$100 per acre; 88 acres at no taxable value per acre; 100 acres at \$1,000 per acre; 112 acres at \$42,000 per acre; and 211 acres at \$80,000 per acre. It is assumed that 1.0 million square feet of building space have been built at \$70 per square foot and 1.6 million square feet at \$90 per square foot. These building values include parking and driveway improvements, but do not include utilities which have a taxable value of 2.6 million dollars. In addition, 120 houses are built at a value of \$115,000 each including land and 95 houses are built at \$200,000 each including land. The total additional valuation for the study area (on-site) under this second development alternative is \$272.2 million, which produces an estimated \$9,755,252 in added property taxes for the City. Table D-4 shows the median case on-site fiscal impacts for the second development alternative in more detail.

The second development alternative would also cause significant off-site development in Concord, although at a lower level than the first development alternative. There are estimated to be an additional 4,674 jobs elsewhere in Concord as a result of the on-site development, including 130 employees in City government and 207 at the Concord School

District. There would be 3,628 new houses and apartments built off-site in Concord for residents who take these new jobs both on and off-site. Total population in the City would increase by 9,333 and there would be 1,606 additional students in the Concord School District and 186 new students in the Merrimack Valley School District. The additional taxable valuation of off-site business development would be \$110.7 million, with an additional \$359.2 million for off-site residential development. This produces an estimated \$16,838,898 in added property taxes for the City to collect off-site. Table D-5 shows the median case off-site fiscal impacts for the second development alternative in more detail.

A comparison of Tables D-4 and D-5 shows the much higher costs of serving residential land uses than non-residential land uses by City government. The impacts are particularly great for the police and fire departments and for the City Library and parks and recreation programs.

**Table D-4: Second Development Alternative - Median Case  
 City Government Impacts On-Site**

Revenues and Cost Category	Employees	Amounts
<b>Revenue</b>	-----	
Property tax	-----	\$ 9,755,252
-----	-----	23,295
Motor Vehicle Tax	-----	91,325
Building Permits*	-----	30,000
Highway Block Grant	-----	10,200
Department Charges**	-----	33,400
Airport fees	-----	13,360
<b>Total Revenues</b>		<b>\$ 9,956,832</b>
<b>Costs</b>	-----	
Administration	2.7	164,903
Code Enforcement*	1.8	104,912
Planning/Development*	1.8	102,915
Library	0.3	12,858
Recreation	0.1	13,420
Police	6.5	319,904
Fire	6.3	345,769
General Services**	13.0	669,435
<b>Total Costs</b>	<b>32.0</b>	<b>\$ 1,734,116</b>
<b>Payment to Merrimack County</b>	---	<b>\$ 577,511</b>
<b>Balance for Concord School District and/or Tax Reduction</b>	---	<b>\$ 7,645,205</b>

**Notes on Table D-5:**

- \* Annualized revenues and costs from this development
- \*\* Does not include water and sewer funds or employees

Table D-6 shows the net revenues and costs for City government and the Concord School District under three different scenarios: best case, median case, and worst case. It also shows the effect of the proposed on-site and off-site development on the property tax rate for property owners within the Concord School District portion of the City for each scenario.

**Table D-5: Second Development Alternative - Median Case  
 City Government Impacts Off-Site**

Revenue and Cost Category	Employees	Amounts
<b>Revenue</b>		
Property tax	----	\$16,838,898
Land use Change Tax*	----	22,000
Motor Vehicle Tax	----	540,200
Building Permits*	----	38,800
Highway Block Grant	----	13,900
Department Charges**	----	135,700
Airport fees	----	23,800
<b>Total Revenues</b>	----	<b>17,613,298</b>
<b>Costs</b>		
Administration	5	305,375
Code Enforcement*	3	174,854
Planning/Development*	3	171,525
Library	6	257,166
Recreation	2	68,406
Police	18	885,888
Fire	42	2,305,128
General Services**	18	926,910
<b>Total Costs</b>	<b>97</b>	<b>\$ 5,095,252</b>
<b>Payment to Merrimack County</b>	----	<b>\$ 996,863</b>
<b>Balance for Concord School District and/or Tax Reduction</b>	----	<b>\$11,521,183</b>

**Notes on Table D-5:**

\* Annualized revenues and costs from this development

\*\* Does not include water and sewer funds or employees

**Table D-6: Three Fiscal Impacts for the Second Development Alternative**

	Best Case	Median Case	Worst Case
On-site Balance	\$ 8,756,549	\$ 7,645,205	\$ 5,422,518
Off-site Balance	13,692,352	11,521,183	7,178,846
Total Balance	22,448,901	19,166,388	12,601,364
Concord S. D. Costs	8,367,920	10,458,272	12,548,624
Remaining Balance	\$14,080,981	\$ 8,708,116	\$ 52,740
<b>Reduction in Tax Rate</b>	<b>26.3 %</b>	<b>16.3 %</b>	<b>0.1%</b>
<b>Tax Reduction on a \$100,000 Single Family Home</b>	<b>\$877</b>	<b>\$550</b>	<b>\$3</b>

The "best case" scenario in Table D-6 has tax revenues and fees ten percent higher and the costs of serving this development ten percent lower for both the Concord School District and the City government than under the median case scenario. Merrimack County would also

receive ten percent more revenues from the on-site and off-site developments under this second development alternative under the best case scenario than for the median case scenario.

The "worst case" scenario in Table D-6 has tax revenues and fees twenty percent lower and the costs of serving this development twenty percent higher for both the Concord School District and the City government than under the median case scenario. Merrimack County would receive twenty percent less revenues from the on-site and off-site developments under this second development alternative under the worst case scenario than for the median case scenario.

### **Conclusion**

The primary conclusion which can be reached from this fiscal impact analysis is that the property tax on prime commercial and industrial real estate development is not sufficient to support the cost of public primary and secondary education under New Hampshire's current tax structure. Concord comes out ahead in terms of property taxes received from such properties only if at least 57 percent of the employees who work in those taxable properties and who have children enrolled in public schools live outside of the City's limits, shifting the cost of education to other municipalities.

City of Concord—1995-1997 Operating Budgets—Revenues				
		1995	1996 (6 mo.)	1997
		Current	Fiscal Budget	Fiscal Budget
<b>Taxes</b>				
	1995 Property Taxes	\$15,976,040		
	1996 Property Taxes		\$12,366,420	
	1997 Property Taxes			\$16,056,010
	Payments-in-Lieu-of-Taxes	\$225,000	\$70,000	\$250,000
	Land Use Change Tax	\$20,000	\$12,500	\$25,000
	Timber Yield Tax	\$10,000	\$3,000	\$10,000
	Motor Vehicle Reg. Tax	\$2,561,500	\$1,300,000	\$2,700,000
	Bank Stock Tax	\$70	\$0	\$0
	Subtotal	\$18,792,610	\$13,751,920	\$19,041,010
<b>Licenses and Permits</b>				
	Miscellaneous Licences and Permits	\$102,890	\$71,450	\$115,070
	Building Permits	\$287,500	\$151,950	\$355,550
	Public Works Permits	\$16,000	\$12,500	\$35,000
	Subtotal	\$406,390	\$235,900	\$505,620
<b>Federal and State Shared Revenue</b>				
	Miscellaneous Shared Revenues	\$97,280	\$9,400	\$97,790
	State Revenue Sharing	\$1,364,000	\$0	\$1,364,000
	State Highway Block Grant	\$512,570	\$87,000	\$203,600
	Subtotal	\$1,973,850	\$96,400	\$1,665,390
<b>Department Service Charges</b>				
	Miscellaneous Service Charges	\$221,200	\$95,300	\$266,750
	Dispatch Service—Fire	\$97,010	\$50,250	\$100,930
	Ambulance Service Charge	\$310,000	\$206,000	\$419,000
	Cemetery Service Charges	\$193,310	\$97,050	\$194,090
	Program & Event Fees—Recreation	\$84,000	\$53,880	\$109,250
	Subtotal	\$905,520	\$502,480	\$1,090,020
<b>Department Service Charges—Other</b>				
	User Fees	\$16,760	\$37,600	\$28,730
	Inspections, Applications, Appeals	\$24,840	\$20,420	\$40,900
	Subdivision Fees—Planning	\$22,750	\$12,500	\$27,000
	Subtotal	\$64,350	\$70,520	\$96,630
<b>Fines and Penalties</b>				
	Miscellaneous Fines and Penalties	\$161,000	\$94,250	\$197,750
	Subtotal	\$161,000	\$94,250	\$197,750
<b>Rents and Leases</b>				
	Miscellaneous Rents and Leases	\$86,350	\$42,970	\$80,120
	Subtotal	\$86,350	\$42,970	\$80,120
<b>Transfers-In</b>				
	Miscellaneous Transfers-In Trust	\$310,700	\$12,730	\$318,600
	Miscellaneous Transfers-In Other	\$709,010	\$340,500	\$791,800
	Subtotal	\$1,019,710	\$353,230	\$1,110,400
<b>Miscellaneous Other Revenues</b>				
	Miscellaneous Other Revenues	\$1,416,810	\$838,700	\$1,740,000
	Subtotal	\$1,416,810	\$838,700	\$1,740,000
<b>Surplus Funds</b>				
	Total Surplus Funds	\$600,000	\$0	\$950,000
	Subtotal	\$600,000	\$0	\$950,000
<b>Special Revenue Funds</b>				
	Parking Meter Fund	\$684,100	\$333,650	\$675,740
	General Services—Airport			
	Miscellaneous	\$92,530	\$37,390	\$90,310
	City Subsidy (G.S. Dept.)	\$117,910	\$45,840	\$135,510
	Community Development	\$87,060	\$47,710	\$88,740
	Subtotal	\$981,600	\$464,590	\$990,300
<b>Enterprise Funds</b>				
	General Service—Golf/Arena			
	Golf Course	\$546,820	\$247,410	\$589,070
	Arena	\$310,610	\$140,140	\$317,100
	General Services—Water & Sewer			
	Administration	\$296,760	\$157,830	\$315,540
	Meter Read/Bill	\$206,850	\$100,030	\$217,540
	Meter Operations	\$127,930	\$68,040	\$134,760
	Records, Planning & GIS	\$351,700	\$186,320	\$372,100
	Vehicle Costs	\$0	\$0	\$0
	Water Utility Fund	\$4,006,810	\$1,781,500	\$3,864,100
	Wastewater Utility Fund	\$4,945,420	\$1,940,000	\$4,819,620
	Solid Waste Fund	\$1,178,380	\$557,840	\$1,196,720
	General Services Equipment Fund	\$654,800	\$344,140	\$670,600
	Subtotal	\$12,626,080	\$5,523,250	\$12,497,150
	<b>GRAND TOTALS:</b>	<b>\$39,034,270</b>	<b>\$21,974,210</b>	<b>\$39,964,390</b>

City of Concord--1995-1997 Operating Budgets--Expenditures						
				1995	1996 (6 mo.)	1997
				Current	Fiscal Budget	Fiscal Budget
<b>General Fund</b>						
	Administration			\$2,442,707	\$1,227,230	\$2,556,950
	Public Safety			\$10,067,264	\$5,348,870	\$9,928,290
	General Services			\$5,894,443	\$3,237,590	\$6,064,230
	Planning and Development			\$800,456	\$404,610	\$812,280
	Leisure Services			\$1,520,615	\$770,820	\$1,570,750
	Human Services			\$998,620	\$594,330	\$1,138,210
	Miscellaneous			\$858,760	\$1,045,230	\$840,960
	Capital Outlay			\$1,039,058	\$416,320	\$606,000
	Debt Service			\$2,640,480	\$1,684,690	\$2,959,270
	<b>Subtotal</b>			<b>\$26,262,403</b>	<b>\$14,729,690</b>	<b>\$26,476,940</b>
<b>Special Revenue Funds</b>						
	Parking Meter Funds			\$691,461	\$324,240	\$611,890
	Airport Fund			\$209,640	\$83,230	\$225,820
	Community Development Fund			\$87,780	\$47,710	\$88,740
	<b>Subtotal</b>			<b>\$988,881</b>	<b>\$455,180</b>	<b>\$926,450</b>
<b>Enterprise &amp; Internal Service</b>						
	Golf Course Fund			\$565,000	\$284,550	\$589,220
	Everett Arena Fund			\$318,070	\$175,820	\$316,360
	Solid Waste			\$2,266,619	\$1,115,650	\$2,306,920
	Water and Sewer			\$67,277	\$0	\$0
	Water Utility			\$4,114,971	\$1,705,040	\$3,915,080
	Wastewater Utility			\$5,169,436	\$2,143,760	\$5,165,340
	<b>Subtotal</b>			<b>\$12,501,373</b>	<b>\$5,424,820</b>	<b>\$12,292,920</b>
<b>GRAND TOTAL ALL FUNDS</b>				<b>\$39,752,657</b>	<b>\$20,609,690</b>	<b>\$39,696,310</b>
<b>GENERAL SERVICE EQUIPMENT SERVICES</b>				<b>\$633,040</b>	<b>\$340,140</b>	<b>\$662,600</b>

City of Concord--1995 Operating Budget--Cost of Service per Employee			
	1995	1995	1995
Department and Division	Employees	Current	Cost/Employee
<b>GENERAL FUND</b>			
<b>Administration</b>			
City Manager Operations	3	\$250,889	\$83,629.67
Legal Services	7	\$408,460	\$58,351.43
Assessor	5.5	\$310,250	\$56,409.09
Personnel	3	\$193,177	\$64,392.33
Purchasing	2	\$133,230	\$66,615.00
Finance	17.22	\$933,041	\$54,183.57
City Council	0	\$72,180	
City Clerk	2.5	\$141,480	\$56,592.00
<b>Subtotals</b>	<b>40.22</b>	<b>\$2,442,707</b>	<b>\$60,733.64</b>
<b>Public Safety</b>			
Police	89	\$4,380,218	\$49,215.93
Fire	93	\$5,104,201	\$54,883.88
Code Enforcement	10	\$582,845	\$58,284.50
<b>Subtotals</b>	<b>192</b>	<b>\$10,067,264</b>	<b>\$52,433.67</b>
<b>General Services</b>			
<b>Subtotals</b>	<b>171.7</b>	<b>\$5,894,443</b>	<b>\$34,329.90</b>
<b>Planning and Development</b>			
Planning	4	\$282,860	\$70,715.00
Economic Development	3	\$125,846	\$41,948.67
Engineering	7	\$379,430	\$54,204.29
Conservation Commission	0	\$3,120	
Forestry Program	0	\$9,200	
<b>Subtotals</b>	<b>14</b>	<b>\$800,456</b>	<b>\$57,175.43</b>
<b>Leisure Services</b>			
Library	26.7	\$1,144,385	\$42,860.86
Recreation	11	\$376,230	\$34,202.73
<b>Subtotals</b>	<b>38</b>	<b>\$1,520,615</b>	<b>\$40,334.62</b>
<b>Human Services</b>			
Welfare Administration	4	\$176,230	\$44,057.50
Welfare Aid		\$390,000	
Social Service Agency Grants		\$432,390	
<b>Subtotals</b>		<b>\$998,620</b>	
<b>Miscellaneous</b>		<b>\$858,760</b>	
<b>Capital Outlay</b>		<b>\$1,039,058</b>	
<b>Debt Service</b>		<b>\$2,640,480</b>	
<b>SUBTOTAL FOR GENERAL FUND</b>		<b>\$26,262,403</b>	
<b>SPECIAL REVENUE FUNDS:</b>			
Parking Meter Fund	(PS)	\$691,461	
Airport Fund	(CS)	\$209,640	
Community Development Fund	(ED)	\$87,780	
<b>SUBTOTAL FOR SPECIAL REVENUE FUNDS</b>		<b>\$988,881</b>	
<b>ENTERPRISE FUNDS &amp; INTERNAL SERVICES</b>			
Golf Course Fund	(CS)	\$565,000	
Everett Arena Fund	(CS)	\$318,070	
Solid Waste	(CS)	\$2,266,619	
Water and Sewer	(CS)	\$67,277	
Water Utility	(CS)	\$4,114,971	
Wastewater Utility	(CS)	\$5,169,436	
<b>SUBTOTAL FOR ENTERPRISE &amp; INTERNAL SERVICES</b>		<b>\$12,501,373</b>	
<b>GRAND TOTAL ALL FUNDS</b>		<b>\$39,752,657</b>	

Concord School District				
Current Budget for 1994-1995 and Proposed Budget for 1995-1996				
Actual and Projected Budget Revenues (1994-1996)				
Revenues by Source	Actual Revenue	Projected Revenue	Average Revenue	Revenue/Student
	1994-1995	1995-1996	1994-1996	2/96 Population
<b>Revenue from State Sources</b>				
Business Profits Tax	\$836,903	\$836,903	\$836,903	\$153
Foundation Aid (Sweepstakes)	\$572,049	\$446,097	\$509,073	\$93
School Building Aid	\$348,907	\$350,209	\$349,558	\$64
Area Vocational School	\$376,486	\$286,394	\$331,440	\$61
Drivers Education	\$30,000	\$45,000	\$37,500	\$7
Catastrophic Aid	\$175,055	\$173,820	\$174,438	\$32
Child Nutrition	\$16,920	\$21,571	\$19,246	\$4
<b>Subtotal from State Sources</b>	<b>\$2,356,320</b>	<b>\$2,159,994</b>	<b>\$2,258,157</b>	<b>\$414</b>
<b>Revenue from Federal Sources</b>				
ECIA Chapter I	\$329,168	\$374,571	\$351,870	\$64
Vocational Education	\$361,423	\$318,014	\$339,719	\$62
Block Grant	\$54,743	\$46,734	\$50,739	\$9
Child Nutrition Program	\$346,220	\$351,646	\$348,933	\$64
PL 142 & 89-313 Handicapped	\$300,204	\$297,765	\$298,985	\$55
Other	\$90,340	\$74,898	\$82,619	\$15
<b>Subtotal from Federal Sources</b>	<b>\$1,482,098</b>	<b>\$1,463,628</b>	<b>\$1,472,863</b>	<b>\$270</b>
<b>Local Revenue other than Taxes</b>				
Tuition	\$1,993,946	\$2,082,152	\$2,038,049	\$373
Earnings on Investments	\$28,000	\$527,079	\$277,540	\$51
Child Nutrition--Local	\$613,218	\$716,338	\$664,778	\$122
Other	\$250,212	\$272,890	\$261,551	\$48
Unreserved Fund Balance	\$881,850	\$649,124	\$765,487	\$140
Transfer from Capital Reserve Fund	\$0	\$0	\$0	\$0
<b>Subtotal from Local other than Taxes</b>	<b>\$3,767,226</b>	<b>\$4,247,583</b>	<b>\$4,007,405</b>	<b>\$734</b>
<b>Total Non-Tax Revenue</b>	<b>\$7,605,644</b>	<b>\$7,871,205</b>	<b>\$7,738,425</b>	<b>\$1,418</b>
<b>Local Tax Assessment Revenue</b>	<b>\$28,378,317</b>	<b>\$31,212,914</b>	<b>\$29,795,616</b>	<b>\$5,458</b>
<b>TOTAL OPERATING REVENUE</b>	<b>\$35,983,961</b>	<b>\$39,084,119</b>	<b>\$37,534,040</b>	<b>\$6,876</b>

Concord School District				
Current Budget for 1994-1995 and Proposed Budget for 1995-1996				
Actual and Projected Budget Expenditures (1994-1996)				
	APPROVED	PROPOSED	AVERAGE	COST/STUDENT
	Budget	Budget	OF BUDGETS	2/96 Population
	(1994-95)	(1995-96)	(1994-1996)	
<b>PEOPLE</b>				
Salaries--Administration	\$1,237,317	\$1,277,317	\$1,257,317	\$230
Salaries--Teachers	\$15,267,121	\$15,887,121	\$15,577,121	\$2,853
Salaries--Other	\$5,068,469	\$5,303,738	\$5,186,104	\$950
Staff Positions (Enrollments)	\$0	\$261,939	\$130,970	\$24
Early Retirement Stipend	\$437,000	\$512,000	\$474,500	\$87
Fringe Benefits	\$5,508,755	\$5,444,602	\$5,476,679	\$1,003
<b>Subtotal--People</b>	<b>\$27,518,662</b>	<b>\$28,686,717</b>	<b>\$28,102,690</b>	<b>\$5,148</b>
<b>NON-PEOPLE</b>				
Purchased Services	\$472,788	\$518,844	\$495,816	\$91
Servicemaster	\$189,340	\$193,990	\$191,665	\$35
Sup. Educational Services	\$1,000	\$1,000	\$1,000	\$0
Maintenance and Transportation	\$382,792	\$424,461	\$403,627	\$74
Insurance	\$116,695	\$116,622	\$116,659	\$21
Postage, Printing, and Advertising	\$53,716	\$62,500	\$58,108	\$11
Tuition	\$649,203	\$699,203	\$674,203	\$124
City Services	\$131,805	\$132,809	\$132,307	\$24
Supplies/Maintenance *	\$573,625	\$573,625	\$573,625	\$105
Textbooks and Periodicals	\$149,285	\$149,285	\$149,285	\$27
Energy	\$789,165	\$875,252	\$832,209	\$152
Equipment and Furniture	\$123,613	\$123,613	\$123,613	\$23
Membership Dues and Fees	\$13,816	\$17,112	\$15,464	\$3
Principal and Interest	\$2,200,210	\$4,063,441	\$3,131,826	\$574
Federal Programs	\$1,135,878	\$1,111,981	\$1,123,930	\$206
School Lunch	\$976,358	\$1,089,555	\$1,032,957	\$189
Miscellaneous	\$96,941	\$105,040	\$100,991	\$18
Transfer to Capital Reserve	\$409,069	\$139,069	\$274,069	\$50
Contingency	\$0	\$0	\$0	\$0
<b>Subtotal--NonPeople</b>	<b>\$8,465,299</b>	<b>\$10,397,402</b>	<b>\$9,431,351</b>	<b>\$1,728</b>
<b>TOTAL EXPENSES</b>	<b>\$35,983,961</b>	<b>\$39,084,119</b>	<b>\$37,534,040</b>	<b>\$6,876</b>