

1978


Dickey-Lincoln School Lakes Project Environmental Impact Statement: Appendix C: Social & Economic Assessment (Supplement 1)

Pamela D. Savetsky

New England Division

United States Army Engineer Division

Follow this and additional works at: https://digitalcommons.library.umaine.edu/dickey_lincoln

 Part of the [Applied Statistics Commons](#), [Business Administration, Management, and Operations Commons](#), [Climate Commons](#), [Construction Engineering Commons](#), [Economic Theory Commons](#), [Power and Energy Commons](#), [Water Resource Management Commons](#), and the [Work, Economy and Organizations Commons](#)

Repository Citation

Savetsky, Pamela D.; New England Division; and United States Army Engineer Division, "Dickey-Lincoln School Lakes Project Environmental Impact Statement: Appendix C: Social & Economic Assessment (Supplement 1)" (1978). *Dickey-Lincoln School Lakes Project*. 30.

https://digitalcommons.library.umaine.edu/dickey_lincoln/30

This Report is brought to you for free and open access by DigitalCommons@UMaine. It has been accepted for inclusion in Dickey-Lincoln School Lakes Project by an authorized administrator of DigitalCommons@UMaine. For more information, please contact um.library.technical.services@maine.edu.

ENVIRONMENTAL IMPACT STATEMENT

Maine
TK
1425
D5
U52323
App. C
Supp. 1
1978

DICKEY-LINCOLN SCHOOL LAKES

APPENDIX C SOCIAL & ECONOMIC ASSESSMENT (SUPPLEMENT)



*DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS.
02154*

1978

LIBRARIES
UNIVERSITY OF MAINE



State of Maine Collection
RAYMOND H. FOGLER LIBRARY
ORONO

A SCENARIO OF PROJECTED BOOM AND DECLINE IN NORTHERN
AROOSTOOK COUNTY, MAINE, RESULTING FROM DICKEY-LINCOLN
SCHOOL LAKES DAM CONSTRUCTION

Prepared for
U.S. Army Corps of Engineers
New England Division
Waltham, MA

By
Pamela D. Savatsky

Construction-induced population change in the northern portion of Aroostook County, Maine, will be a major impact of the Dickey-Lincoln School Lakes Dam project. A review of available literature on rural communities which have been affected by construction projects of a similar scale has been completed. This review will aid in the development of a scenario of the construction labor peak and decline effects on the Dickey-Lincoln area. Eventhough this scenario is based on specific needs of the project, since estimates have been developed as a result of post construction studies in other communities, it is likely that these projections will differ slightly from those in the E. C. Jordan impact report. Secondary developments will not be considered in this paper.

Considering the studies of regions and towns impacted by similar projects, it is necessary to understand that though the agricultural/rural character of these communities with accompanying low-density, migration, income, education, and employment statistics are very much alike, (Jobes, 1977; Eberhart, 1974; Department of the Army 1977, 1978; Coon et. al. 1975) cultural differences exist in Northern Aroostook County. The Fort Kent vicinity is basically unlike other areas, because it is comprised of second and third generation French immigrants from Canada. They retain a very strong Catholic religious orientation in the majority of St. John Valley. Divorce and suicide are virtually noneiistent. Families are large with more than eight children in some cases. Extended family units of parents, several groups of married children, with their families,

and often cousins, have adjoining farms or residences within the same community. They are generally dominated by the male parent and most wives work at home taking care of the large families rather than as wage earners which would be frowned upon by other family members. Though many of the homes tend to appear in external disrepair, the dominant domestic values of the area include immaculate housekeeping, "good hearty food," and well cared for children.

Statistical employment is reportedly low in these rural areas as many of the males work on their own farms, or on neighbor's farms, and as woodsmen alternately. They consider themselves to be self-employed and strive to own their farm, woods, and trucking equipment. Many men also have a variety of trade skills. They may do some work as carpenters, pipe fitters, mechanics, etc. for neighbors. These families are occupationally independent and tend to rely on a variety of mechanisms for seasonal employment. Their incomes vary yearly and seasonally.*

*Qualitative information about these communities is derived from interviews with social scientists at the University of Maine, one of whom, Lowell Daigel, has done an eight year participant observational analysis of this area.

A majority of the recent large-scale projects in rural areas have taken place in the northern great plains and northwestern states, generally due to the availability of land. Thus post construction studies tend to be of northwestern rural communities. Cultural dissimilarities exist since these northwestern areas are predominantly populated by people whose ancestors came from Nordic Germanic, or Anglo-Saxon countries. Patterns of family life, value orientations, and life styles differ even within similar rural agricultural communities. Agricultural patterns, furthermore, may involve livestock for example instead of potato farming. Mining or other industrial activities have, in many cases, been introduced into the northwestern lifestyle. A frontier orientation to life creates a totally different community atmosphere.

Taking these cultural dissimilarities into consideration, it is possible to project some of the potential consequences from the boom and decline in northwestern or northern plains communities to Northern Aroostook County.

Though the Dickey-Lincoln construction project would be seasonal it would take place over an eight year period with approximately 1,800 employees on site from years 5 through 7, being phased out by year 8. In the present analysis, only the "worst case," a boom of 1,800 to a decline of nearly 0 construction workers, will be considered.

A 1977 study of twelve Bureau of Reclamation projects outlined and analyzed the characteristics of construction workers (Mountain West 1977). This analysis of water resource projects reflected the results of a 1975 summary of construction workers' characteristics

in energy projects. (Mountain West 1975). These reports show that on the average, 53% of the workers move into the project area from elsewhere, establishing new residences. Approximately 25% of the construction workers are single and 75% married. Those moving into the communities who are married have an average family size of 3.57 persons. Just under 65% (mean) of the married workers bring their families to the site. This ranges between 27% and 91% the different projects. The mode is 77%. The remaining married workers (35% mean) either live close enough to return home on weekends or leave families for long periods.

Half of the nonlocal people move into trailers, campers, or mobil homes while the other half choose single family homes or apartments. Studies have shown, however, that as many as 80% desire single family homes. The trend in housing is to absorb all of the single houses and apartments available within commuting distance then to seek mobil homes or trailer/camping facilities.

This varies with available housing, however. In the Chief Joseph Dam project in Washington, due to lack of housing in the area, only 18% moved into single family units and 10% into apartments (Construction Workers Survey Chief Joseph Dam Additional Units 1977 Department of Army Corps of Engineers). It has been estimated by community members that as in the Chief Joseph area there are many less than 100 available residences of any kind within the possible commuting corridor from Van Buren to Dickey-Lincoln project area.

Though construction workers prefer living close to the site, generally, a North Dakota study suggests, "the nonmigrant construc-

tion workers commuted to work an average of 33 miles (one way) per day and the migrant workers commuted an average of 25 miles (one way) per day. . . the shorter average distance commuted by the migrant workers reflects an apparent choice to locate closer to the construction site." (Leholm, et. al. July 1976). These workers were traveling some distance in order to live in larger communities with better facilities and housing selection through they preferred to live very close to the site.

Studies of commuting behavior of rural industrial developments have yielded a good deal of evidence that commuting patterns stretch over a wide area if travel conditions are good and better facilities are located within further commuting distance. "While there are some exceptions to this general pattern, the bulk of available data indicate that commutor fields in rural areas are very extensive. In discussing this situation regarding construction and operations of a large steel mill in Illinois, Summers has stated: ' a major reason for limited urbanization is the commuting of employees. Over 80% of them live outside Putnam County. The commutor field has a radius of fifty-seven highway miles.' . . . In another study of four industrializing communities in south central United States during the period 1965-1970, Olsen and Kuen found 'laborsheds were quite extensive in all four areas.'" (Socio-Economic Impacts: Nuclear Power Station Siting 1977).

From all indications, then, some residential dispersion can be expected to take place between St. Francis and Van Buren. It is likely, from these other studies, that 10% of the workers would locate

as far away as Caribou or Presque Isle, commuting more than two hours each way for better facilities and services. Fort Kent and secondarily, Madawasca and Eagle Lake would receive a larger portion of the construction workers seeking housing due to more housing availability and better facilities.

Of the 1,800 workers necessary at peak, it has been estimated that only 112 would be from a ten mile radius of Fort Kent. (Environmental Impact Statement, Dickey-Lincoln School Lakes, 1977).

If 10% were to commute from two hour distances (180) and another 100 were available within the commuting corridor more than ten miles from Fort Kent, this would mean that approximately 1,400 employees would temporarily move into the commuting area during peak. If 65% of the 75% nonlocal married workers brought 683 families averaging 3.57 persons per family, then 2,437 family persons and 718 single persons or those not accompanied by families, 3,155, would be the total population increase within the corridor. The 1973 population of this area was less than 17,000 people. A 19% seasonal population increase from start up to peak of the project would take place.

Allowing that many single workers will share residences and figuring two single persons per residence, a total of 1,042 residences will be required, approximately 950 more than are presently available. Over half of these people are likely to attempt to settle in the larger communities of Fort Kent or Madawaska, requiring units for about 250 households in each community. The more rural communities (7) would each require an additional 50 units unless massive developments take

place in particular areas. Eagle Lake may require closer to 100 additional units. Total population increase would likely amount to between 100 and 200 persons in smaller communities and 700 to 1,000 each in Fort Kent and Madaska. The construction workers and their families are likely to have cultural patterns more similar to the state of Maine generally than those in Northern Aroostook County.

The following are examples of rural communities of similar size where developments have recently taken place.

In Sweetwater County, Wyoming, a construction and mining boom between 1970 and 1974 reflected a 19% per year increase in population, doubling its population of 14,000. This yearly increase would of course, not occur in the Dickey-Lincoln project corridor. Here a 19% overall increase is expected. The results in Sweetwater were:

- "1) The quality of life deteriorated as growth in basic industry outran the local service sector's ability to provide housing, health services, schooling, retailing, and urban services . . . the many newcomers were not satisfactorily integrated into the community;
- 2) Industrial productivity declined 25-40% . . . because of labor turnover and shortages. Construction productivity declined and the local services sector also suffered . . . ;
- 3) The local services sector failed to meet the needs for goods and services. Capital investment in the local services sector--both local and government and commercial activity-- did not build up adequately, nor did local government revenues." (Gilmore and Duff, 1975).

Housing shortages occurred in the rural Langdon North Dakota area due to a construction project between 1970 and 1973. The effects experienced in an number of northern plains communities.*

*This case has been chosen because of the level of detail included in the construction boom analysis.

Approximately 70% of the workers were relocated, creating a need for nearly 3,000 additional housing units. The need was met through establishing mobil home courts, home building by contractors, and military housing on a local base. "All available dwellings were rented to workers. Vacant farmsteads, dilapidated houses and basement rooms were utilized and rental rates increased substantially. In one instance, an apartment renting for \$75.00 per month jumped to \$200.00 per month almost overnight. Local residents were sometimes forced to absorb increases in rent to avoid losing their residence. Competition for housing caused rental rates to rise substantially relative to most local residents were sometimes forced to absorb increases in rent to avoid losing their residence. Competition for housing caused rental rates to rise substantially relative to most local residents' increases in income. People living on retirement payments and other types of fixed incomes were most greatly disadvantaged by the increase in rental rates. Overcrowding of school facilities was a common problem during the early years of the ABM project. The rapid turnover of construction worker children added to the problem of overcrowded school facilities. At Langdon the lack of space hampered efforts to expand the instructional staff . . . Local school administrators indicated that truance and drop out rates did not change substantially. They did indicate that while ABM workers' children had different backgrounds and interests from those of local students, they rapidly became integrated into the student body." (Coon, Dalsted, et. al. 1976). The same approximate number of children would relocate into the Dickey-Lincoln area.

creating some similar impact.

In the Langdon study, it was reported that a need for additional law enforcement personnel and facilities was created. In Langdon, the previous police force had one full time and one part time employee increased to aid full time and one part time employee. Over \$70,000 in federal law enforcement assistance was sought and provided to Langdon, as well as federal grants for environmental impact and educational expansion. Citizens surveyed did not feel that there had been an increase in crime but officials believe there was substantial increase in drug use as well as drug and alcohol violations, shoplifting and burglaries.

Increased demand on local medical facilities necessitated an expansion of outpatient services, an increase of inpatient beds and public health personnel. There were percentage increases in industrial traffic accidents and a rise in venereal disease. People complained that medical services were worse despite a new doctor. Medical services are similarly sparse in the Dickey-Lincoln project area and would therefore be affected greatly. One wing of the hospital is not used presently due to understaffing.

"The communities affected by the ABM project experienced growth in both population and tax base. However, the rate of population growth far exceeded the rate of increase in the tax base . . . Several factors contributed to the slow growth of tax base. First, because of the ABM installation itself was federal property, it was not subject to taxation. Second, the relocating workers lived largely in mobile homes or in government housing which was tax exempt."

(Coon, Dalsted, et. al.) A similar problem could doubtlessly occur in Northern Aroostook County.

The ABM project has very little noticeable impact on the level of economic activity in the affected communities. Local residents viewed the labor market effects of the ABM construction with mixed emotions. Many cited higher wages and improved job opportunities as project benefits. On the other hand local businessmen had to raise their wage rates up to 30% to avoid losing employees. The farmers believe that the project increased their difficulties in obtaining seasonal help. They also experienced difficulty in getting rapid repair service on their vehicles posing problems during the harvest season.

Local businessmen reported increases in trade during the construction period. Total personal income increased substantially between 1969 and 1972. Bank deposits increased and two new banks were established. Many prices of goods and services increased significantly, also increasing the cost of living. Business tends to be much like the North Dakota region in Northern Aroostook and so similar impact may be expected.

The majority of community members interviewed during this project felt recreational facilities had remained the same. Construction workers from warmer climates or urban areas were disappointed about recreation.

Clergy felt that short term construction workers did not attend church regularly or become involved with activities, through a small percentage of the long term construction families did. Pre-marital/marriage counseling was the major problem area encountered by clergy along with loneliness, depression, and despondency. During

this time period, six new protestant churches were built and financially supported by newcomers. As suggested previously, this shows a diverse religious pattern and orientation from the St. John River Valley which would require even more protestant church development with support services.

Very few short term construction workers assumed leadership positions in the local community though those involved with long term construction jobs did assume community roles. The longer people lived in the communities, the more involved they became in formal community activities. This differs from the pattern in the Dickey-Lincoln area where informal activities prevail and citizens are nonpolitically active. Perhaps construction workers will be more active than residents, creating substantial change.

Area residents were asked how they felt personally about the ABM impact. "About 56% believed the changes brought about by the ABM development has been personally beneficial, while 16% indicated the effects of the project had been detrimental. . . Those who had lived in the area ten years or longer indicated negative effects more frequently than those who had lived there for shorter periods of time." (Coon, Dalsted, et. al. 1976).

Seasonal expansion and decrease in workers in the Dickey-Lincoln vicinity will likely show the signs of other types of seasonal communities as reported by Roger Bates. In his study of resort communities Bates found that as communities experienced the flux in population they began to design governmental and other structural elements to cope with seasonal demands. "Disaster communities"

(those experiencing frequent natural disasters) also experience organizational accommodations which help the community to cope with transitional problems. Basically, Bates believes that as these experiences become trends, citizens structure government organizations which adapt to the needs of flux. In some of the Dickey-Lincoln project area communities this is likely to happen but in more apathetic towns citizens may not be able to effectively control seasonal changes.

Cortese, as cited by Leroy Gould, thus summarized periods of boom:

"On the plus side is the creation of a wave of prosperity . . . On the minus side are increases in the cost of living especially for the scarcest commodity, housing . . . From one point of view, it is a period of challenge, and not everyone is up to the challenge." (Gould, 1977).

These similar communities and projects suggest what the boom situation would be likely to resemble in the rural Dickey-Lincoln project area. When workers are phased out and only 10% remain behind, as in these other projects, what can be expected?

To best respond to this concern, a study on effects of developments in rural communities and their residents, by Murdoch of Texas A and M and Schriener of North Dakota State University, may be utilized. Communities in predevelopment and post-development stages were analyzed. These consisted mainly of energy developments and were treated through secondary analysis of data from nine western communities, in

(those experiencing frequent natural disasters) also experience organizational accommodations which help the community to cope with transitional problems. Basically, Bates believes that as these experiences become trends, citizens structure government organizations which adapt to the needs of flux. In some of the Dickey-Lincoln project area communities this is likely to happen but in more apathetic towns citizens may not be able to effectively control seasonal changes.

Cortese, as cited by Leroy Gould, thus summarizes periods of boom:

"On the plus side is the creation of a wave of prosperity . . . On the minus side are increases in the cost of living especially for the scarcest commodity, housing . . . From one point of view, the boom period is definitely a period of opportunity; from another point of view, it is a period of challenge, and not everyone is up to the challenge." (Gould, 1977).

These similar communities and projects suggest that the boom situation would be likely to resemble in the rural Dickey-Lincoln project area. When workers are phased out and only 10% remain behind, as in these other projects, what can be expected?

To best respond to this concern, a study on effects of developments in rural communities and their residents, by Murdock of Texas A and M and Schriener of North Dakota State University, may be utilized. Communities in predevelopment and post-development stages were analyzed. These consisted mainly of energy developments and were treated through secondary analysis of data from nine western communities, in

four states. The data were gathered by Mountain West Research for the old West Regional Commission in 1975. The results of the analysis indicate that over time, structural changes in the community disappear, leaving the post-development phase of the community similar to the pre-development state. "If comparisons of industrial impacts on communities in pre-, current, and post-development stages, at a given point in time, can be used to generalize to the effects of industrialization that may occur over time . . . the results here would seem to indicate that the end of development in a community will mean a return to past structural patterns for a community. On the other hand, the data would also seem to indicate that the gains, however temporary, will benefit longtime as well as new residents and may lead to a period of higher incomes and greater retainment of young adults for a community." (Murdock and Schriener 1977). These authors do not address the cultural changes in post-construction communities.

One particular community, Conrad, Montana serves as an example of a post boom community. It is an active old town with more of a planning orientation than St. John Valley communities. Conrad, Montana, the county seat of Pondera County in northern Montana near the Canadian border, was one of two post-impact communities chosen for study in the CONSTRUCTION WORKER PROFILE. (Mountain West Research, 1975) Construction of an Anti Ballistic Missile/Safeguard at Conrad began in the early seventies, and by 1972 about 3000 new people had moved to the area because of the construction activity. In May, 1972 the project was terminated suddenly because of the limitations on

ABM installation, agreed upon by the United States and the Soviet Union.

"The Army Corps of Engineers had projected a population increase to 6000 persons for Conrad by 1975. By the time the project was terminated, improvements has either been completed or begun in city water, sewer, school, and law enforcement systems, based on the Corps of Engineers population projections with funding from federal assistance programs. These planned improvements were completed, with the exception of the full expansion of the school system. It is estimated that a total of about \$1.5 million in impact funds was received by the town.

The 1975 population of Conrad was estimated to be about the same as its 1970 population (3117 people); only an estimated 100 of the new families drawn to the area by the construction remained in the area after the pproject was terminated.

Several problems occurred as a result of the project's sudden termination: The school system had to honor the contracts of a large number of teachers who had been hired because of high anticipated school enrollments, and this financial burden created some difficulties becuse the tax base to support the increased school budget was suddenly gone; several land speculators lost money on their investments; and some businessmen who had made investments in order to expand their commercial enterprises has to make adjustments to the loss of anticipated increases in business.

The net effects of the project, however, seem to have been beneficial. The town now has improved utilities and law enforcement

and an increased capacity in the school system, all obtained with little financial contribution on the part of the town. . . Respondents who had lived in Conrad before the missile site began to be constructed were asked what their expectations had been with regard to how the community would change when the construction of the site began. Responses to this question can usually be classed negative, positive, or neutral. Nearly 35 percent of the responses were positive, with "increased commercial activity" the most frequent positive response (16.9 percent of all responses); 38 percent of the responses were negative, with "crowded schools" (11.2 percent of responses) and the "higher cost of living" (10.1 percent) the most frequent responses; and 27 percent of the responses were neutral, with "increased population" the most frequent answer (25 percent of all responses). There were no significant differences among responses to this question when analyzed according to education of the household head or according to household income.

Respondents were also asked whether the effects of the project met their expectations or were better or worse. Half of the respondents to this question said that the actual effects were what they had expected, 22.7 percent said the effects were better than they had expected, and 25.8 percent said the effects were worse than expected.

All of those who said that the actual effects were better than they had expected mentioned better community facilities (including schools and commercial facilities as a reason for

feeling the way they did. Next most frequently mentioned was financial benefits (10 percent of the respondents). Most frequently mentioned as a way in which the effects of the missile project were worse than respondents had expected were "higher cost of living" (19 percent of respondents) and "inadequate community facilities" (16 percent of respondents).

Conrad appears to be a stable, well-integrated community, more so than the other study communities which have been affected by large construction projects. It has a long history of stability and is, in fact, rumored to be practically the only community in Montana to have paid its bills throughout the depression. There is a planning committee made up of community leaders which is quite active and was instrumental in determining which federal programs were available to communities affected by federal construction projects. The committee, which is well supported by the community, was no doubt partly responsible for the benefits (in terms of capital facility improvements) gained by Conrad as a result of the ABM project. This level of organization was observed for no other currently affected or post-impact study community (with the exception of Colstrip, Montana, which is a company town)." (Mountain West Research, 1975)

It is altogether possible that little long term change will be experienced in Northern Aroostook since the culture is deeply imbedded in the residents. Seasonal work and temporary earnings which vary have always been a part of the rural lifestyle. It is therefore likely that the region would, in time, return to its pre-development

structural stage virtually unaffected by the construction process.

In conclusion, the Dickey-Lincoln Dam construction boom would affect all communities within an approximate 50 mile corridor. Expected 19% population increases and housing shortages amounting to nearly half again the number of residences in these communities would cause a highly competitive housing market with crowded conditions and a good deal of substandard housing. Rents and market values are likely to increase which would cause dissention in areas where housing is usually kept within extended families. Competition would exist for skilled workers on farms, in the woods or to provide services to neighbors. This may cause a rise in the wages of some and competitive salaries, requiring processes to be increased and the cost of living to rise more than the national trend. Local sales would increase and more money would be spent in the region generally.

Increased tax base would not compensate for increased services necessary; thus, towns would have to find financing elsewhere or increase property taxes of residents. This would be necessary in order to establish additional medical, dental, police, and other public facilities and services for the residential expansion. Educational facilities would become crowded. It is likely that adaptation would be necessary for the newcomers rather than for children of the prior residents. However, medical services would be even less efficient than they currently are. New churches may develop to serve the needs of the many protestant construction workers. It is likely that these churches would offer organizations

services, and activities to better suit the new residents' needs and would effect some separation between old and new residents.

Forms of cluster housing as mobil homes would further prohibit the integration of newcomers into the community as would the language differential in some cases. It is likely that newcomers would feel a great deal of isolation in these bilingual family neighborhood areas. Newcomers on the other hand, would find it easy to control town politics and decisions in apathetic communities. Decisions made by these new residents may at least temporarily effect the structure of the communities.

Since Northern Aroostook County citizens are used to seasonal adaptations and temporary work commitments, it is likely that as the construction phase ends, little affect would remain. Deep-seated cultural identities would retain the character of the communities and structural changes in population composition would decline as temporary residents emigrate.

To plan for the effects of population increases, it would be necessary for town, county, and state officials to begin to seek funding sources to aid in expansion of facilities and services. The two major problems to be considered by an ad hoc task force of residents or community development corporation are 1) the need for adequate housing and 2) that the tax base will not increase at the rate necessary to make provisions for temporary population growth. Further - analysis of the effectiveness of measures taken by similar communities to plan for such impacts will lead to a better comprehension of the success of particular planning techniques.

REFERENCES

- Bates, Rodger A., "Resort Community Adjustments to Population Undulations." Unpublished paper, 1977.
- Campbell, Kimberly, "National Association of Counties Case Studies on Energy Impacts #2: Controlling Boomtown Development. Sweetwater and Uinta Counties, Wyoming." Federal Energy Administration, 1976.
- Chalmers, J.A., Mountain West Research Inc., "Construction Worker Survey." Bureau of Reclamation, 1977.
- Coon, Randal C., Norman L. Dalsted, Arlen G. Leholm, F. Larry Leistritz, "The Impact of the Safeguard Anti-ballistic Missile System Construction on Northeastern North Dakota," North Dakota State University, 1975.
- Department of the Army, Seattle District Corps of Engineers, "Chief Joseph Dam Community Impact Report," 1974.
- Department of the Army, Corps of Engineers, Seattle Division, "Construction Worker Survey Chief Joseph Dam Additional and Working Paper," 1977
- Department of the Army, Corps of Engineers, Seattle Division, "Libby Additional Units and Reregulating Dam," Draft Report, 1978.
- Department of the Army Corps of Engineers, New England Division, "Environmental Impact Statement, Dickey Lincoln School Lakes," 1977.
- Eberhart Associates, Inc, "Chief Joseph Dam Community Impact Report Update I," Department of the Army Seattle District Corps of Engineers, 1974.
- Frendenburg, William R., "Social Science Perspectives on the Energy Boomtown: A Literature Survey," U.S. Energy Research and Development Administration, 1976.
- Gilmore, John S., Mary K. Duff, Boom Town Growth Management: A Case Study of Rock Springs, Green River, Wyoming, Westview Press, 1975.

- Gould, Leroy C., editor, Social Science Energy Review, Vol. 1, No. 1, Yale University Institution for Social and Policy Studies, 1978.
- Jobs, Patrick C., "Population Estimates of Eastern Montana," Montana State University Research Report, 1977.
- Lehold, Arlen G., F. Larry Leistritz, James S. Wieland, "Profile of Electric Power Plant Construction Work Force," North Dakota State University, 1976.
- McMahon, Kevin, "Labor Demand and Supply of the Dickey-Lincoln Project Labor Demands," Department of the Army Corps of Engineers, New England Division, 1978.
- Mountain West Research, Inc., "Construction Worker Profile, Final Report," Old West Regional Commission, 1975.
- Murdock, Steve H., Eldon C. Schriener, "The Effects of Rural Development on the Industrial and Occupational Structure of Rural Communities and Their Residents: An Examination of Evidence from Four Western States," paper presented at the Rural Sociological Society annual meeting, 1977.
- New England Municipal Center, "Impact of the Proposed Dickey Lincoln Construction Work Force on Municipal Government Services," Department of the Army Corps of Engineers, New England Division, 1978.
- Policy Research Associates, "Socioeconomic Impacts: Nuclear Power Station Siting," Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, 1977.
- Wieland, James S. and F. Larry Leistitz, Steven H. Murdock, "Characteristics and Settlement Patterns of Energy Related Operating Workers in the Northern Great Plains," North Dakota State University, 1977.

IMPACT OF THE PROPOSED DICKEY-LINCOLN CONSTRUCTION WORK FORCE
ON MUNICIPAL GOVERNMENT SERVICES

REPORT

Prepared for the

Department of the Army
Corps of Engineers
New England Division
Waltham, Massachusetts

Prepared by

New England Municipal Center
Durham, New Hampshire

June 1978

CONTRACT - DACW33-78-C-0021

TABLE OF CONTENTS

	<u>Page</u>
SECTION 1 - INTRODUCTION	1
SECTION 2 - DESCRIPTION OF STUDY AREA	7
2.01 General	7
2.02 Climate	7
2.03 Geography	8
2.04 Land Use	9
2.05 Economic Activity	11
2.06 Recreation	11
2.07 Forms of Government	12
2.08 The Communities	14
2.09 Summary of Municipal Services and Facilities	14
SECTION 3 - PROJECT EMPLOYMENT AND POPULATION PROJECTIONS	18
SECTION 4 - COMMUNITY IMPACT	19
4.01 General	19
4.02 Laborer Location	21
4.03 Municipal Services	24
A. General Planning and Management	25
B. Water Supply	26
C. Sewerage Disposal	29
D. Solid Waste	31
E. Streets and Roads	32
F. Police Protection	34
G. Fire Protection	36
H. Recreation	37
I. Education	39
J. Social Services	41
K. Medical Services	44
L. Finance	45
SECTION 5 - MANAGEMENT ASSISTANCE PLAN	46
Step I: Information Collection and Analysis	48
A. Description of Work to be Performed	48
B. Work Tasks	55
C. Assignment of Responsibilities	57

	<u>Page</u>
Step 2: Municipal Selection of Optimum Housing Scenarios	59
A. Description of Work to be Performed	59
B. Work Tasks	60
C. Assignment of Responsibilities	61
Step 3: Municipal Service Strategies	65
A. Description of Work to be Performed	65
B. Work Tasks	67
C. Assignment of Responsibilities	67
Step 4: Municipal Implementation	69
Preliminary Work Plan	70
Resource Agencies to Assist Local Governments	71
SECTION 6 - FEDERAL GRANT AND LOAN	74
APPENDIX A - MUNICIPAL OFFICIALS CONTACTED	91
APPENDIX B - BIBLIOGRAPHY	92
APPENDIX C - CONTACT PERSONS FOR CURRENT INFORMATION ON CONSTRUCTION WORK FORCE IMPACTS	97

IMPACT OF THE PROPOSED DICKEY-LINCOLN CONSTRUCTION WORK FORCE ON MUNICIPAL GOVERNMENT SERVICES

SECTION I: INTRODUCTION

Purpose of Report

This report was prepared by the New England Municipal Center (NEMC) for the New England Division (NED) of the U.S. Army Corps of Engineers, and provides information to planners, government officials and others concerning the impact of the proposed Dickey-Lincoln construction work force on municipal government services and operations. The purpose of this report is to assist the municipal governments directly affected by the construction work force of the proposed Dickey-Lincoln project, and entails the following three major tasks:

- a. Identify the problems they will encounter in the provision of services and related support for the construction work force and their families;
- b. Identify what actions they will need to take to address these problems; and
- c. Design a management work program to overcome these problems outlining the type of assistance they will need and alternative strategies municipal governments might undertake.

Construction Activity

The construction is a water resources project proposed by the U.S. Army Corps of Engineers involving the construction of the Dickey-Lincoln School Hydroelectric Project. Planned construction activity will occur in three stages: (1) phasing in of construction activities; (2) peak construction activity from year 4-7 with maximum of about 1900 employes on-site during year 5; and (3) a phasing-out of the construction work by year 8.

After year 8, a small number of permanent employes operating and maintaining the hydroelectric units is assumed to have a very minor impact on surrounding communities. Workers on the project will be in engineering, technical and construction fields. A large part of the work force is expected to come from outside the local area. The number of workers and family members could increase local population by about 2700 persons.

Research Methodology

Three methods were used to collect and analyze information for this report:

- a. NEMC staff conducted two on-site interviews of community leaders to determine their perception of the proposed Project and its impact on municipal government services. These interviews included thorough discussions with municipal elected and appointed chief executives, and frequent follow-up telephone conversations;
- b. Officials involved in other major construction projects were contacted to determine what, if anything, could be learned from other experiences. These contacts included persons involved with projects in Washington, North Dakota, Tennessee and Arizona; and
- c. Available pertinent literature on the impact of major developments on municipal services were researched. In particular, publications, research and standards of the International City Management Association, the Argonne National Laboratory, and the Real Estate Research Corporation were examined.

Draft reports were reviewed by NED Corps staff, and their comments and suggestions are incorporated in this final report.

Content Summary

The Report is divided into six sections and three appendices. Their content is summarized below:

(1) Introduction.

(2) Description of Study Area:

-Includes general information on the physical, social and economic conditions in the area.

-Provides detailed information on the forms of government in the three communities under study: Fort Kent, St. Francis, and St. John.

-Summarizes information about various municipal services and facilities that would be affected by the Project.

(3) Project Employment and Population Projections

-Provides employment and population projections for each of the eight years of the proposed Project.

(4) Community Impact

-Establishes three probable scenarios dealing with the location of housing for the construction workers and their families.

-Provides information on the current capacity of eleven municipal government services: Planning and Management, Water Supply, Sewerage Disposal, Solid Waste, Streets and Roads, Police Protection, Fire Protection, Recreation, Education, Social Services, Medical Services and Finance.

-Analyzes the impact of the three scenarios on each service area, and raises a series of questions related to each scenario which need to be addressed for municipal governments to prepare for the impacts.

(5) Management Assistance Plan

-Recommends a four-step process to assist the municipal governments after a decision is made to implement the Project. The steps are:

- (a) Information Collection and Analysis;
- (b) Municipal Selection of Optimum Housing Scenarios;
- (c) Municipal Service Strategies; and
- (d) Municipal Implementation.

-Recommends, within each step, work to be performed, tasks involved, and assignment of responsibilities.

-Recommends that NEMC manage and coordinate the Management Assistance Plan, with the support of the Maine Municipal Association, Northern Maine Regional Planning Commission, and the Cooperative Extension Service.

(6) Federal Grant and Loan Assistance

-Provides basic information on 45 sources federal grant and loan assistance programs, administered by over 15 different federal and state agencies, that might be available to assist the municipalities address the impacts on their services.

-Provides names, addresses, and telephone numbers of appropriate contact persons for most of the programs described.

(7) Appendix A: Municipal Officials Contacted

-Lists names and addresses of municipal officials contacted.

(8) Appendix B: Bibliography

-Lists reference materials dealing with impact on municipal services of major developments.

(9) Appendix C: Contact Persons for Current information on CWF Impacts

-Lists persons contacted who are familiar with other major projects causing impacts on municipal services.

Findings and Conclusions

Based upon this research effort, NEMC offers the following conclusions and findings relative to the proposed Project:

1. Despite the uncertainty regarding CWF location, the "wait and see" attitude of municipal officials, and the inability at this point to make firm or reasonable projections about service area impacts, the potential problems facing municipal governments in the impact area are manageable. With adequate assistance, such as that described in the Management Assistance Plan, the municipal governments in the impact area will be able to respond to the location of 2000+ workers within their communities. The resources exist in terms of federal and state grant and loan funds to help finance local improvements and services to minimize the impact on government services. In addition, resource agencies are available to help the local officials deal with these impacts.
2. An increase in municipal government staff capacity in each community is important to oversee and administer all local actions regarding the CWF impact and to work on a day-to-day basis with resource agencies. Although outside agencies, as outlined in the Management Assistance Plan can be helpful, the need for an in-house, on-site staff capacity to work with the local elected officials must be pursued.
3. It is imperative that municipal governments, as soon as they learn that the Project will be implemented, make decisions to help guide/control the location of the CWF and their families in their communities. These decisions must precede any detailed planning to address the service impacts.
4. Given the difficulty in predicting specific worker locations prior to approval of the Project, it is best to plan for the worst possible extremes in terms of the impact on municipal government services. Though

it is recognized that this "worst case approach" is not likely to actually occur, if the issues and problem areas are addressed in this manner it will assist municipalities be more prepared and help avoid serious problems with service delivery.

5. Depending upon the final location of the CWF and families, the services likely to be most seriously impacted will probably be water and sewer services, police services and education.
6. Construction workers and families will probably locate in all three communities in addition to some on-site location. However, it is likely that one or more of the three communities will use local zoning ordinances to restrict CWF location.

NEMC recommends that this report be shared with the local government officials in the impact area and the various resource agencies that might be involved in implementing the Management Assistance Plan. In fact, it might be desirable to conduct an information seminar for the local officials and resource agencies to review the findings and suggestions.

SECTION 2: DESCRIPTION OF STUDY AREA

2.01 General

Existing physical, social and economic conditions within a normal commuting distance to the site were identified as having the greatest possible impact by the proposed project. This information provides a base for evaluation of impacts on municipal services and operations due to construction activities. The communities involved are: St. Francis, St. John and Fort Kent. The area is delineated on Plate 1.

2.02 Climate

The Dickey-Lincoln School project is in the most northern extremity of the continental United States east of the Mississippi. At this latitude (approximately 47°N), the climate can best be characterized as cool. The average annual temperature is 4°C (39°F), with monthly averages varying from a high of 19°C (66°F) in July to a low of -11°C (10°F) in January. Extremes in temperature vary from approximately 36°C (97°F) to a low of -41°C (-42°F). The average growing season between killing frost is 100 days, extending from the end of May to mid-September.

The average annual precipitation is 91 cm (36 inches) and is distributed quite uniformly throughout the year. The highest average monthly precipitation of 9.6 cm (3.8 inches) occurs in August and the lowest of 5.6 cm (2.2 inches) occurs in January. Most of the precipitation from November to March occurs as snow and the average annual snow in the region is about 2.5 meters (100 inches). The average snowpack reaches a maximum of about 22.9 cm (9 inches) water equivalent near the end of March. Extreme snowpacks have reached water equivalent of as high as 54.7 cm (18 inches).

The prevailing wind in the area is from the west at an average annual velocity of 11 miles per hour. The highest wind at Caribou, Maine was recorded at 76 miles per hour. This occurred in January and the direction was from the northwest.

The mean relative humidity at Caribou is 74 percent. Average annual evaporation and sublimation from lake areas in the region is estimated to be 19.0 inches (48.3 cm) and 2.4 inches (6.1 cm), respectively, for a total of 21.4 inches (51.4 cm); whereas evapotranspiration from the vegetated land area is approximately 12.5 inches (32.8 cm).

2.03 Geography

The St. John River Basin is located in Maine and the Canadian provinces of Quebec and New Brunswick. The total drainage area of 21,600 square miles makes this one of the largest for any river on the Atlantic seaboard of North America. There are approximately 7400 square miles of drainage area within the State of Maine. The basin has common divides with the watersheds of the St. Lawrence River, Penobscot River and the St. Croix River. The St. John River flows northeasterly through Maine from its headwaters in Little St. John Lake and then courses southerly through Canada and ultimately empties into the Bay of Fundy. Its length is approximately 415 miles. One hundred miles of river form the international boundary. Principal tributaries to the St. John in Maine are the Allagash River, Fish River and the Aroostook River.

The upper St. John River Basin is a maturely dissected upland region which has been modified by glaciation. The headwaters area is predominantly a region of low relief with wide flat plains, swamps and wetlands and low

broadly domed hills with widely scattered monadnocks. Downstream from Ninemile Bridge along the main river and in the Little Black River drainage areas, the relief is greater and the topography is rougher with steep hills and narrow crested broken ridges rising above generally narrow trough-like valleys. Relief in this area approximates 800-1000 feet with the higher hill tops having approximate elevations of 1400 to 1700 feet.

Two major rivers flow to the north and east to unite immediately downstream of the proposed Dickey-Lincoln dam site. The lakes in the region are located at the headwaters of the major rivers and their tributaries.

2.04 Land Use

Commercial forests cover 86% of Aroostook County. Timber production is the dominant land use in the unorganized townships. Much of the woodland is held in undivided and in-common ownership, a pattern dating back to the 1820's. There are very few small private operators harvesting in the north woods of Maine.

Agriculture is the second largest land use in Aroostook County, consuming 12.8% of total area of the county. The cropland is concentrated in the incorporated townships of the eastern part of the county. From 1959 to 1969 many farms were consolidated. This served to decrease the numbers of farms, but the acreage in production remained approximately the same. Potatoes are the principal crop, followed by peas, buckwheat and sugar beets. A very small portion of the county's land is devoted to non-timberland industrial uses. Manufacturing, especially the processing of forest and agricultural products, is mostly centered around population centers.

There are eight towns with population over 2500 and they consume a relatively insignificant portion of land in comparison to the county's 6805 square miles. Residential land use is distributed along highways and secondary roads. Aroostook County had a population density of 13.8 people per square mile in 1970. About 65% of the households in the immediate impact area are located on lots of one acre or less.

A relatively small percentage of Aroostook County is devoted to transportation. U.S. Route 1 is the principal highway artery. Three railroads have a combined trackage of about 400 miles. Analysis indicated that given the existing traffic, one accident occurs approximately every ten years on the given grade crossings.

Loring Air Force Base is the only significant military installation in the county. It occupies 9700 acres, much of which is undeveloped.

Most of the open farm and woodland within Aroostook County is available for outdoor recreation. The North Maine Woods (NMW) is a partnership of landowners, managers, and natural resource agencies which formed to organize and control the uses of their land. In 1974, 51,673 people used NMW lands, mostly for hunting and fishing.

Zoning controls are in effect on more than 75% of the land in Aroostook County including the proposed Dickey-Lincoln School project site. Shoreland zoning is in effect throughout the state.

Presently the Maine Land Use Regulation Commission (LURC) has planning and zoning powers over all of Maine's plantations and unorganized townships. LURC has adopted rules and regulations designed to enforce its Comprehensive

Land Use Plan. These rules and regulations contain a section on land use standards for flood prone area protection in compliance with the Flood Disaster Protection Act of 1974. One of the stated purposes is to regulate certain land use activities in flood prone areas to comply with the cooperative agreement between LURC and HUD regarding the regulation of land use so that flood insurance can be made available to persons in flood prone areas. These rules and regulations become effective when an official Land Use Guidance Map is certified by LURC. Until that time, there are interim standards which are presently in effect.

2.05 Economic Activity

Four sectors, agriculture, food and kindred products, lumber and wood products, and paper and allied products combine for over three-quarters of the total output of the Aroostook County economy.

2.06 Recreation

The upper St. John River is one of the last lengthy segments of freeflowing, near wilderness rivers remaining in the densely populated northeastern United States. Until the mid-1900's, public recreational use of the unorganized areas of Maine, except for fringes around population centers, was very limited due to inaccessibility. The logging road system had become extensive by the late 1960's. This created new opportunities for more people. The forest landowners needed different policies regarding public access. The need for a cooperative system with uniform administrative practices led to the formation of the North Maine Woods Association. The purpose of the organization is to oversee public use of the road system and provide campsites, on a fee basis, for recreationists desiring to enjoy the north Maine woodlands. At the present time, the North Maine Woods Association is proceeding to develop its own

comprehensive recreation plan for the area. While the presence of roads and on-going activities prevent this area from being called a true wilderness, it has the potential for remaining an informal, "semi-wilderness."

Difficult access has and will continue to protect the remote character of this area. This combination of factors makes the project area unique as a wilderness type recreation opportunity. The remoteness and relatively undisturbed character coupled with some of the most challenging whitewater river segments in the Northeast makes a canoe trip down the Upper St. John River a memorable experience. Canoe usage visitor day figures for 1975 show that 81% were accounted for by non-residents who must travel considerable distances just to reach the area.

Existing recreational use in the project area is typically non-mechanized and extensive in nature. Primary activities include hunting, fishing, camping in a semi-wilderness setting, and canoeing. The many whitewater rapids offer varied challenges to canoeists. Day activities are of lesser significance and include other activities such as picnicking, hiking, sightseeing, etc.

2.07 Forms of Government

- a. St. Francis is a selectboard-town meeting form of government. The town meeting is an example of direct democracy and has been practiced in New England for over 300 years. It is a gathering of all qualified voters of a town to act on ordinances and other legislative matters, adopt the municipal budget, elect municipal officials, and debate other matters of concern to the municipality. The importance of the town meeting is that it exclusively holds the legislative powers of that town's government.

The primary officials elected at the town meeting are selectmen. In St. Francis there are three selectmen with the first selectman serving essentially as a town manager. The municipality employs no full-time and 4 part-time staff.

- b. St. John is a plantation; a form of government that is unique to Maine. The plantation form of government resembles town government in organization, powers and procedures. However, the operations tend to be more simplified. A three member board of assessors serves as the executive body of the plantation and generally exercises the powers of selectmen and municipal officers under Maine law.

Like town government, the annual meeting of eligible voters is the municipal governing body. As in towns, the annual meeting is called by warrant of the municipal officers; but unlike towns, the plantation meeting is required to be held in March. The plantation meeting elects officers, raises and appropriates tax monies for governmental activities, and attends to other matters of importance to the plantation. The municipality employs no full-time and 1 part-time staff.

- c. Fort Kent is a council-manager town meeting form of government. With this form of government, an elected council appoints the manager who is responsible to that council. The addition of the town meeting is the only difference between this and a regular council-manager form. The municipality employs 47 full-time staff.

2.08 The Communities

The communities under study are listed in the following table:

<u>Community</u>	<u>Population</u>		
	<u>1960</u>	<u>1970</u>	<u>1973</u>
St. Francis	1058	811	830
St. John	407	377	369
Fort Kent	4671	4575	4702

2.09 Summary of Municipal Services and Facilities

a. Planning and Zoning

St. Francis and Fort Kent have municipal planning boards, which are individuals appointed or selected by the town officials to advise them on planning problems. They are responsible for preparation of comprehensive plans and subdivision ordinances, and the review of subdivision applications. However, only Fort Kent has a zoning ordinance.

Land use in St. John Plantation, according to state law, is under the authority of the Maine Land Use Regulation Commission.

b. Water Supply

Of the three communities under study, Fort Kent and St. Francis have public water systems. However, many residents in Fort Kent and St. Francis, as well as all residents in St. John, depend on private wells for their water supplies.

c. Sewerage Disposal

Fort Kent is the only community that has a municipal sewerage system and treatment plant. Fort Kent's system could accommodate some increased usage. St. Francis and St. John rely on sub-surface systems-- mostly septic tanks.

d. Solid Waste

St. Francis and St. John have sanitary landfills. The Board of Assessors of St. John are confident that their landfill could accommodate a population influx. However, St. Francis officials indicate that they may need a new site.

Fort Kent is currently using an open burning dump which does not meet federal or state requirements. The community is currently operating under a variance through the state. However, it must, by state law, develop an acceptable solid waste disposal area by 1980.

e. Streets and Roads

Fort Kent is the only community with a full-time public works department. The Fort Kent public works department is responsible for major street and road maintenance programs. In St. John and St. Francis, side roads are maintained by the town governments, but all major street functions are the responsibility of the county and state. Generally, the public works functions are partially filled by the municipalities and partially by the state or county government.

f. Public Safety

Fort Kent is the only community with a full-time police department. The other two communities use a variety of combinations including constables, county sheriff, state police and mutual assistance agreements. St. Francis officials felt that their current police protection was not adequate and that increasing the service levels was warranted.

Fort Kent and St. Francis have volunteer fire departments and equipment. St. John provides fire service through a contractual arrangement with Fort Kent. However, because it does not have a public water system, it must depend on the Fort Kent tank truck to provide water for fire fighting.

g. Recreation

Fort Kent provides a full range of recreational activities - both indoor and outdoor; the town also employs a recreation director. St. Francis residents use the facilities in Fort Kent and pay an annual user fee. St. John is developing a large outdoor recreation area; residents also use the services and facilities of Fort Kent. Fort Kent is attempting to enlarge its current recreation program, and St. Francis recently formed a citizen committee to investigate availability of funds for recreation facilities.

h. Education

The three communities involved in this study are members of School Administrative District (SAD) #27. A SAD is a district formed by several municipalities to combine educational and funding opportunities, attempting to reach an economy of scale of students using facilities. SAD #27 is adequate for present requirements.

i. Social Services

There are six major providers, other than churches, of social services in the three community area. Those six agencies are: The Maine Department of Human Services, Aroostook Mental Health Clinic, the University of Maine Extension Service, Holy Innocents Homemakers, Aroostook County

Action Programs, and the U.S. Department of Health, Education and Welfare (HEW). Most of the services are provided through offices in Fort Kent.

j. Medical Services

Fort Kent is the only community in the Service Impact Area that has a hospital. The facility has 70 beds and is a general acute care hospital with medical-surgical, physical therapy, lab, x-ray, emergency room, pediatrics, and obstetrics capabilities.

Fort Kent is the only community with practicing doctors. It also provides ambulance service on a contractual basis to St. John and St. Francis.

k. Housing

A recent housing survey for Fort Kent indicates that there is a two percent vacancy rate within that community. In addition, the survey indicated that 19 percent of the units currently occupied are overcrowded or grossly overcrowded. The breakdown as to types of units is as follows:

Single Family	726
Mobile Home	140
Duplex	1
Apartment	171
Dwelling with Business	19
Not Responding	159

There have not been any recent housing surveys performed in St. Francis or St. John. However, officials indicate that there is a vacancy rate of approximately one percent in both communities.

SECTION 3: PROJECT EMPLOYMENT AND POPULATION PROJECTIONS

General

Dickey-Lincoln dam construction work will involve people employed by contractors and the Corps of Engineers. Most of the employees are expected to locate near the project during the construction period. Some employees will be accompanied by their families. The following figures are extracted from Appendix C, The Social and Economic Assessment Report of the Dickey-Lincoln School Lakes Project.

Employment

<u>Yearly Quarter Starting in:</u>		<u>Total Construction Workers Required on Project</u>	<u>Total Construction Population Generated in Area</u>
Year 1	May	100	323
	August	100	323
	November	80	311
	January	80	311
Year 2	May	180	449
	August	233	497
	November	130	404
	January	130	404
Year 3	May	340	593
	August	340	593
	November	107	387
	January	100	387
Year 4	May	1043	1454
	August	1273	1776
	November	120	463
	January	120	463
Year 5	May	1656	2309
	August	1850	2580
	November	280	945
	January	240	929
Year 6	May	1766	2728
	August	1766	2723
	November	260	929
	January	260	929
Year 7	May	1586	2212
	August	970	1354
	November	207	473
	January	127	401
Year 8	May	60	169
	August	40	155

SECTION 4: COMMUNITY IMPACT

4.01 GENERAL

Construction activities at the Dickey-Lincoln will cause a local population increase of 2700 people during the peak of the eight year construction period. Based on three alternative scenarios of where the construction workers and their families might reside, the community impact analysis considers the existing capacity of the communities to absorb the increased population, the capacity of municipal governments to provide essential public services, and identifies key information gaps relating to these services. Services considered include water supply, sewerage facilities, police and fire protection, education, streets and highways, social services, medical services and recreation.

The approach used in this study has included telephone interviews with social and economic staff members involved in projects located in Washington, North Dakota, Tennessee and Arizona; on-site interviews with chief elected officials, town managers and staff involved in the three communities in the service impact area, and a review of national standards developed by the International City Management Association, the Argonne National Laboratory, Real Estate Research Corporation, and other national organizations. Many of these standards are cited in Economic/Demographic Assessment Manual by J.A. Chalmons and E.J. Anderson (Bureau of Reclamation, Engineering and Research Center, Denver Federal Center, Denver, CO 80225).

In some instances a "worst-case" approach of all personnel working on the proposed project living within the boundaries in one community has been used. It is the opinion of this report however that the actual housing patterns will be dispersed throughout the entire project area.

The case study approach has proven to be useful on a limited basis because of the lack of hard data indicating actual impacts that may be expected with the remote northern Maine area. Because of the "wait and see" attitude by the local government officials and the lack of professional staff, few projections have been made in this report. It must be recognized that there is much that could happen (or not happen) that could materially affect the accuracy of the service area projections. For example, some communities may choose to encourage growth and actively compete for new residents while others may prefer the status quo and resist expansion. These attitudes will have an important influence on the way in which future events actually occur. As the construction date approaches, however, it is critical that the working assumptions be carefully reviewed so that the planning process be as well informed as possible and so that any significant changes in the projected environment can be anticipated. For that reason, the Management Assistance Plan (see Section 5) must be employed or seriously considered as a proper planning approach to assist the local governments that will be impacted by the proposed project.

At the Chief Joseph Dam construction site in Washington, it has been found that a short commuting distance to the job site is more important to the laborers than other "attractive" features such as quality of the school system, adequacy and access to shopping facilities, availability and adequacy of water and sewerage facilities, level of police and fire protection, and the general attractiveness of the community. Indications of the importance of the commuting distance factor can also be seen in the other cases (e.g., Tennessee Valley Authority, Hartsville Nuclear Plants, Socioeconomic Monitoring and Mitigation Reports). However, other studies do not specifically reference the relative importance of other factors vis commuting distance. It appears the relative importance of these other features is peculiar to the project (and its environment) under consideration, as is described below concerning the Dickey-Lincoln Project.

In addition to commuting distance, another significant variable that will determine workers location will probably be housing. Existing available housing in the impact area is in drastically short supply, and living quarters are most likely to consist of mobile homes, or large campers. Based on other large construction projects, it is anticipated that approximately 40 percent of the workers will bring in their own living units. The additional housing will have to be provided by private enterprise, major project contractors, local, state or federal government agencies, or through some arrangement of joint sponsorship.

4.02 LABORER LOCATION

Although it is impossible to project specifically where the construction work force (CWF) and their families will locate, the following housing scenarios are possible, and are used in the balance of this report to project the impact on municipal government services:

- a. The development of on-site laborer housing in an area immediately adjacent to the Project site, on a large scale;
- b. The development of laborer housing quarters within the St. John/Fort Kent area or in St. Francis; or
- c. Free form housing generated by demanded private enterprise.

The development of on-site laborer housing in a specific area on a large scale (Scenario A) would minimize the effect of population influx throughout the impact area because of the housing concentration. However, this arrangement would require the development of some mechanism to provide the full range of needed public services. Because of the distance of such a site from the three communities under study (Fort Kent is 36 miles from the site, St. John 15-20 miles and St. Francis 11-15 miles), it is unlikely that existing municipal services in these communities could be extended outside of the town boundaries to the housing site; although it is likely the location of laborers and their families on-site will

have an impact on the police and traffic services in the other towns (and a minimal impact on other services in the three towns).

On-site laborer housing would probably be located at or immediately adjacent to the Town of Allagash. The Town, population approximately 450, provides very minimal municipal services: police protection is provided by the State Police and a part-time local constable; fire protection is provided by volunteers and a full-time CETA-funded fireman; the Town has a sanitary landfill for residents; water is supplied through private wells; recreation facilities include use of the SAD 10 school gym, one baseball and one tennis court. SAD 10, administers the school system; 135 students attend one facility for grades K-12; there are 12 full-time teachers. Limited zoning has been enacted and is controlled by the Town's Planning Board. The Town budget for 1978 is \$76,621.

The impact on Allagash municipal services under Scenario A could be quite large, so major, in fact, that if construction workers were located on-site it is likely that an entirely self-sufficient service system will operate to support the residents and that this system could not rely upon the Town of Allagash's municipal services. In some instances, however, there may be an impact (e.g., education and police protection) and this has been briefly addressed in other parts of this section. Because this report anticipates wide dispersion of the workers and their families, a detailed analysis of the impact on the Town of Allagash has not been undertaken; also, an indeterminate amount of land area in the Town will be needed for the Project itself.

The development of laborer housing quarters within St. John, Fort Kent or St. Francis would have a significant impact on the local government services provided by the towns, as described below in Section 4 and 5. Most basic municipal government services in each community are already in need of expansion or just adequate for current

needs with minor growth. Consequently, each community would probably have to expand one or more current services. However, through municipal government actions (e.g., zoning, building codes, etc.), the location of these quarters could be controlled to a degree, thereby making it possible for the town governments to plan for the expansion of needed municipal services.

The municipalities involved in this study have taken a "wait-and-see" attitude involving restrictive ordinances. They are not about to restrict actions of local residents. However, should the project be approved it is likely that restrictive zoning and building ordinances will be the subject of special town meetings.

If construction workers are to secure housing on their own and be dispersed throughout the impact area with no municipal government influence on their location (Scenario C), this would probably present the most difficult problems for the local governments in the area. Currently, St. Francis and St. John are experiencing an approximate one percent housing vacancy rate; Fort Kent has a vacancy rate of about two percent.

Under housing scenarios (b) and (c), extensive municipal government evaluation and subsequent actions will be required if the town governments wish to influence the location of the CWF and provide an adequate level of municipal services. This type of evaluation/planning could occur well in advance of any movement of the construction work force into the impact area.

Laborer location is the key factor, and municipal government steps to guide and control that location is paramount if the town governments are going to accommodate the work force and their families and provide municipal government services. One example relating to land use and zoning illustrates

this point. Assuming that under housing scenarios (b) and (c) that mobile home living becomes the primary living facility for laborers, the towns may evaluate their present zoning requirements relating to mobile homes and take local action through the town planning commissions and Boards of Selectmen to control the sites for mobile home placement. This issue is further complicated in St. John where any local action regarding land use decisions must relate to the State Land Use Regulation Commission since in that area the Commission requires a permit to (1) build any structure, including the placement of modular or mobile homes with an exception relating to a structure built before September 1971; (2) subdivide a single parcel of land into three or more lots of less than 40 acres within a five-year period; and (3) develop any land relating to the construction of new or expansion of existing gravel pits, roads, camping areas, ski trails, bridges and similar activities.

4.03 MUNICIPAL SERVICES AND FACILITIES

The balance of the Community Impact Analysis presents detailed information on the current operating level/service capacity of several municipal government services. Included in Appendix A is a list of local persons who can be contacted for additional information about each of the municipal services. Following each service description, a series of questions are posed. These questions indicate the type of concerns that must be addressed by the municipal governments related to each service area, and suggest the type of information gap that exists for each service area. These information gaps, expressed as questions, are restated in Section 5, the Management Assistance Plan, as information needs. Obtaining this information (i.e., answering these questions) is an essential first step and prerequisite in implementing a Management Assistance Plan.

GENERAL PLANNING AND MANAGEMENT

The three communities under study, as a result of the uncertainty surrounding the project, have decided to wait for the final decision on the dam construction before taking any real action regarding municipal service expansion. For example, according to the First and Second Selectmen, the town of St. Francis has an option to purchase land as a site for the development of laborer housing, although a decision to purchase will not be made until a decision on Project's implementation is made. The town does not have a zoning ordinance concerning the placement of mobile homes. However, actions on these types of issues are being delayed.

The planning and management capability of the communities in this study can be inferred from a restatement of the total professional staff in each community. St. Francis has a part-time first selectman who serves essentially as a Town Manager; 4 part-time employes also serve the community. There are no full-time and only one part-time staff member in St. John.

Ft. Kent, the largest community in the impact area, has a Town Manager and 47 full-time staff but no professional planner.

Delays in local actions could result in the municipalities not having adequately planned for their potential growth by the time the dam may be approved. For example, they will not know if their existing ordinances are adequate to plan for the development because they are unsure about worker residency and have never been subject to intense growth pressure. Different local government forms will present varying levels of difficulty to made necessary decisions in a timely and responsive manner. In addition, a major constraint to working on these issues now is the fact that none of the municipal governments have the staff capacity to undertake essential planning activities. The municipal officials in each

of the three communities recognize this need, and agree that professional planning assistance is necessary for them to respond to the accelerated growth projected to accompany the construction activity. However, they have chosen not to take action on this and related needs pending the dam construction decision by the federal government.

One other major concern of the local officials relating to the overall functioning of their municipal governments is the affect a large population influx could have on their town meetings. For example, if 1,000 construction workers were to reside within the town of St. Francis, it could result in a transient majority at the annual town meeting completely influencing the town government decision-making process, the expenditure of funds, and the adoption of certain policies which could have a significant long-range impact on the community. Although evidence of this occurring in similar projects is not available, similar situations have arisen in rapid growth areas (e.g., Southern New Hampshire between 1970-1975) and it is possible that it could occur in this project. The important factor in this consideration is that the officials contacted in this study believe that it could happen and are apprehensive about it.

B. WATER SUPPLY

The Fort Kent town-operated water system currently handles 675 accounts. If there is no substantial industrial use increase in the near future, it is possible that the system could handle approximately 1400 accounts, according to the water system operator.

It is not mandatory for residents to be connected to the town water system and the resident is responsible for a connection charge. Fort Kent has a two-man crew working on the town water system. No study has been completed of the subsurface water capacity in the town; however, a drilling company will be drilling for a new well in the summer of 1978.

The current system uses a gravel packed well that lies within 70 feet of the St. John River and has an open reservoir for water storage. The reservoir has a listed capacity of 500,000 gallons; however, the town's Water System Operator indicates that it more likely holds 300,000-400,000 gallons. There are plans to build, in the summer of 1978, a storage tank with a capacity of 500,000-750,000 gallons to replace the reservoir. The current distribution capacity of the system is 1.2 million gallons per day (gpd) with an average daily use of approximately 400,000 gpd. There is no water treatment facility in Fort Kent and the water meets all current federal and state water quality standards.

The town of St. Francis operates a small public water supply system which currently serves 45 homes and the SAD #27 school building. The town reservoir holds approximately 35,000 gallons. In addition, other residents use private wells. A study conducted approximately three years ago indicated that the town-operated system could handle 100 additional units. St. John residents use private wells for water supply and no study has been done of the capacity for additional wells in the town.

The following questions must be answered in order to adequately supply CWF residents with water:

Scenario A

- What is the availability of quality water supplies in the on-site location? Is above-surface water available?
- What are the alternative sources of water supply for on-site residents? For example, piping from existing wells? Portable methods?

- Can a public system be constructed for on-site users, using one or very few wells? What government entity would be responsible for financing and maintaining such a system?

Scenarios B and C

- Will the sub-surface water supply in each community support 2000+ users?
- Are there adequate private companies in the area to dig artesian wells for new residents?
- Can Fort Kent and St. Francis significantly expand their facilities for 2000+ additional users, and maintain a larger system?
- In Fort Kent and St. Francis, how will the addition of new users on the public system change the current water use charges, and what will be the other fiscal impact on users?

General Questions

- What state laws and regulations control the use of water by private individuals? Which state agencies are involved in regulating this use?
- What federal laws, e.g., the Safe Drinking Water Act, or regulations govern water supplies? What are the pertinent restrictions, if any?
- Is a regional (three-town) approach to the problem of water supply feasible, e.g., setting up a regional authority to control well digging and use?
- Are there resource agency (e.g., regional planning agency, state government agencies, etc.) staff available to assist the towns in the planning for additional water supply?

C. SEWERAGE DISPOSAL

The Fort Kent system is a secondary treatment facility and has a design capacity of 700,000 gpd. The system has been averaging 250,000 gpd and peaking at approximately 300,000 pgd. There are currently 3000 users on the system, according to the wastewater treatment operator, and if no new industrial users are added, the system has the capacity of adding 3000 users. The plant became operational in October 1969 and has functioned well except for the area of sludge removal. The glass buildings for drying sludge are inadequate for the Fort Kent winter and have been cracking. According to the towns' Wastewater Treatment Plant Operator, the municipality is still undecided about how to approach this particular problem. The town requires residents to connect to the town sewerage system in those areas in which sewer lines currently exist. Because sewer lines have been laid within virtually all areas within the town, as a practical matter all new residents would become connected to the town system. Fort Kent currently provides sewer service to an industrial park located one mile outside of the town boundaries; however, no other connections are made to out-of-town residences.

Residents in St. Francis use private septic systems. A soil test conducted approximately four years ago, indicated the soil conditions could accommodate at least three times the number of septic tanks currently being used. The Selectman was unsure as to the exact number presently using septic tanks. The town has not plans at present to develop a public sewerage system.

Residents in St. John use septic tanks for sewerage disposal. No tests have been conducted to determine the capacity of the ground to contain more septic tanks. The town has no plans to construct a town-operated sewerage system.

The following questions must be answered in conjunction with the three housing scenarios:

Scenario A

- What are the alternative treatment methods that could be used on-site and what is the cost of each?
- Will the ground under the various on-site locations support septic systems for the 2000+ residents?
- If sewerage is placed in a holding tank and trucked periodically to a treatment facility, how will it affect the road conditions?
- Is land available for the development of lagoons?

Scenarios B and C

- What affect will a large number of additional septic tank systems in St. John and St. Francis have on the quality of sub-surface water used for drinking purposes?
- Would the development of lagoons in either town be feasible?

General Questions

- What new municipal ordinances and regulations are needed in each town to govern septic tank construction, placement, use and inspection?
Will additional employes be required for a septic tank inspection program?

- What would be the impact on the user charges in Fort Kent if additional users were added to the system?
- Are federal and/or state funds available to assist towns treat additional sewerage and assist Fort Kent with its sludge problem?
- Are there resource agency staff available to assist the towns in the planning to handle additional sewerage?

D. SOLID WASTE

St. Francis and St. John have sanitary landfills; Fort Kent is currently using an open burning dump which needs to be closed by 1980. Residents transport their waste individually to the sites. Industrial waste disposal accounts for a very small fraction of the waste disposed in the three towns. St. John assessors feel that their landfill could accommodate a population influx. St. Francis officials indicate that they may need a new site to handle additional substantial increases in use.

Standards developed by the Argonne National Laboratory and cited in a Framework for Projecting Employment and Population Changes Accompanying Energy Development require that there be .21 acres of sanitary landfill for every 1000 persons. This assumes 5 pounds per day per capita waste, which is compacted, and a landfill seven feet deep, two-thirds of which is covered by solid waste. Using this standard, approximately 2-3 acres of land will be used by the construction work force generation of solid waste over the construction period. Thus it is projected that each of the communities involved will have adequate land available for this purpose.

The following questions should be addressed in conjunction with the housing scenarios:

Scenario A

- Are sanitary landfill areas available near the on-site locations?
- How much equipment/personnel will be needed to manage the landfill?
- Is it possible to compact/treat the waste in such a way as to re-use the land above the landfill when the CWF leaves?
- Is it feasible to transport waste to one of the town sites? What additional costs would the towns incur as a result of this increased use?

General Questions

- What will be the impact on the quality of sub-surface water supplies in areas adjacent to the landfills?
- What federal (e.g., Resource Conservation and Recovery Act) or state financial or manpower resources are available to assist the towns address the solid waste problems?
- Is a regional approach to the solid waste problem feasible, e.g., regional solid waste authority to serve the three towns?

E. STREETS AND ROADS

Fort Kent is the only one of the three communities that actually operates a major street and road maintenance program. The town has a ten man crew that devotes all or part of their time to street maintenance, snow removal, and other street-related functions.

In St. John and St. Francis side roads are maintained by the town governments; however, all major street and road work functions are handled by the county and state governments. A major influx of population in either St. John or St. Francis will require additional funds and personnel to expand the present street systems, improve existing streets and roads, and install new facilities such as traffic signals.

It should be noted that the major route from these communities to the project site will have to be improved to accommodate the expanded transportation. According to Sherman Daigle, Road Superintendent for the State of Maine (located in Fort Kent), the 36 miles on Rt. 161 from Fort Kent to Allagash is in only fair condition and is currently adequate for light traffic. However, several portions of the road were built before 1950 and are in need of substantial rebuilding (e.g., base work). Most of the road is a 20 ft. pavement, covered with tar, not thick asphalt.

No significant transportation planning has been done for the three communities or for the impact area generally.

The following questions need to be answered in conjunction with the three housing scenarios:

Scenario A

- What agency will have responsibility for the development and maintenance of a street or road system within an on-site location?

Scenarios B and C

- How many additional personnel will the town governments need to employ to develop and maintain an expanded street and road system?

- What local actions can be taken to minimize the need for an expanded street and road system by controlling worker location within the communities?

General Questions

- Are there alternatives for some type of public transportation system within the impact area? If "yes," what agency could create and operate such a system?
- Because highway improvement priorities are frequently set several years in advance, what are the current state and regional plans for improving transportation services in this area?
- Assuming some type of a regionally-coordinated transportation plan is desirable, what agency is in the best position to immediately develop that plan?
- What will be the additional costs to adequately rebuild Rt. 161 to accommodate increased worker and project-related traffic? Will the State bear these entire costs?

F. POLICE PROTECTION

The town of Fort Kent has the only full-time police department in the impact area. The department consists of five full-time officers and one part-time officer. The department has two automobiles and is equipped with a two-way base station, a two-way radio remote control at the U.S. Customs Office, two mobile units (one in each car) and two portables. The department also has dispatchers on a 24 hour-a-day basis for six and one-half days a week; for the other 12 hours, the U.S. Customs Office takes the calls and relays the message to the officer on duty. Newly constructed jail facilities consist of four cells and should be adequate for a service population of 12,000.

Police services are provided in St. Francis and St. John through a combination of a full-time constable, the County Sheriff's Office, and the State Police Department.

Police standards cited in Argonne National Laboratory, A Framework for Projecting Employment and Population Changes Accompanying Energy Development call for between 1.4 and 3 police officers per 1000 population. Standards for patrol cars vary from one for each patrolman to one for every three. Actual use will vary due to individual community needs and the number of shifts operated. Thus, with the projected population expansion, the number of additional officers necessary for all three communities could range from three to nine at peak construction time; with the total number of additional vehicles necessary varying from one to nine.

In the Chief Joseph Dam construction area there was a slight rise in vandalism; in the Hartsville, Tennessee area it was found that relatively "soft crimes" such as bad checks and vandalism increased more often than "hard crimes." It is anticipated that Fort Kent, with its theater, bars, and restaurants will show an increase in weekend violators and will likely increase the police manpower usage necessary during that period. This impact will even occur under Scenario A although the impact (due to distance/convenience factors) will be less than under Scenarios B or C.

Currently the state of Maine requires that all new police officers receive 120 hours of intensive training at the Maine Criminal Justice Academy. Court duties for the area are handled by a circuit riding judge.

The following questions must be answered in conjunction with the three housing scenarios:

Scenario A

- Can the State Police Department, the County Sheriff's Office, or Fort Kent out-stationed police officers handle on-site disturbances? It is possible to increase the capacity of the Allagash force (currently served by State police

- and par - ime oca cons ab e) o service the 1-site ar a
- What traffic problems can be predicted between the on-site location and the place of recreation and leisure?

Scenarios B and C

- Can the present court system handle an increased work load? (Note: it is not possible to definitively answer this question at this time because it is not possible to accurately predict law violations.)

G. FIRE PROTECTION

Fort Kent and St. Francis have volunteer fire departments while St. John has a contractual agreement with Fort Kent for fire service. St. John pays Fort Kent a base fee for these services plus \$150 per fire call.

The Fort Kent department has approximately 20 volunteers and one full-time chief. The equipment consists of three vehicles (tankers and pumpers). There is one dispatcher, two civil defense radio bands as well as state and town police bands. There is one fire hydrant within Fort Kent. It has a limited fire inspection program conducted on a volunteer basis. Present equipment could probably handle fires in new facilities except high rise apartments.

The St. Francis department consists of six volunteers and has a 750 gallon per minute (gpm) pumper and a 2000 gpm tank truck. There is a 20,000 gallon water tank under the fire station which can be used within a two mile radius of the station. It has very limited capacity to handle large fires, and conducts a limited fire inspection program on a volunteer basis. St. Francis also has a mutual assistance agreement with Fort Kent. The response time to an on-site location would be adequate for most fires. However, additional volunteers may be necessary and could come from the CWF.

All three communities use a telephone alarm system while St. Francis and Fort Kent also use a fire whistle.

According to the National Fire Protection Association, for small towns, two pumpers, a staff car and an ambulance are considered to be adequate basic equipment. Volunteer fire departments are usually adequate for towns smaller than 10,000 persons as long as there are enough volunteers to operate the necessary fire equipment.

General Questions

- What will be the impact of additional residents, given the present capacity of the town departments on the fire insurance rating? What will be the additional insurance costs to the town and residents?

H. RECREATION

Fort Kent has a full compliment of recreational activities with indoor activities taking place at the school gymnasium. Outdoor activities sponsored by the town include use of the municipal pool, hockey rink, skating rink, ballfields and tennis courts. The community is attempting to enlarge its current recreation program. The town has made some assessment of its recreation needs for its present population and employs a recreation director. The town operates many of its recreation programs using SAD #27 school facilities.

St. Francis has recently formed a citizen committee to investigate fund raising for recreational facilities. Residents may currently use the school gym which is the only indoor recreation area in town. Outdoor recreation is largely informal and consists of use of the natural environment. Town residents do use the recreation facilities in Fort Kent and through an inter-local agreement, the towns pay Fort Kent \$1500 annually.

St. John was considering developing a large outdoor recreation area; in the past it has used 34 acres of land belonging to a local paper company for outdoor activities. However, according to Third Selectman Gary Blais, the town meeting recently decided to not purchase the land because it was too far from the road and would lack supervision. Students at the University of Maine at Fort Kent did a study of recreation needs in 1977 for the town. They interviewed adult and adolescent residents to determine recreation needs. According to Mr. Blais, a skating rink was identified as a priority need, but when it was discussed at town meeting funds to construct and maintain a rink were voted down. According to Mr. Blais, resident voters felt that the availability of Fort Kent recreation services (St. John has an agreement with Fort Kent to use their facilities) was adequately meeting the recreation needs. Indoor recreation facilities are provided through the local school facility or residents use those in Fort Kent.

The following questions should be answered in conjunction with the three housing scenarios:

Scenario A

- Will there be a need to construct on-site recreational facilities?

Scenarios B and C

- How many more users will the present facilities in the three towns accommodate?
- If new recreation facilities are required, will there be federal and state funds available to help finance the facilities?
- If new recreation facilities are required, how many additional town (or school) personnel will be required to staff the facilities?

General Questions

- Because under any construction worker location, the indoor facilities in all three towns will be heavily used by the construction workers and their families, is it feasible to develop a regionally-coordinated program which includes the three towns and SAD 27? If "yes," what entity can take the lead in developing this plan and monitoring its development?
- Will it be necessary to develop a user charge system for the use of all or some of the indoor recreation facilities in the impact area?

I. EDUCATION

The three communities are members of SAD 27 which consist of grades K-12 with six buildings averaging approximately 10 acres per site. SAD 27 administers schools in seven communities. Five of the buildings are located in Fort Kent; one is located in St. Francis. There are 140 teachers and administrative staff in SAD 27. The current school population is 2250 and the school administrator feels that 200 more pupils could be accommodated, with all six buildings being able to accommodate some student increase. If additional buildings are needed, one alternative would be to use some of the buildings at the University of Maine facility located in Fort Kent. One important pending development which may impact the present system should be noted. There is the possibility that the Wallgrass Elementary School (K-6) in Soldier Pond may be closed and this may result in the transfer/relocation of the school's 136 students into SAD 27 facilities in Fort Kent. According to Louis Albert, SAD 27 Business Manager, the superintendent has recommended closing of the school, but a decision by the SAD is still pending. Soldier Pond is a plantation which borders Fort Kent.

It is unlikely that SAD 27 would have any major difficulty in recruiting additional teachers since it currently has more than 100 teacher applications on file and no unfilled positions.

Some other rural projects have provided education services on-site as an extension of an existing school system or administered directly by the state. However, it is likely that because of the dispersion anticipated in this project that most students will attend existing schools, and those living on-site will be bused to the closest facility.

According to the SAD Administrator the school bus system receives state government funding support and there would be little problem in receiving money for additional vehicles and drivers.

The Town of Allagash, under the administration of SAD 10, has a school for grades K-12 which is currently operating at capacity with 135 students and 12 full-time teachers.

The following questions must be answered in conjunction with the three housing scenarios:

Scenario A

- Is it possible for SAD 27 to open another school facility at the on-site area, or to expand the SAD 10 facility in Allagash to handle additional students? What special busing arrangements would have to be made to accommodate the new residents of the on-site area if a new facility is not constructed?

Scenarios B and C

- What will be the impact on student/teacher ratios and will this affect the SAD's current status of meeting state of Maine standards?
- If additional facilities are needed, what arrangements could be worked out with the University of Maine for use of its facilities in Fort Kent?

- What federal and state funds will be available to help pay teacher salaries, renovate or expand facilities, and provide supplementary and support services, including additional school buses?

J. SOCIAL SERVICES

The three town governments have relatively little responsibility for the provision of social services, except for administering local welfare assistance programs. Partial funding for welfare assistance programs is provided by federal government and the State of Maine. Local government officials view this as a state and county problem.

Most social services are provided by state agencies, the county, and other community-based groups. A summary list of selected social services and the agency which provides them is as follows:

(1) *Maine Department of Human Services*

a. Social Services

1. Children
2. Foster care
3. Special studies in divorce cases
4. Adoption placement
5. Unwed mother program
6. Foster home finding
7. Mental health services
8. Food and clothing
9. Housing and household needs
10. Financial resources
11. Employment
12. Education
13. Health
14. Developmental disabilities
15. Social/emotional development/adjustment
16. Protection from abuse, neglect, or exploitation
17. Homemaking
18. Day care
19. Family planning and pregnancy problems
20. Adoption
21. Substitute living arrangements
22. Consumer protection
23. Environmental protection and community sanitation
24. Community safety and justice
25. Community information and organization
26. Transportation

b. Financial

1. AFDC and WIN (Work Incentive Program)
2. Medical assistance
3. Food stamps

Note: Regional offices for the Maine State Department of Human Services are located in Caribou, Houlton and Fort Kent.

- (2) *Aroostook Mental Health Clinic* - provides full range of mental services.
- (3) *University Extension Services* - Food and nutrition education programs.
- (4) *Holy Innocents Homemakers* - Volunteer "loaned homemaker" service to disabled and elderly residents.
- (5) *Aroostook County Action Program*
 - a. Community planning
 - b. Alcohol information and referral service
 - c. Headstart
 - d. Family planning (one outreach worker with clinic twice a week and educational programs)
 - e. Early periodic screening and diagnostic treatment project
 - f. Community development (two staff workers)
 - g. Manpower training
 - h. Transportation (corps of volunteer drivers)
 - i. Youth Environmental Services (one staff worker from Van Buren to Allagash)
 - j. Housing rehabilitation program
 - k. Winterization program
 - l. ACAP and Aroostook Regional Task Force for Elderly which operates a minibus to Fort Kent for services

The following questions need to be answered in conjunction with the three housing scenarios:

Scenario A

- Do the present social service agencies have the outreach capacity to service construction workers and their families at an on-site location?
- Will a social service referral center of some type be required at the on-site location? If "yes," what agency can operate such a service?

Scenarios B and C

- Will it be necessary for the town governments to undertake an inventory of present social service agencies serving their community to determine what additional services are needed, and to evaluate the present services to determine if town funds should be used to support or expand those services?
- Will the town governments need to employ a social services coordinator to serve as an information and referral service for the construction workers and their families to help them obtain needed social services?
- What will be the impact on the local welfare assistance programs administered by the three towns.

General Questions

- Will the need for additional social services in the area require major new expenditures by the town governments for these services?
- Is there a way that the existing programs of non-profit organizations such as the Community Action Agency can be expanded using additional federal funds from a federal agency such as the Community Services Administration?

K. MEDICAL SERVICES

Fort Kent is the site of a regional hospital that serves the needs of the three communities. The facility has 70 beds and is a general acute care hospital with medical-surgical, physical therapy, lab, x-ray, emergency room, pediatrics and obstetrics capabilities. There are ten doctors, two optometrists, one chiropractor and four dentists in Fort Kent. There are no medical personnel located in the other communities with the exception of an intern in St. Francis placed through the Aroostook County Action Program.

According to James Ouellett, Fort Kent Health Officer (located at Northern Maine Medical Center Hospital in Fort Kent), there is currently a shortage of medical professionals in the following areas: family practitioners (two needed); OB GYN physician (1 needed); and internist (1 needed). There are currently adequate number of nurses, surgeons and other medical professionals. According to Mr. Ouellett, if the project is implemented, additional nurses may be needed; he is uncertain about the need for other medical professionals (except those currently needed) and indicated that this will depend upon the specific problems arising from the project construction which is not possible to predict at this time.

A volunteer, non-profit, town-subsidized (all three communities) ambulance service is operated in the area and is located in Fort Kent. Municipal officials consider the ambulance service to be adequate for present needs; however, a major population growth will require the purchase of an additional vehicle.

General Questions Related to Medical Services

- Will new types of medical services; e.g., burn facilities, be required because of the nature of the construction work?
- Will medical personnel be required on-site due to the nature of construction work, and what agency will be responsible for such personnel?
- Can an intern program similar to the one in St. Francis be implemented to provide additional medical services?
- If needed, can additional medical personnel be attracted to the impact area? Are federal or state funds available to help attract and subsidize such personnel?

L. FINANCE

Key indicators related to the financial capacities of municipal governments are shown in the chart below. Questions related to finance issues are not presented in this section because they depend almost entirely upon the town's willingness to appropriate capital or operating funds. However, selected information needs are provided in Section 5. According to the figures obtained from town officials, it would be possible for all three towns to borrow up to \$2,202,482 for capital improvements.

Financial Condition Summary

	Maximum Debt Limit	Current Debt	1978 State Valuation	Town Valuation	Full Value Tax Rate	Expen- ditures
St. Francis	210,000	0	4,800,000	1,600,000	13.35	64,000
St. John	35,000	3,000	3,700,000	2,240,763	10.29	79,352
Fort Kent	2,492,070	531,588	42,100,000	22,084,250	16.92	1,591,728

The municipal financial structure of the three communities is heavily dependent upon property tax for revenue.

For financial purposes, a comparison of the maximum debt limit to the current debt gives an indication of the amount of money the municipalities can use to facilitate loans or match for federal grants for the

purposes of maintaining, improving or expanding their services. However, the process used for authorizing such action is through the town meeting. Once again it is difficult to project community authorization. For example, one of the towns recently voted against a sewer and water line extension that has curtailed some activities by developers in the community.

SECTION 5: MANAGEMENT ASSISTANCE PLAN (MAP)

If the decision is made to implement the Project, it is recommended that planning begin immediately to assist municipal governments provide services to new construction worker residents. This section suggests that a four-step process be implemented to accomplish this planning and assistance effort. The steps in the process are described in detail in this section; they are:

- Step 1: Information Collection and Analysis
- Step 2: Municipal Selection of Optimum Housing Scenarios
- Step 3: Municipal Service Strategies
- Step 4: Municipal Implementation

It is suggested that the New England Municipal Center (NEMC) be designated the general contractor/lead agency for implementation of the management assistance plan. It is further suggested that NEMC work closely with three in-state resource agencies on the completion of MAP steps; these agencies are the Maine Municipal Association, the Northern Maine Regional Planning Commission and the Cooperative Extension Service (of the U.S. Department of Agriculture, University of Maine). Each of these agencies provide a variety of assistance to municipal governments. In addition to assisting NEMC as support agencies in the implementation and planning, their involvement will also build their capacity to provide continuous and on-going support to the impacted municipal governments.

It is estimated that 18 months would be required to complete the Management Assistance Plan. Following completion of the MAP, NEMC's role would be greatly reduced and the three support agencies would take primary responsibility, along with the Army Corps of Engineers, NED, for assisting the municipal governments on a regular and on-going basis.

In addition to the unavailability of suitable housing, the highest priority municipal service areas that would need immediate attention are water, sewer, police protection, and education. These priorities were determined by an examination of the existing service capacity in Fort Kent, St. Francis, and St. John, extensive discussions with municipal officials in the area, and discussions with staff engaged in other major projects having impacts on rural areas. Most of the staff in this latter category agreed that these were generally high priority service problems in rural areas (e.g., Mike York, Mountain West Research, Inc.; Chief Joseph Dam, Community Impact Report Update I). However, the principal determinant for selecting these priorities was the judgements of municipal officials in the three towns and the Center's overall assessment of probable impacts following the brief investigation.

No attempt has been made in this section to suggest regional or multi-town approaches to municipal service problems. Exceptional opportunity exists for multi-town approaches to these problems (e.g., fire protection, education, ect.). However, because of the tradition of small town independence and the existence of separate and distinct municipal government jurisdictions, it was felt that a suggestion regarding multi-town approaches would be premature. However, regional and multi-town approaches to the problem service areas should not be discounted, and as work progresses, NEMC and the support agencies would insist that these approaches be examined.

At the end of this section is a list of resource agencies, including state and federal government agencies and non-profit organizations which are available to assist the municipal governments. In addition, other agencies are listed from Section 4 which provides federal and state assistance.

The balance of this section describes, for each step, a description of the work to be performed, work tasks, and assignment of responsibilities.

STEP 1: INFORMATION COLLECTION AND ANALYSIS

A. DESCRIPTION OF WORK TO BE PERFORMED

The Community Impact Section of this report identifies information that was collected in the Spring of 1978 about municipal services within each of the three communities. This information collection effort was not exhaustive, and several major gaps still exist, which is why the community impact lists key questions following each service area description. The answers to these questions must be carefully investigated before the community can determine what course of action(s) it can take to prepare for the construction work force and what alternatives are available to it within each service area. What follows is a restatement of these questions as information needs. In many cases, questions have been expanded to accommodate the full range of information needed for municipal decision-makers.

Within each service area, information needs are listed in order of priority and grouped in the following categories.

- a. Statutory and regulatory considerations:
 - State and federal laws affecting the services; and
 - Municipal ordinances relating to the service.
- b. Scenario and service area considerations:
 - Information needs peculiar to the services being considered within each scenario.
- c. Financial considerations:
 - Availability of federal funds;
 - Availability of state funds; and
 - Municipal financing capacity.

The following is the list of subjects, agencies, and issues about which more information is needed within each service area:

A. Water Supply

a. Statutory and Regulatory Considerations

1. Federal Safe Drinking Water Act of 1973.
2. Maine Department of Environmental Protection and Department of Health Regulations on water quality and use.

b. Scenario and Service Area Considerations

1. Sub-surface and surface water availability.
2. Whether Fort Kent and St. Francis water systems can construct facilities for additional users.
3. Sub-surface water supplies must be adequate to support additional users.
4. Whether a public system can be constructed on-site.
5. Alternative sources of water supply for on-site residents.

c. Financial Considerations

1. Fiscal resources are available to the communities to expand water supply systems.

B. Sewerage Disposal

a. Statutory and Regulatory Considerations

1. Federal laws governing septage disposal (e.g., Clean Water Act).
2. Maine Department of Environmental Protection and Department of Health regulations on expansion of treatment facilities and placement of septic systems.
3. Municipal ordinances to regulate septic system construction, placement and use.

1. Soil conditions on-site to accommodate the population influx.
2. Whether or not additional septic systems in St. Francis and St. John will affect the quality of well water.
3. Feasibility of lagoons in any of the areas.
4. What alternative treatment methods could be used and their cost.

c. Financial Considerations

1. How much federal/state money is available to Fort Kent to expand the secondary treatment facility.
2. The impact of user fees.
3. The cost of more staff to provide the additional service.

C. Solid Waste

a. Statutory and Regulatory Considerations

1. Maine Department of Environmental Protection and Department of Health regulations restricting open burning, governing landfill operations, and concerning impact of solid waste on sub-surface water supplies.
2. Federal Resource Conservation and Recovery Act regulations governing landfill operations.

b. Scenario and Service Area Considerations

1. Specific numbers of additional users each town's site can accommodate.
2. Landfill options for on-site residents (Scenario A).
3. On-site transportation of solid waste to town(s) sites.

c. Financial Considerations

1. Town(s) borrowing capacity to expand/build additional landfills.
2. Funds available from federal/state sources.
3. Economies of scale using regional solid waste disposal system.

D. Streets and Roads

a. Statutory and Regulatory Considerations

1. Maine Department of Transportation regulations regarding street and highway construction and maintenance.

b. Scenario and Service Area Considerations

1. Adequacy of present highway system and intersection control.
2. Responsibility for on-site location, street construction and maintenance.
3. Creation of a public mass transportation system.

c. Financial Considerations

1. Availability of federal and state funds to assist the financing of new or expanded services.
2. Cost of additional staff to provide expanded service.
3. Existing state/regional plans related to transportation needs/priorities.

E. Police

a. Statutory and Regulatory Considerations

1. Federal Law Enforcement Assistance Administration requirements related to receipt of federal funds.

b. Scenario and Service Area Considerations

1. Special law enforcement problems arising from large labor housing situations.
2. Location of law enforcement personnel to respond to emergency situations.
3. Adequacy of alternative incarceration facilities.
4. District Judge case load and possibility of expansion.

c. Financial Considerations

1. Availability of federal and state funds to support employment of additional personnel.
2. The cost of additional staff to provide expanded services.

F. Fire

a. Statutory and Regulatory Considerations

1. Maine State regulations affecting the location of on-site equipment.
2. Municipal ordinances regarding the construction of new facilities and provisions for fire ponds.

b. Scenario and Service Area Considerations

1. Response time of present equipment to an on-site location.
2. Who would provide on-site fire service.
3. Adequacy of present equipment.
4. Impact of fire insurance rating.

c. Financial Considerations

1. Availability of federal and state funds to purchase additional equipment and to expand the present communications system.
2. The cost of additional staff to provide expanded service.

G. Recreation

a. Statutory and Regulatory Considerations

1. Municipal ordinances and by-laws affecting the provision of service to out-of-town residents.

b. Scenario and Service Area Considerations

1. Need to construct on-site recreational facilities.
2. Development of regional recreation programs using available resources.

c. Financial Considerations

1. Availability of federal and state funds to assist the financing of new or expanded facilities.
2. Expansion of user fee system to cover costs.
3. Cost of additional staff to provide expanded service.

H. Education

a. Statutory and Regulatory Considerations

1. Maine Department of Education standards for student-teacher ratio and bussing.

b. Scenario and Service Area Considerations

1. Availability to SAD 27 of additional facilities in the service impact area.

c. Financial Considerations

1. Availability of federal and state funds to finance education personnel salaries, expand facilities and to provide supplementary services.

I. Social Services

a. Statutory and Regulatory Considerations

1. Federal regulations regarding social service delivery.
2. State regulations regarding social service delivery.

b. Scenario and Service Area Considerations

1. Affect of on-site labor housing on eligibility for social service programs.
2. Present out-reach capacity of social service providers.
3. Inventory of social service providers to determine additional or expanded services necessary.

4. A municipal social service coordinator to serve as information referral agent.

c. Financial Considerations

1. Availability of federal and state funds to assist the financing of new or expanded services.
2. Impact of additional population on municipal government expenditures.
3. Cost of additional staff to provide expanded service.

J. Medical

a. Statutory and Regulatory Considerations

1. State or federal public health service regulations.

b. Scenario and Service Area Considerations

1. Availability of on-site medical personnel and equipment.
2. New facilities and equipment necessitated by the nature of construction work.
3. Availability of a field service intern program.
4. Availability of adequate nursing staff.

c. Financial Considerations

1. Availability of federal and state funds to help attract and subsidize medical personnel.
2. Impact on municipal subsidy of expanded ambulance service.
3. Cost of additional staff to provide expanded service.

K. Finance

a. Statutory and Regulatory Considerations

1. Special Maine enabling legislation permitting municipalities to exceed their borrowing capacity for unusual circumstances; feasibility of enacting such legislation if none exists.

b. Scenario and Service Area Considerations

1. Willingness of local financial institutions (e.g., Banks, Holding Companies) to provide special lending packages to assist communities with borrowing needs.
2. Attitude (at time of decision) of community residents regarding increased property taxes needed to support increases in municipal operating budgets.

c. Financial Considerations

1. Feasibility of affecting cost economies by approaching financial problems on multi-town basis; e.g., if three towns must borrow money for capital improvements, is it possible for the towns to "package" together their loan portfolios to secure a lower interest rate?

B. WORK TASKS

Information Collection

Three primary tasks are involved in the collection of this information:

1. Interview appropriate persons to obtain necessary information.

Extensive interviews will be held with:

a. State government agency staff

- The director and staff of eleven state agencies; see listing, end of this section.

b. Federal agency staff

- Ten federal agency regional administrators and/or their in-state designees and staff; see listing. The Federal Regional Council will also assist with these interviews.

c. Resource agency staff

- At least five sub-state regional and/or statewide non-profit agency directors and their staff; see listing.

d. Municipal government officials

- At least 25 elected and appointed municipal government officials including each selectman, council member, and full time executive and department head staff person.

Each interview should take at least one-two hours; follow-up interviews and/or telephone discussions will be necessary in most cases. Prior to interviews, interviewees will be sent letters describing the type and amount of information needed. The interview will be the primary method used to obtain up-to-date information on available federal and state assistance, statutory and regulatory changes, and local attitudes regarding the location of the construction workers. The interviews will also obtain information about the capabilities of resource agencies (e.g., Aroostook County Action Program) to assist the municipalities.

2. Research existing studies and materials to obtain detailed information on each service area. It is anticipated that this research will not be original in nature, but will involve careful review of materials already available, e.g., analyses of soil conditions available from the Soil and Water Conservation District.

3. Community Attitude Survey should be conducted to determine the attitude of area residents regarding the adequacy of current municipal services. This information will be used, along with the factual data on municipal service capacity, to determine what service areas are currently weak.

The survey instrument will also be used to solicit citizen opinion on probable locations of construction workers in their community.

The survey method will be a mail questionnaire, distributed over the signature of municipal elected officials, and returned to town halls and compiled/analyzed by support agency staff; the same survey will be administered in each town.

Information Analysis and Report Preparation

Analyzing the information collected will be a major undertaking, involving the principal researchers of the three support agencies, and coordinated by the lead agency program manager. Reports will be prepared on each service area. Each of the eleven reports will contain information pertinent to individual towns. Each report will be approximately 40-50 pages in length and describe:

- a. Service Area Conditions: a detailed elaboration of the brief information provided for each service area in Section 4;
- b. Statutory and Regulatory Considerations: analysis of state and federal laws that affect the service area, including municipal ordinances relating to the service.
- c. Financial Considerations: detailed information on availability of federal and state funds and assistance (including timetables and probable funding levels), and municipal finance capacity.
- d. An assessment of the overall impact of the CWF on the municipal government service area.

C. ASSIGNMENT OF RESPONSIBILITIES

The New England Municipal Center (NEMC) will take lead responsibility for managing and coordinating Step 1 work activities.

Three agencies will be assigned a major support responsibility in the information collection phase of the Step 1 work. A principal investigator will be assigned by each support agency to manage their respective work activities and supervise their staff. The specific work assignments will be:

1. Maine Municipal Association: Plan and conduct all interviews.
2. Northern Maine Regional Planning Commission: Perform all research functions.

3. Cooperative Extension Service: Conduct attitude survey.

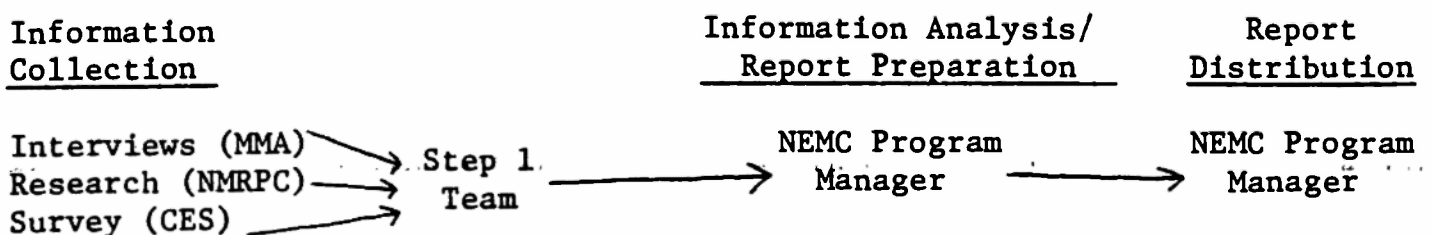
Following collection of the information, NEMC's program manager will take lead responsibility for preparing each report. Support agency principal investigators will assist NEMC prepare information and complete the reports. When reports are prepared as drafts they will be sent for review and comment to appropriate federal and state agencies and municipal officials. NEMC will take lead responsibility for distributing the final reports to municipal, state and federal government officials.

The report will be essential for completion of Step 2 and Step 3 work activities.

- In Step 2, the reports will be used to prepare Community Impact Analyses which will be used by municipal decision makers (selectmen, council-members, managers) to project the probable location(s) of construction workers in these communities.
- In Step 3, the NEMC program manager will use the reports to prepare contract scopes of service for completion of the Municipal Service Strategies.

The following chart illustrates the Step 1 work activities and assignments:

STEP 1: INFORMATION COLLECTION AND ANALYSIS



A. DESCRIPTION OF WORK TO BE PERFORMED

In order for municipal governments to most effectively plan for the impact of construction workers on their services, they must take some actions prior to the arrival of the work force. Such actions, for example, enactment of zoning ordinances, may reduce the affect the additional worker residents will have on existing services. This concern was reinforced by discussions with other project officials, who felt strongly that, where municipal officials have prerogatives, it would have improved planning and subsequent management of municipal services if these municipal governments took positive and constructive actions early. This step assumes that municipal governments will wish to take actions to direct and/or control the location of housing for workers and their families.

The purpose of this step is to assist each municipal government determine the optimum locations for housing of the construction workers in their communities. Optimum means those locations which will have the least impact on the provision of municipal services. Obviously, any one location within a community may have a serious impact on one service and a negligible impact on other services. Therefore, it will be the task of the lead and support agencies to develop a simple method which can be used to quickly estimate the impact of a particular locational decision on all eleven service areas. A community impact analysis method will be designed for use at public meetings to explain impacts of alternative locational decision.

The result anticipated in this step will be specific actions taken by each municipal government - acting individually or collectively - regarding the location of the construction workers. These actions may include zoning decisions. The important point is that it is essential for each community

to express its locational preferences in some manner in order to provide direction to the detailed analyses which must follow in Step 3.

B. WORK TASKS

Three tasks are involved in assisting each municipal government make decisions regarding the location of construction workers in their community:

(1) Community Impact Analyses will be prepared for each community.

Based on the community attitude survey, consultation with community leaders, and availability of land for possible housing developments, the lead agency will establish 3-5 possible housing locations for construction workers within each community. Each possible location, or scenario, will include estimates of how many persons will reside in a given area/neighborhood of the community. For example, one of the five scenarios for Fort Kent, may have 250 persons (broken-down by adults and children) residing within the central business district; 500 persons residing in neighborhood X, and 500 persons residing in mobile homes 2 miles from the center of town.

Given this scenario, it would be possible to determine the approximate impact of these new residents on the eleven service categories. Extrapolated further, it may be possible to estimate the approximate additional cost to the community for providing a service given a certain scenario. In order to simplify use of these analyses, it may be possible to place these figures on a matrix, which could show the approximate gross impact of each scenario, in terms of additional costs to the municipal government. The chart at the end of this section illustrates how one community's impact analysis might be shown.

It should be noted that the purpose of the community impact analysis would be only to give community residents and leaders a rough indication of the impact of various alternatives. Other factors would need to be considered by the community in selecting its optimum scenario, including the subjective preferences of residents. The community impact analysis should be used as a tool to help local officials make decisions; in many cases, its principal use may be simply to stimulate thought and discussion, not to influence specific decisions. One analysis will be prepared for each community.

- (2) Public Meetings would be held to solicit resident opinion on the alternative housing locations. In addition to discussion at city council/selectmen meetings, special public hearings would be conducted and community groups (e.g. League of Women Voters, Kiwanis, e tc.) would be encouraged to discuss the issues. At these meetings, information would be available on the community impact analyses and background materials would be provided interested residents (including the Step 1 reports).
- (3) Municipal Governments will decide, on one optimum scenario, and, if possible, take actions to influence construction worker residence locations. It is anticipated that boards of selectmen and the city council will vote on the optimum scenario and make this decision known throughout the community.

C. ASSIGNMENT OF RESPONSIBILITIES

NEMC will take lead responsibility for the entire Step 2 effort. NEMC's program manager will work with a team of support agency staff to complete the community impact analyses, and will serve as a facilitator at the public hearings and when the municipal officials make decisions. The

specific assignment of responsibilities for each task follows:

- (1) Community Impact Analysis: Northern Maine Regional Planning Commission
Maine Municipal Association
Cooperative Extension Service

These agencies will support NEMC in the preparation of each town's analysis; their staff will be assigned specific elements of each scenario to research and develop fiscal estimates. NEMC's role will be to coordinate and manage the completion of these analyses and distribute them to the municipal officials and community residents. Careful attention will be given to preparing information materials that are easy for residents to use; some materials will be prepared in French for residents who cannot read English.

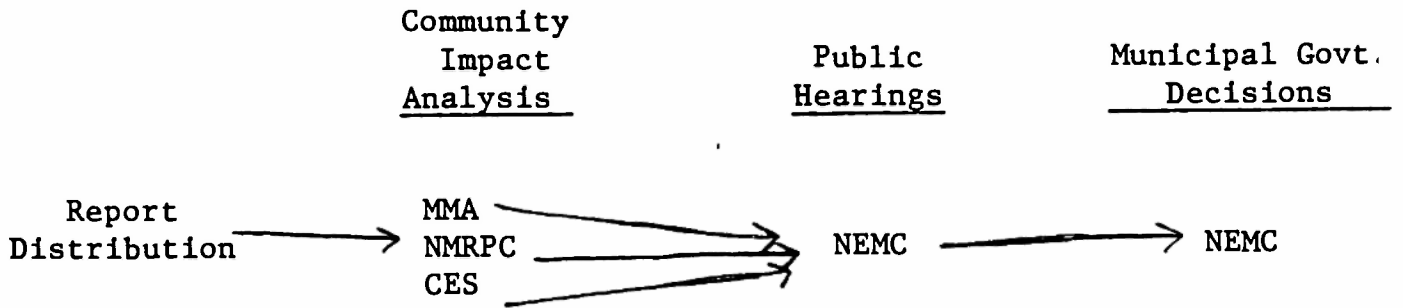
- (2) Public Hearings and Decision-Making: NEMC

NEMC will serve as facilitator at these meetings; specifically, the role will involve answering questions, providing information, and interpreting findings in the Step 1 reports and in the community impact analyses. NEMC will not influence decisions regarding the selection of a scenario.

After each municipal government selects an optimum scenario, it will be possible for the resource agencies to proceed with Step 3 - preparation of Municipal Government Service Strategies.

The following chart illustrates the Step 2 work activities and assignments:

STEP 2: MUNICIPAL SELECTION OF OPTIMUM HOUSING SCENARIOS



STEP 2: COMMUNITY IMPACT ANALYSIS CHART

(SAMPLE)

Note: This chart illustrates how a community might determine in a preliminary manner, the approximate fiscal impact of alternative housing scenarios. A separate sheet would explain each scenario.

COMMUNITY IMPACT ANALYSIS: FORT KENT

Municipal Service

Water
Sewer
Streets
Police
Fire
Education
Recreation
Soc. Services
Medical
Solid Waste
Financial
Total Costs

	\$	\$	\$	\$	\$	
	\$	\$	\$	\$	\$	\$

CFW Housing Scenarios

#1 #2 #3 #4 #5 Total Costs

STEP 3: MUNICIPAL SERVICES STRATEGIES

A. DESCRIPTION OF WORK TO BE PERFORMED

At this stage of the Management Assistance Plan, each municipal government will have selected one scenario which it believes will most closely conform to the actual location of construction workers' housing. Each municipal government will also have made a commitment to attempt to influence the location of construction worker residences to align most closely with the scenario they have chosen. Secondly, detailed information on federal programs available, service area conditions, and financial considerations will also be available from Step 1. Step 3 will attempt to use the information collected in Step 1 and the locational decisions made in Step 2 to provide each municipal government with alternative strategies to address the problems which are expected to be encountered within each service area.

The primary result of the analytic work in this step will be the preparation of Municipal Government Service Strategy Reports; one report will be prepared for each of the eleven service categories. Each service strategy report will contain the following information:

1. A concise statement of the problems to be addressed for the service area, if the scenario each town has selected is realized. These problems will be stated in specific and quantifiable terms and will include details on the adequacy of the present municipal service and its ability to accommodate additional residents. The problem statement will also indicate projected shortcomings in the service if the optimum scenario is implemented and will document the amount of additional service (e.g., number of additional police officers, number of additional septic tanks, etc.) that will be required.

2. A full statement of the resources available to address the service area problem will be described. Resources will include not only federal and state grant and loan programs, but manpower resources of federal and state agencies. The resource statement will also project the feasibility of applying for and securing grant and loan programs, and specifically how these might be applied to alleviate problems in the service area.
3. Alternative strategies will be described which each of the three municipal governments can undertake to address the service area problem. For example, if the service area is sewerage, alternative strategies for Fort Kent might be: (a) expansion of the existing secondary treatment facility, (b) use of septic tanks with a holding tank at the secondary treatment facility, or (c) construction of another secondary treatment facility on the outskirts of the community to accommodate a projected large rural population. The alternative strategies will be presented in enough detail for municipal officials to determine the cost of implementing each strategy, manpower necessary, and how long it will take to implement each strategy. Detailed work plans will be provided with each strategy; work plans will also recommend roles and responsibilities of various federal, state and local agencies.
4. A recommendation suggesting which of the alternative strategies presented should be implemented by the municipality, will be given.

When each of the reports is complete, it will be presented to Boards of selectmen and the city council for their review and subsequent action.

B. TASKS TO BE PERFORMED

1. Preparation of draft service strategy reports. Following detailed analysis and study of each service area within the perimeters of each town's selected scenario, reports will be prepared in the above format in draft and will be distributed to municipal officials and state/federal agency officials for their review and comment prior to final publication. Priority service areas - water and sewer, police and education - will be prepared first.
2. Publication of final service strategy reports.
3. Presentation of report findings and recommended strategy to municipal officials. This will include formal presentation at meetings of the Boards of Selectmen and City Council, and informal discussions with appointed and elected municipal officials concerning the details of the findings and recommendations.

C. ASSIGNMENT OF RESPONSIBILITIES

NEMC will be the lead agency in managing Step 3 activities. NEMC will work with the three support agencies on management and coordination of the preparation of these reports. These three other agencies, mentioned above, are the Maine Municipal Association, the Northern Maine Regional Planning Commission, and the Cooperative Extension Service. The purpose of involving these three agencies in the management and coordination of Step 3 activities are two-fold:

1. To secure their help in the timely completion of Municipal Service Strategy Reports; and
2. To build their capacity to assist municipal governments implement selected strategies (Step 4), including possible management of the implementation of some strategies, and monitoring and evaluation of strategy completion.

As the lead agency for managing Step 3, NEMC will engage consultants (including non-profit agencies and state agencies) to prepare each of the eleven service strategy reports. Whenever feasible, NEMC will contract with state agencies and/or non-profit agencies to prepare the reports. When this is not feasible, NEMC will select private consultants on a competitive basis to prepare the reports.

NEMC and the three support agencies will receive the reports in draft, solicit reactions from municipal, state and federal officials and perform final editing on the reports before they are published.

NEMC and the support agencies will also serve as facilitators at public meetings when the reports are presented and advise municipal officials on recommended strategies.

STEP 4: MUNICIPAL IMPLEMENTATION

When each municipal government receives its service strategy reports, it will be in a position to determine which of the alternatives presented they wish, if any, to implement. That implementation may require application for federal and/or state funds, commitment of municipal government fiscal resources, engagement of additional municipal government staff, or enactment of other municipal ordinances. The alternative strategies will recommend specific municipal actions necessary to implement the strategy.

NEMC will continue to take the lead assisting municipal governments implement their strategies. Depending upon the service area strategy under discussion, one or more of the three support agencies (MMA, NMRPC, CES) will be engaged to assist NEMC work with the community. For example, if Fort Kent decides that it wishes to expand its secondary treatment facility, NEMC might engage NMRPC to assist with preparation of the Clean Water Act, Section 201 proposal for waste water treatment construction grants. The specific roles and responsibilities of subcontractors (e.g., NMRPC, MMA, CES) will depend upon the service area and the strategies selected. NEMC and these three agencies will serve as support staff to the municipal governments and assist them prepare applications, analyze issues further, and inform them of necessary municipal actions to implement strategies.

MANAGEMENT ASSISTANCE PLAN

Preliminary Work Plan

Stages

Work Schedule (Months)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

Information Collection
and Analysis

Municipal Selection of
Optimum Housing Scenarios

Municipal Service
Strategies

Municipal Implementation

RESOURCE AGENCIES TO ASSIST LOCAL GOVERNMENTS

Federal Agencies

Dwight Sewell
Chief of Community Programs
Department of Agriculture
Farmer's Home Administration
State Office
Orono, Maine 04473
(207) 866-4929

William R. Adams, Jr.
Regional Administrator
Environmental Protection Agency
JFK Federal Building, Room 2203
Boston, Massachusetts 02203
(617) 223-7210

John F. Bean
Principal Regional Official
Department of Health, Education
and Welfare
JFK Federal Building, Room 2400
Boston, Massachusetts 02203
(617) 223-6830

Edward T. Martin
Regional Administrator
Department of Housing and Urban
Development
JFK Federal Building, Room 800
Boston, Massachusetts 02203
(617) 223-4066

Luis Sepulveda
Regional Administrator for
Employment and Training
Department of Labor
JFK Federal Building, Room 1707
Boston, Massachusetts 02203
(617) 223-6439

Ivan Ashley
Regional Administrator
Community Services Administration
JFK Federal Building, Room E-432
Boston, Massachusetts 02203
(617) 223-4080

Helen M. Keyes
Secretarial Representative
Department of Commerce
JFK Federal Building, Room E-429
Boston, Massachusetts 02203
(617) 223-0695

Regional Administrator
Federal Energy Administration/
Department of Energy
150 Causeway Street, Room 3701
Boston, Massachusetts 02114
(617) 223-3701

William Schwab
Acting Secretarial Representative
Department of Transportation
Commander 1st District, U.S.
Coast Guard
150 Causeway Street
Boston, Massachusetts 02114
(617) 223-3601

Charles Maher
Regional Director
U.S. Civil Service Commission
J. W. McCormack Post Office and
Courthouse Building
Boston, Massachusetts 02109
(617) 223-2538

J. Joseph Grandmason
Federal Co-Chairman
New England Regional Commission
53 State Street, Room 400
Boston, Massachusetts 02108
(617) 223-6045

Dr. Richard McCann
Acting Regional Commissioner for
Education
Department of Health, Education and
Welfare
JFK Federal Building, Room 2303
Boston, Massachusetts 02203
(617) 223-4558

Larry Kelley
Staff Director
Federal Regional Council of
New England
JFK Federal Building,
Boston, Massachusetts 02203
(617) 223-5421

Edward Montminy
Acting Regional Health Administrator
Department of Health, Education and
Welfare
JFK Federal Building, Room 1400
Boston, Massachusetts 02203
(617) 223-6827

State Agencies

Timothy Wilson, Director
Division of Community Services
Stevens School, Hallowell
State House
Augusta, Maine 04333
(207) 289-3771

Richard Bachelder, Director
Bureau of Public Improvements
State Office Building, 1st Floor
State House
Augusta, Maine 04333
(207) 289-3881

H. Sawin Millett, Commissioner
Department of Education and
Cultural Services
Education Building
State House
Augusta, Maine 04333
(207) 289-2321

Allen Pease, Director
Office of State Planning
184 State Street
State House
Augusta, Maine 04333
(207) 289-3261

Henry Warren
Acting Commissioner
Department of Environmental
Protection
AMHI Ray Building
State House
Augusta, Maine 04333
(207) 289-2811

State Clearinghouse Coordinator
State Planning Office
184 State Street
State House
Augusta, Maine 04333
(207) 289-3261

John Norton, Director
Bureau of Health Planning and
Development
151 Capitol Street
State House
Augusta, Maine 04333
(207) 289-2716

Allan Weeks, Director
Bureau of State Police
36 Hospital Street
State House
Augusta, Maine 04333
(207) 289-3801

State Agencies (cont.)

David Smith, Commissioner
Department of Human Services
Human Services Building
State House
Augusta, Maine 04333
(207) 289-2736

Roger Mallar, Commissioner
Department of Transportation
Transportation Building
State House
Augusta, Maine 04333
(207) 289-2551

Emelien Levesque, Commissioner
Department of Manpower Affairs
20 Union Street
P.O. Box 309
Augusta, Maine 04330
(207) 289-3814

Marilyn McInnis, Director
Office of Alcoholism and Drug Abuse
Prevention
Bureau of Rehabilitation
32 Winthrop Street
Augusta, Maine 04330
(207) 289-2141

Theodore Trott
Executive Director
Maine Criminal Justice Planning
and Assistance Agency
11 Parkwood Avenue
Augusta, Maine 04330
(207) 289-3361

Donald C. Hoxie, Director
Division of Environmental Engineering
State Department of Human Services
Augusta, Maine 04330
(207) 289-3826

Other State Agencies

Norman Fournier
Executive Director
Aroostook County Action Program
P.O. Box 1116
Presque Isle, Maine 04769
(207) 764-6011

Edwin Bates, Director
Cooperative Extension Service
Winslow Hall
University of Maine
Orono, Maine 04473
(207) 581-2211

James Barresi
Executive Director
Northern Maine Regional Planning
Commission
McElwain House, 2 Main Street
P.O. Box 779
Caribou, Maine 04736
(207) 498-8736

John Salisbury
Executive Director
Maine Municipal Association
Local Government Center
Community Drive
Augusta, Maine 04330
(207) 623-8429

SECTION 6: FEDERAL GRANT AND LOAN ASSISTANCE

This section provides brief information on various federal government assistance programs available to communities, such as those which may be impacted by construction activity of the proposed Project. The amount and type of federal resources available vary significantly at different times of the year and at different years, and it is not possible to predict definitively what funds will be available at a future date. There are several reasons for this uncertainty. Assistance funds are usually appropriated by the U.S. Congress for each fiscal year beginning October 1. The Maine State Legislature meets biennially; however, appropriations are made for each year of the bienium separately. State appropriations or local municipal government funds are often necessary as a "match" to receive federal funds. Given these variables, it is not practical to assume in advance that assistance funds will be appropriated and available in any given year to satisfy requests. In addition, such actions as non-appropriation, executive impoundment of funds, or the gradual phasing out of some domestic assistance programs may render the chances of receiving aid uncertain. Also, some of the assistance funds are provided in accordance with long-range plans (three-five years) and the requesting agency may not be a part of the plan or its pending request may not be high on the priority list to receive funding.

Thus, this section is able to provide only summary information on the most important federal funding sources currently available to the region adjacent to the proposed Dickey-Lincoln dam and the three communities under study: St. Francis, Fort Kent, and St. John. When feasible, fiscal year (FY) 1978 (October 1, 1977-September 30, 1978) expenditure figures have been provided for different federal programs; in some cases, projected FY 1979 funds are also indicated. It should be noted, however, that all these figures are estimates and are provided on a state-wide or

national basis. In most cases, municipal governments must compete for federal grant and loan funds.

Eligible activities for federal program funds are also mentioned, but these eligible activities frequently change with regulation changes and new legislation. In addition, some federal programs require local cash and/or in-kind matches.

It is also important to note that significant manpower resources in the form of technical assistance and advice, are also available from federal and state government agency staff. The availability of assistance, however, depends upon the program priorities of the federal/state agency in a given time, and the specific nature of the request for assistance from local governments and agencies. Because of these variables, no attempt has been made to identify these resources in this report. However, this information would need to be obtained if the Management Assistance Plan is implemented.

If the Management Assistance Plan (Section 5) is implemented, a thorough analysis of available federal and state program funds will need to be undertaken for each municipal service area. It is possible that several different federal grant and loan programs may be available to address a single municipal need. For example, it might be possible to use the Housing and Community Development Act, General Revenue Sharing, and Comprehensive Employment and Training Act to rehabilitate a community social service center. However, because of the variables and uncertainties mentioned above, the specific mix and/or availability of federal programs will not be known definitively until a more time-specific and thorough analysis can be performed.

Information on assistance programs was obtained from various federal and state government agencies and from data contained in the 1978 Catalog of Federal Domestic Assistance and its supplements. Agencies responsible for administering the federal

for further information on this program is the in-state designee:

Ms. Kay Godwin
Executive Director
Bureau of Public Administration
University of Maine
College Street
Orono, Maine 04473
(207) 581-7603

HOUSING

Federal government housing programs are administered by the Federal Housing Administration of the Department of Housing and Urban Development (HUD) and the Farmer's Home Administration (FmHA) of the U.S. Department of Agriculture. Each agency's major programs are described briefly below.

- A. Section 8, Subsidized Housing Program. The Housing and Community Development Act of 1977 (PL 95-128) establishes a rental assistance program entitled Section 8. HUD's Manchester Area Office administers the program for the three northern New England states; in Maine, all Section 8 units are allocated to the Maine State Housing Authority for subsequent distribution throughout the state. In FY 1978, the State of Maine received 90 units of subsidized Section 8 housing (for existing rehab). HUD provided \$2,500 per unit. The contact for additional information on availability of this housing subsidy program is:

Joseph Garaffa
U.S. Department of Housing
and Urban Development
Cotton Federal Building
Manchester, New Hampshire 03101
(603) 666-7645

The balance of the housing programs described below are administered by the Farmer's Home Administration, through their in-state office. Most of the following programs are administered by the Farmer's Home Administration under the Housing Act of 1949

as amended. Various sections refer to sections of the Act. Information on these programs may be obtained from the county supervisor or their in-state office:

John Robertson
Rural Housing Loan Officer
FmHA State Office
Orono, Maine 04473
(207) 866-4929

Charles Kelly
County Supervisor
Nadeau Building
17 East Main Street
Fort Kent, Maine 04743

- B. Section 502, Single Family. Provides subsidized loans for the purchase and/or construction of housing. Provides interest rates as low as 1% depending upon income levels. This is the largest program administered by FmHA. In 1978, the State of Maine received \$53,000,000 for this program.
- C. Multiple Family Housing Units. This is the fastest growing FmHA program in the state, it provides low interest loans to low income persons and senior citizens for multiple family housing units. In FY 1978, \$11,000,000 was available to the State of Maine.
- D. Section 504. This program provides loans and grants to remove housing hazards: e.g., weatherization, leaky roofs, danger porches, etc. In FY 1979, \$24,000,000 is projected to be available nationally under this program.
- E. Weatherization Loan Program. This program works in conjunction with power companies throughout the state and is intended to provide low interest loans to assist home owners weatherize their units.
- F. Section 515, Rural Rental Housing. This program provides rental subsidies for low income workers throughout the state for housing rental. In FY 1979, \$22,000,000 is projected to be available nationally.

G. Section 514, Labor Housing. The purpose of this program is to provide housing for domestic farm workers. \$38,000,000 is projected to be available in FY 1979 nationally.

H. Technical Assistance Self Help Program. Grants are available to non-profit organizations to help families build their own homes. These families must qualify under Section 502 income guidelines. In FY 1979, approximately \$19,000,000 is projected to be available nationally for this program.

MANPOWER

A. Comprehensive Employment and Training Act of 1973 (CETA) PL 93-203. Title II and VI of CETA provides funds for municipal governments and non-profit agencies to hire public service employes. CETA is administered by the Department of Labor which contracts with prime sponsors; state agencies act as prime sponsors to administer the program for small communities. The State of Maine's balance of state manpower office has the contract with DOL to administer CETA programs for small communities. In FY 1978, Aroostook County Commissioners subcontracted, in turn, with the Maine State Balance of State Office to administer most of the CETA programs in the Aroostook County area, including the towns of Fort Kent, St. Francis, and St. John. In FY 1978 Aroostook County received \$4.45 million for CETA programs, including program administration. In addition, \$723,000 was allocated in FY 1978 under the CETA legislation for training CETA employes. The contact for CETA program is:

Ms. Jean Miley
Executive Director
State of Maine Balance of State
CETA Office
8 Crosby Street
Augusta, Maine 04330
(207) 289-3376

EDUCATION

The U.S. Department of Education, which is part of the Department of Health, Education and Welfare, administers federal education grants through state departments of education. The Maine Department of Education and Cultural Services is the primary agency in the State of Maine which administers federal education funds. The primary contact for information about federal education programs available to municipalities in the State of Maine is:

Robert Brown
Director of Federal Programs
Department of Education and
Cultural Services
Education Building
State House
Augusta, Maine 04333
(207) 289-2475

- A. Elementary and Secondary Education Act. ESEA is the major federal program providing support for educational services. In FY 1978, the State of Maine received approximately \$11-12 million for education of the disadvantaged (Title I); \$2,000,000 for the migrant workers program (Title I); \$2,000,000 for the Title IV Consolidated Program (consolidates ESEA Title II, III, V and Health and Nutrition); and \$500,000 for the bi-lingual program.
- B. Impacted Aid (PL 87-874). School affected federal impact area funds are administered on a per student basis, the rate per student based on whether or not his/her parents live on or off federal land or are employed on federal property. In FY 1978, approximately \$4,000,000 was provided to municipal governments as impacted aid in the State of Maine; municipal governments use these funds any way they wish to support school services. Its possible that if the Project is implemented, impacted aid might be available to support some school services.

- C. Other Federal Education Programs. In addition to those programs mentioned above, \$2,000,000 was also available in FY 1978 for vocational education; \$30,000 was available to assist school systems which had facilities damaged because of natural disasters; \$104,000 for the Right to Read Program in FY 1978; and \$125,000 for the Career Education Program.
- D. State Subsidy. The State of Maine provides a subsidy to its municipal governments to support education expenses; the subsidy is based on a formula which relies heavily upon the valuation of the community and the school population.

WASTE WATER TREATMENT

- A. Clean Water Act of 1977. Title II of the Clean Water Act of 1977 provides funding support to municipal governments for the planning and construction of waste water treatment facilities. The Clean Water Act is administered federally by the Environmental Protection Agency through its Region I Office in Boston; within each state, the program is administered by state government agencies. In Maine, the Department of Environmental Protection administers the Clean Water Act for municipal governments within the state.

Section 201, Title II of the Clean Water Act provides grants for construction of treatment works; in FY 1979, approximately \$30,000,000 will be available to Maine municipal governments for construction of treatment facilities. Construction funds are allocated on a priority basis to municipal governments based upon specific criteria. In addition, in FY 1979, over \$500,000 is expected to be available to municipal governments, area-wide planning agencies and the State DEP for area-wide waste treatment management. Contact:

Charles King
Municipal Services Division
Department of Environmental Protection
AMHI Ray Building, State House
Augusta, Maine 04330
(207) 289-2591

SMALL BUSINESS ASSISTANCE/ECONOMIC DEVELOPMENT

Several sources of federal funds can be used to assist with municipal economic development strategies; in addition, funds are also available to private businesses to assist them grow and expand. Some of these federal programs are administered by the U.S. Department of Housing and Urban Development, the Economic Development Administration, and the Farmer's Home Administration; these federal grant and loan programs were described under the community and economic development section. In addition to those programs, grant and loan assistance is also available from the Small Business Administration (SBA). SBA programs are administered in the State of Maine by:

Thomas A. McGillicuddy
District Director
Small Business Administration
Augusta District Office
40 Western Avenue
Augusta, Maine 04330
(207) 622-6171

Some of the programs described below are available to private businesses; other programs are available to municipal governments; and some to non-profit agencies. Specific program eligibility requirements and funding levels vary substantially; detailed information is available from SBA.

- A. Small Business Investment Companies (SBIC). Privately owned and operated companies which are licensed by SBA to provide venture capital and long term loans for small firms for expansion, modernization and financing of their operations. In general, financing must be for at least five years, except that a borrower may elect to prepay indebtedness; an SBIC may invest a maximum of 20% of its capital in a single firm. Some SBICs also provide management assistance to small businesses.

- B. Local Development Company (502 Program). Private or non-profit corporations approved by SBA to receive loans from SBA to purchase land, machinery and equipment, and expand, or construct facilities for specific small businesses when conventional financing is not available. The local development company then contracts with a small business for use of the facility by leasing or selling the facility or by lending funds to the small business to construct the facility. These SBA loans may not be used for working capital or debt repayment. Local development companies must provide a portion of the funds, usually 20% and the banks and SBA invest up to 80% of the total amount.
- C. Regular Business Loan (Section 7A). Are provided for small businesses which cannot obtain funds from a bank or other private source. SBA may guarantee up to 90% or \$350,000, whichever is less, of a bank loan. SBA may also provide advance funds not to exceed \$150,000 on an immediate participation basis with a bank, or make a direct loan of up to \$150,000 only when other forms of financing are not available.
- D. Displaced Business Loans. These loans are available for small businesses which suffer economic losses through displacement caused by federally aided renewal or other construction projects. The amount of SBA loan depends on the degree of injury suffered; loans can be for up to 30 years and carry a 6.5% interest rate.
- E. Business Development Program (Section 8A). This program allows SBA to contract with the federal government to supply goods, services and construction needs and then subcontract with small firms for performance of the work.

F. Score/Ace. The Service Corp of Retired Executives/Active Corp of Executives provides prospective small business owners and troubled small businesses with free management counseling. Expertise of the executives are matched to the specific needs of the small business; counselors generally visit the business owner in his/her place of business to assist them.

MEDICAL FACILITIES

A. National Housing Act (Public Law 90-448). This program provides that the Federal Housing Administration, Department of Housing and Urban Development, may insure lenders against loss on mortgages used to finance the construction or rehabilitation of private non-profit and proprietary hospitals, including major movable equipment.

B. Small Business Administration (Public Law 85-536). This program provides assistance to medical or dental practitioners on an individual basis or as a group to obtain direct low-interest loans or insured loans. Funds are provided for the conversion or expansion of facilities such as private health clinics or offices, the purchase of equipment or materials, and for working capital.

SOLID WASTE

A. Farmers Home Administration (Public Law 92-419). This program provides grants and loans for the improvement and expansion of rural solid waste collection and treatment facilities.

B. Economic Development Administration (Public Law 89-136). This program can provide grants and loans for construction, improvement, or expansion of solid waste facilities. Such facilities would have to help enhance economic development in economically underdeveloped areas.

RECREATION

- A. Heritage Conservation and Recreation Service, Department of Interior.
(Public Law 88-578 as amended). Funds are available under this program for the acquisition and development of recreational projects such as playgrounds, swimming pools, and for support facilities such as roads and water supplies. Funding is not available for the operation and maintenance of facilities.
- B. Economic Development Administration (Public Law 89-136). Economically underdeveloped counties (including Aroostook) may qualify for grants and loans of up to 80 percent for the development and improvement for recreational facilities. However, these facilities must contribute to the economic development of an area.

WATER

- A. Safe Drinking Water Act (Public Law 93-523) will guarantee loans up to \$50,000 for municipalities to improve their water collection and purification facilities
- B. Economic Development Administration (Public Law 89-136). Under this program grants and loans can be made for the construction, improvement, or expansion of water systems in economically underdeveloped areas. Such facilities must, however, help enhance economic development and help overcome economic obstacles in an area or EDA cannot be used.
- C. Farmers Home Administration (Public Law 87-128). This program provides for project grants and loans for the improvement and expansion of water systems for rural towns with populations less than 5,500.

POLICE

- A. The Law Enforcement Assistance Administration, Department of Justice (Public Law 93-83). This program provides matching 90 percent grants to assist states and local governments in implementing programs and projects to improve law enforcement. If need is so great as to not be readily met by the state comprehensive plan, discretionary grants can be made. All monies are in short supply, but chances of receiving such funds are enhanced if application is made well in advance of need.
- B. The Economic Development Administration (Public Law 89-136, as amended). This provides for grants and loans up to 80 percent of the amount needed for the financing of police facilities. It must help create an environment which is conducive to the creation of jobs.

FIRE

- A. Farmers Home Administration (Public Law 92-419). Communities with populations of less than 5,500 may apply for matching funds and low-interest loans for the construction of municipal fire protection facilities and for the purchase of equipment.
- B. Economic Development Administration (Public Law 89-136). This program provides for the acquisition of fire protection facilities in the same way and with the same provisions as noted earlier in the section on police protection.

COMMUNITY AND ECONOMIC DEVELOPMENT IMPROVEMENTS

Several federal programs are available to assist communities with community development, economic revitalization, and public works-type improvements. In many cases, these activities include street improvements, water and sewer facilities, municipal

facility construction, and assistance to non-profit agencies. Listed below are those federal programs which primarily address community development and public works-type activities. Economic development programs, which are available to assist businesses, are listed in a separate section. The three federal agencies which are primarily responsible for administering these programs are the U. S. Department of Housing and Urban Development (HUD), the Farmer's Home Administration (FmHA) of the U. S. Department of Agriculture, and the Economic Development Administration (EDA) of the U.S. Department of Commerce. Contacts for each of these federal programs are listed below:

James Lannigan, Community Planning
and Development Representative
U.S. Department of Housing and
Urban Development
Cotton Federal Building
Manchester, New Hampshire
(603) 666-7641

Philip Bartram, Economic Develop-
ment Representative
U.S. Economic Development Admin-
istration
607 Federal Building
40 Western Avenue
Augusta, Maine 04330
(207) 622-6171

Dwight Sewell, Chief,
Community Programs
Farmer's Home Administration
State Office
Orono, Maine 04473
(207) 866-4929

- A. Housing and Community Development Act (Public Law 95-128), Title I. The Community Development Block Grant Program provides funds on a competitive basis to non-metropolitan and metropolitan areas throughout the country. The State of Maine non-metropolitan allocation of these funds for fiscal year 1978 was \$5,691,000. Funds may be used for a variety of community development-type activities including housing improvements, infrastructure improvements, and other community efforts to improve housing conditions for low and moderate income residents. Economic development activities are eligible. This program is administered by the HUD Manchester Area Office.

- B. Urban Development Action Grants (UDAG). Section 119, of Title I of the Housing and Community Development Act of 1977 provides funds on a competitive basis to reverse economic decline in severely distressed municipalities. UDAG will fund industrial and commercial development efforts to link community and economic development initiatives. UDAG funds must be used to involve the private sector in addressing economic decline in communities. The funds are awarded on a competitive basis periodically throughout the year. The program is administered by HUD.
- C. Water and Sewer Program (Public Law 89-240). The Farmer's Home Administrations water and sewer program provides loans and grants for establishment of central water and sewer programs in municipalities.
- D. Community Facilities. The Farmer's Home Administration, through the Rural Development Act of 1972, provides 5% loans for the construction of new and/or the rehabilitation of old community facilities. Loans are provided to municipal governments for these construction efforts.
- E. Industrial Development Grant Program provides grants to municipal governments to establish small industrial parks and generally encourage economic growth and expansion. In FY 1978, the Farmer's Home Administration provided \$18,000,000 in loans and grants under their water and sewer, community facilities, and industrial development grant programs. Another program, called the Business and Industrial Development Program, is also administered by the Farmer's Home Administration and provides guaranteed loans of 90% to businesses and industries under certain circumstances.
- F. Public Works Grants. Title I of the Public Works and Economic Development Act of 1976, which is administered by EDA, provides funds on a matching basis to

municipal governments for public works-type projects that create permanent jobs. In FY 1978 between \$1,000,000-\$3,000,000 in public works grants were awarded to Maine Municipalities by EDA.

G. Public Works Impact Program. In 1978 approximately \$1,000,000 was awarded by EDA to Maine municipal governments facing severe economic distress for public works-type activities.

H. Local Public Works Program. The Public Works Employment Act of 1977 provided \$40,000,000 to Maine municipal governments for public works-type activities. Round one of the program, which provided \$10,000,000 was available to municipalities on a competitive basis; round two, which provided \$30,000,000 was available primarily on an allocation/formula basis. Although the program has terminated, legislation has been introduced in Congress for a round three; its enactment is questionable. Another federal program which has been introduced by the Administration to replace the local public works program is entitled the Labor Intensive Public Works Program, which would provide up to 80-90 percent federal funds for municipal public works activities.

OTHER FEDERAL FUNDING SOURCES

Other federal funds are available for general purpose municipal government support. The following two programs are administered by the U. S. Department of Treasury, from Washington, D.C. In each case, municipal governments receive funds based on formulas. Minimal applications are required, and municipal governments may use the funds for general operating expenses. Detailed information on these programs may be obtained from the Department of the Treasury, or from:

Kay Rand, Staff Assistant
Maine Municipal Association
Community Drive
Augusta, Maine 04330
(207) 623-8429

A. General Revenue Sharing. The Fiscal Assistance Amendments Act of 1976 (PL 94-488) provide funding support from the federal government to municipal government units throughout the state. Municipal governments must complete certification requirements and agree to comply with various federal policies and regulations. However, the funds may be used to support most municipal government operating expenses. In fiscal year 1978 (entitlement period number nine), the following General Revenue Sharing funds were provided to three towns under study: Fort Kent - \$95,005; St. Francis - \$15,983; and St. John - \$3,525.

B. Antirecession Fiscal Assistance. Public Law 95-30 provides funding support to economically distressed communities; payments are received quarterly by communities and funding levels are based upon formulas. For the quarter ending April 30, 1978, the following was also received by the three communities: Fort Kent - \$9,560; St. Francis - \$1,578; and St. John - \$377.

APPENDIX A - MUNICIPAL OFFICIALS CONTACTED

Louis Albert - Business Manager, SAD 27 - Fort Kent

Gary Blais - Third Selectman - St. John

Philip Bouchard - Fire Chief - Fort Kent

Gil Daigle - Water Plant Operator - Fort Kent

Sherman Diagle - Superintendent of Roads, State of Maine - Fort Kent

Claude Dumond - Town Manager - Fort Kent

Roger Harvey - First Selectman - St. Francis

Authur Kelly - Former Superintendent, SAD 10 - Allagash

Paul Kelley - Superintendent, SAD 27 - Fort Kent

Norman Marquis - First Selectman - St. John

Leon Martin - Second Selectman - St. Francis

James McClure - Former Community Development Director - Fort Kent

Alberie Nadieau - Waste Water Plant Operator - Fort Kent

Jim Ouellett - Health Officer - Fort Kent

Cariton Sauage - Chairman, Town Council - Fort Kent

Peter St. John - Recreation and Community Development Director - Fort Kent

APPENDIX B - BIBLIOGRAPHY

The following bibliography presents a succinct list of information available on the impact of construction work force location on municipal government services. It also lists additional publications that may assist the local governments involved to plan for the worker impact.

GENERAL

Mountain West Research, Inc. Construction Worker Profile, Final Report.
December 1975.

U.S. Department of the Army, Corps of Engineers. Community Impact Report:
Chief Joseph Dam, Columbia River, Washington. Washington, D.C.: 1974.

U.S. Department of Housing and Urban Development, Office of Planning and
Development, Office of Planning and Development. Rapid Growth From Projects,
Ideas for State and Local Action, A Program Guide. April 1976.

Energy Research and Development Administration. Managing the Social and
Economic Impacts of Energy Developments, July 1976.

International City Management Association, Environmental Impact Statements:
Preparation and Review by Local Governments. Vol. 7, No. 6. June 1975.

International City Management Association, Alternative Resources for Local
Government. Vol. 9, No. 7. July 1977.

International City Management Association, Information Sources for Municipal
Administrators. Vol. 4, No. 8. August 1972.

International City Management Association, Procedures for Retaining Public
Works Consultants. Vol. 7, No. 4. April 1975.

International City Management Association, Boom then Bust: Managing Rapid
Growth Cities. Vol. 9, No. 3. March 1977.

The Urban Institute, How Effective Are Your Community Services? 1977.

WATER

Fair, Geyer, and Okun. Water Supply and Wastewater Removal. New York: 1966.

American Public Health Association. Standard Methods for the Examination of
Water and Wastewater. Washington, D.C.: 1971.

SEWERAGE

Fair, Geyer, and Okun. Water Supply and Wastewater Removal. New York: 1966.

American Public Health Association. Standard Methods for the Examination of
Water and Wastewater. Washington, D.C.: 1971.

PLANNING AND ZONING

International City Management Association, Regulating Mobile Home Parks. Vol. 3, No. LS-3. March 1977.

International City Management Association, Housing Code Standards, Administration and Enforcement. Vol. 3, No. LS-1. January 1971.

International City Management Association, Principles and Practice of Urban Planning. Washington, D.C.

Building Officials Conference of America, The Boca Basic Building Code. 1975.

University of Delaware. Management Guide for Municipal Low/Moderate Income Rental Mobile Home Park. 1975.

Freilich, Robert H. and Peter Levi. Model Subdivision Regulating: Text and Commentary. American Society of Planning Officials 1975.

SOLID WASTE

Schweighauser, Charles A. Solid Waste Practices in Berkshire County: The Problems and Possibilities of Community Disposal Facilities. Williamstown, Massachusetts: Center for Environmental Studies; 1969.

Committee on Solid Wastes, American Public Works Association. Refuse Collection Practices. Chicago, Illinois: Public Administration Service: 1966.

International City Management Association, Waste and Water, Vol. 9, No. 2. February 1977.

International City Management Association, Refuse Collection Productivity: Personnel Strategies. Vol. 7, No. 8C. August 1975.

International City Management Association, Managing Solid Waste: Part I. Vol. 5, No. 11. November, 1973.

International City Management Association, Managing Solid Waste: Part II. Vol. 5, No. 9. September, 1974.

American Public Works Association. Municipal Refuse Disposal, Chicago: Public Administration Service, 1970.

U.S. Environmental Protection Agency. Decision-Makers' Guide in Solid Waste Management. Washington, D.C.; Government Printing Office, 1976.

POLICE

International City Management Association, Police-Community Relations. Vol. 3, No. 5. May 1977

International City Management Association, Law Enforcement in Small Cities. Vol. 6, No. 12. December, 1974.

International City Management Association, Local Government Police Management. Washington, D.C.

Zapke, Robert A. Police Management Guidelines For Rural Communities. University of Delaware, 1976.

FIRE

National Board of Fire Underwriters. Bulletin #175. March 1959.

National League of Cities. The Grading of Municipal Fire Protection Facilities: Its Relationship to Fire Insurance and to the Municipality's Fire Protection Policy. Washington, D.C.: National League of Cities; July 1967.

Kimball, Warren Y. How to Judge Your Fire Department. Boston, Massachusetts: National Fire Protection Association; 1972.

International City Management Association, Fire Service Performance Measurement. Vol. 9, No. 11. November, 1977

International City Management Association, The Volunteer Fire Service: A Management Perspective. Vol. 6, No. 11. November 1974

International City Management Association, Municipal Fire Administration. Washington, D.C.

Schaenman, Philip S. and Joe Swartz, "Measuring Fire Protection Productivity in Local Government." National Fire Protection Association, October 1974.

National Fire Protection Association, Fire Prevention Code NFPA, Annual.

RECREATION

American Society of Planning Officials. Standards for Outdoor Recreational Areas. Chicago, Illinois: American Society of Planning Officials; 1965.

U.S. Bureau of Outdoor Recreation. Outdoor Recreation Space Standards. Washington, D.C.: U.S. GPO; 1967.

International City Management Association. Managing Municipal Leisure Services. Washington, D.C. 1973.

Buechner, Robert D. National Park Recreation and Open Space Standards. National Recreation and Park Association, 1970.

MEDICAL

Argonne National Laboratory, Real Estate Research Corporation. Space Criteria for Hospital Evaluation. Chicago: Chicago Hospital Planning Council, 1965.

International City Management Association, Providing Emergency Medical Service. Vol. 6, No. 8. August 1974.

SOCIAL SERVICES

International City Management Association, Organizing for Human Services. Vol. 9, No. 6. June 1977.

International City Management Association. Managing Human Services. Washington, D.C. 1977.

OTHER REFERENCES

U.S. Department of the Army, Corps of Engineers. Community Impact Report: Update 11 (Impact on Local Schools), Chief Joseph Dam, Columbia River, Washington. Seattle, Washington (Draft 1977).

Tennessee Valley Authority. Hartsville Nuclear Plants: Socioeconomic Monitoring and Mitigation Report, September 30, 1976. Knoxville, Tennessee, April 1977.

Tennessee Valley Authority. Hartsville Nuclear Plants: Socioeconomic Monitoring and Mitigation Report, March 31, 1977. Knoxville, Tennessee, September 1977.

Tennessee Valley Authority. Hartsville Nuclear Plants: Socioeconomic Monitoring and Mitigation Report, September 30, 1977. Knoxville, Tennessee, April 1978.

North Dakota Regional Environmental Assessment Program. The REAP Economic-Demographic Model: Background, Structure and Applications. Bismarck, North Dakota: 1977.

North Dakota Regional Environmental Assessment Program. REAP Economic-Demographic Model: Technical Description. Bismarck, North Dakota: 1977.

Bureau of Reclamation. Economic/Demographic Assessment Manual. Denver, Colorado: 1977.

APPENDIX C: CONTACT PERSONS FOR CURRENT INFORMATION
ON CONSTRUCTION WORK FORCE IMPACTS

James Chalmers and Mike York
Mountain West Research Inc.
123 East University Drive
Tempe, Arizona 85281
(602) 968-7991

Glenn Schaible
Socio Economic Resource Analyst
Regional Environmental Assessment Program
Suite 521, 316 North Fifth Street
Bismarck, North Dakota 58505
(701) 224-3700

George R. DeVeney
Regional Planner
Tennessee Valley Authority
290 Liberty Building
Knoxville, Tennessee 37902
(615) 632-4852

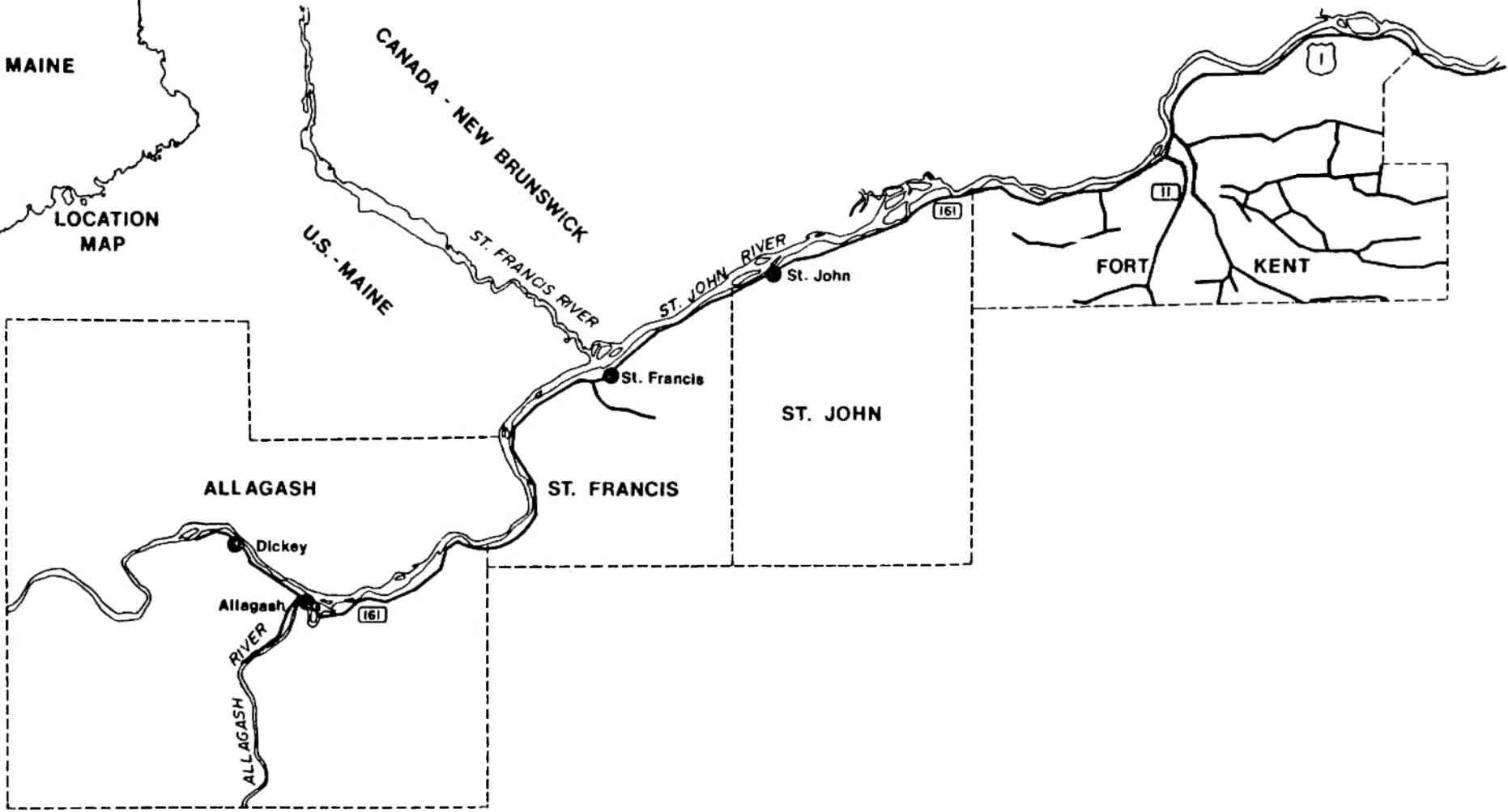
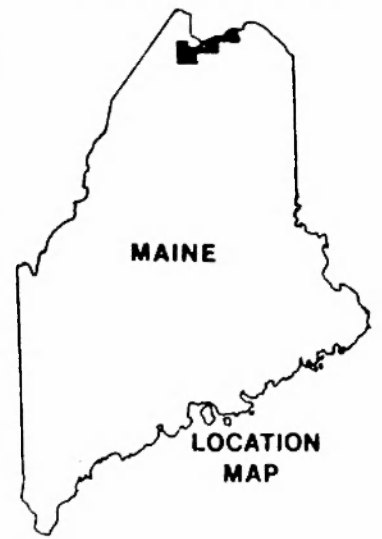
Arthur Harnisch
Chief, Economic and Social Evaluation Section
Seattle District, Corps of Engineers
P.O. Box C-3755
Seattle, Washington 98124
(206) 764-3646

Norman Tillman
Agricultural Economics Department
North Dakota State University
Fargo, North Dakota 58102
(701) 237-7441

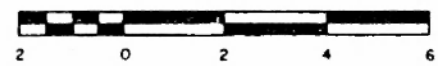
Jerry Delli Priscoli
Social Scientist
Institute for Water Resources
Corps of Engineers
Kingsman Building
Fort Belvoir, Virginia 22060
(202) 325-0370

J. Randall Threadgill
Project Coordinator
Economic/Demographic Assessment Manual
Bureau of Reclamation
Engineering and Research Center
Denver Federal Center
Denver, Colorado 80225
(303) 234-3166

DICKEY-LINCOLN PROJECT



SCALE (MILES)



IMMEDIATE IMPACT AREA

FORESTRY ECONOMIC IMPACT STUDY
DICKY-LINCOLN SCHOOL LAKES PROJECT, MAINE
FOR
DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION
CORPS OF ENGINEERS
ENVIRONMENTAL ANALYSIS BRANCH

BY
KIMBALL FORESTRY CONSULTANTS
EBENSBURG, PENNSYLVANIA

AUGUST 1978

TABLE OF CONTENTS

<u>Paragraph</u>	<u>Title</u>	<u>Page No.</u>
	Definition of Study Area	iv
1.0	Inventory	1
1.1	Mills Within Aroostook County	1
1.2	Mills Outside Aroostook County	6
1.3	Roads and Access	11
1.3.1	Road System	11
1.3.2	Access	13
1.4	Wood Harvesting Companies	14
1.5	Management Resources	15
2.0	Timber Flow Into and Out Of Canada	18
3.0	Spruce Budworm	21
3.1	Extent of Infestation	21
3.1.1	Timber Losses	21
3.2	Silvicultural Control	29
3.3	Economic Impact of Preventative Cutting	29
3.4	Impact on Timber Supply	30
3.5	Budworm Losses on Opportunity Costs	30
4.0	Wildlife Mitigation	33
4.1	General	33
4.2	Marketability	33
4.3	Supply	33
5.0	Timber Salvage	35
5.1	Timber Volumes	35
5.2	Optimum Schedule	37
5.2.1	Silvicultural Losses	37
5.2.2	Marketability	38
5.2.3	Labor	40
5.3	Alternate Schedules	40
5.4	Short Term Fiber Contracts	41
6.0	Red Spruce	43
6.1	Extent	43
6.2	Economic Importance	45
7.0	Impacts of Project Implementation on the Project Area	46
7.1	Increased Costs of Timber Harvesting	46
7.2	Change of Timber Flow	46
7.3	Impact on Future Management Plans	47
8.0	Impacts of Project Implementation on the Management of Timberlands in Aroostook County	48
	Bibliography	50

LIST OF TABLES

<u>Table No.</u>	<u>Title</u>	<u>Page No.</u>
1	Mills Located Within Aroostook County	2
2	Processing Capacity of Mills Within Aroostook County	5
3	Mills Located Outside Aroostook County	7
4	Processing Capacity of Mills Outside Aroostook County and Dependency of Aroostook County Timber	10
5	Budworm Losses as Compared to Opportunity Costs	32
6	Annual Timber Salvage Schedule	35
7	Net Timber Volume Summary	35
8	Projected Annual Timber Removal Versus Projected Utilization	39
9	Red Spruce and Balsam Fir Growing Stock	44
10	Red Spruce and Balsam Fir Sawtimber Volume - Aroostook County	44

LIST OF FIGURES

<u>Figure No.</u>	<u>Title</u>	<u>Page No.</u>
1	Access Map	14
2	Softwood Sawtimber Harvest - Aroostook County 1967-1977	19
3	Areas of Spruce Budworm Infestation, 1974	22
4	Areas of Spruce Budworm Infestation, 1975	23
5	Areas of Spruce Budworm Infestation, 1976	24
6	Areas of Moderate-Severe Defoliation, 1977	25
7	Spruce Budworm Protection Districts	26
8	Effect of Spruce Budworm on Maine Spruce- Fir Inventory	31
9	Annual Harvest Schedules For Three, Five and Eight Years	36

I - Definition of Study Area

As described in the project scope of services, the study area includes the St. John River and its major tributaries including the Little Black River, Big Black River, their tributaries and all of Aroostook County. In addition, Maine Counties immediately adjacent to Aroostook and the Canadian Provinces of Quebec and New Brunswick have been included since they are involved in the working commercial forests of Aroostook County.

1.0 INVENTORY

1.1 Mills within Aroostook County

Through personal visits, telephone contacts and mailed questionnaires, the major timber processing mills located within Aroostook County were contacted to obtain the information required for the performance of this task. In addition to the processing capacities and employment parameters, information was requested regarding the quantity of timber that each mill draws from the project area. Of the seventeen (17) mills interviewed, information concerning salaries and/or wages paid was obtained from 7 mills.

As of April, 1976, the Maine Forest Service listed a total of forty primary forest products manufacturers operating within Aroostook County. The mill survey that was performed to complete this portion of Task 1 was limited to Aroostook County manufacturers who process 250 thousand board feet (250 MBF) per year or more. Using the Maine Forest Service list referred to above, a total of 19 of the 40 mills listed reported processing 250 MBF/yr. or more. Of these 19 mills, 17 were contacted in one of the ways described above. The statistical accuracy that could be expected from sampling 17 of the total of 40 mills is in the range of 95 to 99 percent. In an effort to determine the effect travel distance has on the amount of timber drawn from the proposed Dickey-Lincoln project area, mills interviewed were divided into two groups: those within a fifty mile radius of the town of Allagash, Maine, and those beyond this fifty mile radius. A tabulation of the mill inventory results is presented in Table 1.

Referring to this Table, the seven mills surveyed within a fifty mile radius of the town of Allagash (excluding Canadian mills) reported processing approximately 191,000 MBF/yr. of lumber, and 291,000 cords of chips/yr. Of this quantity, 10,000 MBF/yr. of the lumber was reported as being harvested in the project area. This represents approximately five percent (5%) of the lumber needs of these mills. The one remaining mill processing more than 250 MBF/yr. identified on the list of "Primary Forest Products Manufacturers" that is within fifty miles of Allagash, is reported to be processing approximately 15,000 MBF/yr. of lumber. Assuming this mill also obtains five percent of its supply from the project area, the estimated quantities harvested in the project area by Aroostook County mills within fifty miles of Allagash is approximately 10,750 MBF/yr. of lumber and 291,000 cords/yr. of chips.

TABLE 1

MILLS LOCATED WITHIN AROOSTOOK COUNTY

Location	Type of Processing	Capacity	Quantity Drawn From Project Area	Seasonality	Employment Parameters		
					Occupation	Number Employed	Salary/Yr. or Wage/Hr.
+Ashland, ME 04732	Lumber	750 MBF/Yr.	----None----	Yr. round	Mgt. & Prof.	2	\$14,000/Yr.
					Skilled	5	\$10,000/Yr.
					Unskilled	5	\$ 7,500/Yr.
+Ashland, ME 04732	Lumber Chips	90,000 MBF/Yr. 66,000 Cords/Yr.	----None----	Yr. round	Mgt. & Prof.	*	*
					Skilled	*	*
					Unskilled	*	*
+Ashland, ME 04732	Lumber	35,000 MBF/Yr.	----None----	Yr. round	Mgt. & Prof.	*	*
					Skilled	*	*
					Unskilled	*	*
+Fort Kent, ME 04743	Lumber Shingles	1,000 MBF/Yr. 1,250 MBF/Yr.	----None----	Yr. round	Mgt. & Prof.	6	*
					Skilled	26	*
					Unskilled	18	*
+Fort Kent, ME 04743	Lumber	11,000 MBF/Yr.	10,000 MBF/Yr.	Yr. round	Mgt. & Prof.	10	\$13,000/Yr.
					Skilled	30	\$ 9,000/Yr.
					Unskilled	25	\$ 8,000/Yr.
Houlton, ME 04730	Fencing	1,500 MBF/Yr.	----None----	Yr. round	Mgt. & Prof.	1	\$15,000/Yr.
					Skilled	12	\$10,000/Yr.
					Unskilled	9	\$ 6,500/Yr.
Presque Isle, ME 04769	Panel Veneer	4,500 MBF/Yr.	300 MBF/Yr.	Yr. round	Mgt. & Prof.	15	\$15-20,000/Yr.
					Skilled	75	\$ 9,000/Yr.
					Unskilled	35	\$ 7,000/Yr.
Houlton, ME 04730	Lumber	30,000 MBF/Yr.	----None----	Yr. round	Mgt. & Prof.	*	*
					Skilled	*	*
					Unskilled	*	*
Houlton, ME 04730	Lumber	3,000 MBF/Yr.	----None----	Yr. round	Mgt. & Prof.	*	*
					Skilled	*	*
					Unskilled	*	*

TABLE 1

MILLS LOCATED WITHIN AROOSTOOK COUNTY

Location	Type of Processing	Capacity	Quantity Drawn From Project Area	Seasonality	Employment Parameters		
					Occupation	Number Employed	Salary/Yr. or Wage/Hr.
Maro Hill, ME 04758	Lumber	900 MBF/Yr.	----None----	Yr. round	Mgt. & Prof. Skilled Unskilled	* * *	* * *
Oakfield, ME 04763	Lumber	2,000 MBF/Yr.	----None----	Yr. round	Mgt. & Prof. Skilled Unskilled	* * *	* * *
Presque Isle, ME 04763	Lumber	1,500 MBF/Yr.	----None----	Yr. round	Mgt. & Prof. Skilled Unskilled	* * *	* * *
Presque Isle, ME 04763	Lumber	750 MBF/Yr.	----None----	Yr. round	Mgt. & Prof. Skilled Unskilled	* * *	* * *
Smyrna Mills, ME 04780	Lumber	6,000 MBF/Yr.	----None----	Yr. round	Mgt. & Prof. Skilled Unskilled	* * *	* * *
+St. Francis, ME 04774	Specialty Products	2,000 MBF/Yr.	----None----	Yr. round	Mgt. & Prof. Skilled Unskilled	4 5 6	\$10,000/Yr. \$9,000/Yr. \$7,000/Yr.
Van Buren, ME 04785	Shingles Fencing	15,000 MBF/Yr.	7,500 MBF/Yr.	Yr. round	Mgt. & Prof. Skilled Unskilled	8 120 50	\$12-15,000/Yr. \$ 250.00/Wk. \$ 175.00/Wk.
+Woodland, ME 04694	Lumber Chips	50,000 MBF/Yr. 225,000 Cords/Yr.	----None----	Yr. round	Mgt. & Prof. Skilled Unskilled	 1,300	 \$15-22,000/Yr. \$12-15,000/Yr. \$ 8-9,000/Yr.
TOTALS-----	Lumber ----- **Chips	256,150 MBF/Yr. 291,000 Cords/Yr.	17,800 MBF/Yr.				

+Mills located within a 50 mile radius of Allagash, ME

*Requested information not provided

**Chips are obtained as mill residue

The ten Aroostook County mills surveyed beyond a fifty mile radius of Allagash reported processing approximately 65,150 MBF/yr. of lumber. These mills reported that 7,800 MBF/yr. of this amount comes from the project area (about 12.0%). The remaining mill that was not contacted is classified by the Maine Forest Service as processing approximately 1,500 MBF/yr. of lumber. Since this mill is located in Weston, Maine (well over 100 miles from Allagash) it is assumed that they do not draw from the project area.

Table 2 summarizes the survey results for mills located within Aroostook County. It indicates that approximately 7.0% of the timber needs of these seventeen Aroostook County mills is presently drawn from the proposed project area. The mill survey also revealed that approximately 94% of the timber reportedly drawn from the project area by these 17 mills is processed at one facility in the Ft. Kent area and one in Van Buren. (See Table 1.)

Although Table 2 indicates that approximately 12% of the timber needs of mills located outside the fifty mile radius is drawn from the project area, it must be noted that the Van Buren mill mentioned above accounts for about 99.5% of the reported 7,800 MBF/yr. (See Table 1.) Additionally, eight of the ten mills interviewed in this category reported they did not draw any timber from the project area. (If the Van Buren mill was excluded, dependency of mills outside a radius of 50 miles of Allagash on timber from the project area, would drop to about .05%.) Of the 17 mills surveyed, three (18.0%) reported drawing from the project area.

Information concerning employment parameters was not as complete and detailed as was desired. However, sufficient data was obtained to provide a range of values for such parameters. The seventeen mills contacted reported that they operated on a year-round basis. Except for occasional temporary layoffs and the hiring of a limited number of extra workers during short peak production periods, mill personnel are employed on a full time basis. Employees were classified as: (1) managerial and/or professional; (2) skilled workers; and (3) unskilled workers. The average salary reported for each of these classifications was: managerial and/or professional, \$14,500.00 per year; skilled workers, \$10,500.00/yr.; unskilled workers, \$7,443.00/yr. On this basis, the average salary figure for mill employees is \$10,814.00 per year. This compares favorably with the figure reported in the "Census Of Maine Manufacturers, 1976, page 10." This publication reported an average gross wage of \$10,405.00 per year for Aroostook County lumber and wood workers.

TABLE 2

SUMMARY OF AROOSTOOK COUNTY MILLS

	<u>*Total Number Mills</u>	<u>Number of Mills Interviewed</u>	<u>Estimated Volume Processed</u>	<u>Estimated Quantity Drawn from Project Area</u>	
				<u>Volume</u>	<u>Percent</u>
Located within a 50 mile radius of Allagash, ME	8	7	Lumber 191,000 MBF/yr. Chips 291,000 cords/yr.	**10,750 MBF/yr.	6.0%
Located outside a 50 mi. radius of Allagash, ME	<u>11</u>	<u>10</u>	<u>Lumber 65,150 MBF/yr.</u>	<u>***7,800 MBF/yr.</u>	<u>12.0%</u>
Totals	19	17	Lumber 256,150 MBF/yr. Chips 291,000 cords/yr.	18,550 MBF/yr.	7.0%

*includes only those mills processing 250 MBF/yr. or more as reported by the Maine Forest Service in April, 1976.

**includes 5.0% of the estimated annual volume processed by the one mill not surveyed.

***Does not include an estimated annual volume for the one mill not surveyed since it is located in Weston, ME, approximately 150 road miles from Allagash, ME.

Seven (7) of the Aroostook County mills contacted reported the following employee breakdown: managerial and/or professional, 46; skilled, 273; unskilled, 148, for a total employment figure of 467. Due to the absence of reliable data for these employment parameters, no attempt was made to estimate employment figures or wage and salary rates for those mills that did not provide this information.

1.2 Mills outside of Aroostook County

Mills located outside the County were contacted in the same manner as those within the county; personal visits, telephone, or mailed questionnaire. The survey concentrated heavily on those mills that would be the most likely to draw timber from the project area and the lands west of the St. Johns River. Obviously, Canadian mills are the most probable users of this timber. (A total of thirteen Canadian mills were identified as being located within a few miles of the northern and north-western border of Maine, with easy access to the area identified above. Only five Maine mills, located in Allagash, St. Francis, and Ft. Kent are as conveniently located with regard to this area.) Although a language difficulty limited this portion of the survey somewhat, meaningful data was collected from nine of the major mills located in the Provinces of Quebec and New Brunswick. Maine mills outside of Aroostook County that were surveyed were selected from the Maine Marketing Directory, 1976, compiled by the State Development Office. Mills contacted were those listed under the Standard Industrial Code (SIC) No. 2421 (Sawmills and Planing Mills, General) and located within approximately fifty miles of the Aroostook County line. Survey questionnaires were completed for thirteen such firms, bringing the total number of firms surveyed outside of the County to twenty-two.

Table 3 indicates that mills surveyed reported processing a total of 289,300 MBF/yr. of lumber, and 3,190,000 cords/yr. of pulpwood. Of these totals, approximately fifty-one percent (51%) of the lumber (147,920 MBF/yr.) and thirty-four percent (34%) of the pulpwood (1,080,000 cords/yr.) is drawn from Aroostook County. However, these mills reported harvesting only 28,600 MBF/yr. of lumber, about ten percent (10%) and 120,200 cords/yr. of pulpwood, four percent (4%) from the proposed project area. The survey results also indicate that of the mills located outside of the County, the Canadian mills are considerably more dependent upon Aroostook County timber than the Maine mills. Canadian mills reported processing 148,200 MBF/yr. of lumber and 280,000 cords/yr. of pulpwood, of which

TABLE 3
MILLS LOCATED OUTSIDE AROOSTOOK COUNTY

<u>Location</u>	<u>Type of Processing</u>	<u>Capacity</u>	<u>Quantity Drawn From Project Area</u>	<u>Total Quantity Drawn From Aroostook County</u>	<u>Employment Parameters</u>			
					<u>Seasonality</u>	<u>Occupation</u>	<u>Number Employed</u>	<u>Salary/Yr. or Wage/Hr.</u>
Baker Brook N.B., Canada	Lumber	7,000 MBF/Yr.	None	None	Yr. round	Mgt. & Prof.	5	*
	Chips	8,500 Cords/Yr.				Skilled	25	*
						Unskilled	20	*
Clair N.B., Canada	Lumber	9,000 MBF/Yr.	None	3,000 MBF/Yr.	Yr. round	Mgt. & Prof.	4	*
	Chips	15,500 Cords/Yr.				Skilled	18	*
						Unskilled	13	*
Clair N.B., Canada	Lumber	3,200 MBF/Yr.	1,600 MBF/Yr.	3,200 MBF/Yr.	Yr. round	Mgt. & Prof.	2	*
	Railroad Ties	2,700 Cords/Yr.				Skilled	12	*
						Unskilled	6	*
-7- Clair N.B., Canada	Shingles	2,000 MBF/Yr.	None	2,000 MBF/Yr.	Yr. round	Mgt. & Prof.	1	\$14,000/Yr.
						Skilled	9	\$ 5.50/Hr.
						Unskilled	6	\$ 4.00/Hr.
Edmunston N.B., Canada	Rd. Pulpwood	280,000 Cords/Yr.	None	70,000 Cords/Yr.	Yr. round	Mgt. & Prof.		
	Chips	260,000 Cords/Yr.				Skilled	1,900	Annual Payroll
						Unskilled		\$12,000,000
Estcourt P.Q., Canada	Lumber	32,000 MBF/Yr.	26,000 MBF/Yr.	26,000 MBF/Yr.	Yr. round	Mgt. & Prof.	8	\$12,000/Yr.
	Chips	38,400 Cords/Yr.				Skilled	100	\$ 4.85/Hr.
						Unskilled	37	\$ 4.70/Hr.
Lac Frontier P.Q., Canada	Lumber	10,000 MBF/Yr.	None	6,000 MBF/Yr.	Yr. round	Mgt. & Prof.	6	\$13,000/Yr.
	Chips	12,000 Cords/Yr.				Skilled	7	\$ 6.50/Hr.
						Unskilled	12	\$ 5.00/Hr.
St. Pamphile P.Q., Canada	Lumber	35,000 MBF/Yr.	None	31,500 MBF/Yr.	Yr. round	Mgt. & Prof.	15	\$10,000/Yr.
	Chips	42,000 Cords/Yr.				Skilled	65	\$ 6.75/Hr.
						Unskilled	90	\$ 5.20/Hr.
St. Pamphile P.Q., Canada	Lumber	41,000 MBF/Yr.	1,000 MBF/Yr.	50,000 MBF/Yr.	Yr. round	Mgt. & Prof.	4	\$12,000/Yr.
	Shingles	9,000 MBF/Yr.				Skilled	60	\$ 5.50/Hr.
	Chips	60,000 Cords/Yr.				Unskilled	160	\$ 5.00/Hr.

*Requested information not provided

TABLE 3

MILLS LOCATED OUTSIDE AROOSTOOK COUNTY

Location	Type of Processing	Capacity	Quantity Drawn From Project Area	Total Quantity Drawn From Aroostook County	Employment Parameters			
					Seasonality	Occupation	Number Employed	Salary/Yr. or Wage/Hr.
Bucksport, ME	Pulpwood	600,000 Cords/Yr.	None	30,000 Cords/Yr.	Yr. round	Mgt. & Prof. Skilled Unskilled	650	* * *
Costigan, ME	Stud Mill	70,000 MBF/Yr.	None	3,500 MBF/Yr.	Yr. round	Mgt. & Prof. Skilled Unskilled	20 110 70	\$15,000/\$20/Yr. \$ 7.00/Hr. \$ 5.50/Hr.
Howland, ME	Lumber	5,000 MBF/Yr.	None	500 MBF/Yr.	Yr. round	Mgt. & Prof. Skilled Unskilled	4 35 11	* \$ 5.00/Hr. \$ 4.00/Hr.
Jay, ME	Pulpwood	900,000 Cords/Yr.	5,200 Cords/Yr.	225,000 Cords/Yr.	Yr. round	Mgt. & Prof. Skilled Unskilled	1,100 150	\$14-\$15,000/Yr. * *
Lee, ME	Lumber Furniture Stock Cedar Cabin Stock	1,000 MBF/Yr.	None	20 MBF/Yr.	Yr. round	Mgt. & Prof. Skilled Unskilled	2 17 9	* \$ 8.00/Hr. \$ 3.50/Hr.
Lee, ME	Specialty Products	500 MBF/Yr.	None	None	Yr. round	Mgt. & Prof. Skilled Unskilled	1 4 0	* * *
Milo, ME	Hardwood Lumber	3,600 MBF/Yr.	None	None	Yr. round	Mgt. & Prof. Skilled Unskilled	2 12 3	* * *
Milo, ME	Chip plant	78,000 Cords/Yr.	None	None	Yr. round	Mgt. & Prof. Skilled Unskilled	2 10 4	* * *
Millinocket, ME	Pulpwood	1,050,000 Cords/Yr.	115,000 Cords/Yr.	630,000 Cords/Yr.	Yr. round	Mgt. & Prof. Skilled Unskilled	4,000	* * *
Old Town ME	Pulpwood	360,000 Cords/Yr.	None	125,000 Cords/Yr.	Yr. round	Mgt. & Prof. Skilled Unskilled	* * *	* * *

*Requested information not provided

TABLE 3
MILLS LOCATED OUTSIDE AROOSTOOK COUNTY

Location	Type of Processing	Capacity	Quantity Drawn From Project Area	Total Quantity Drawn From Aroostook County	Employment Parameters			
					Seasonality	Occupation	Number Employed	Salary/Yr. or Wage/Hr.
Passadumkeag, ME	Stud Mill	52,000 MBF/Yr.	None	18,200 MBF/Yr.	Yr. round	Mgt. & Prof.	12	*
						Skilled	80	*
						Unskilled	43	*
Patten, ME	Dimension Lumber	8,000 MBF/Yr.	None	4,000 MBF/Yr.	Yr. round	Mgt. & Prof.	2	*
						Skilled	23	\$ 5.00/Hr.
						Unskilled	10	\$ 3.50/Hr.
Sangerville, ME	Dimension Stock	1,000 MBF/Yr.	None	None	Yr. round	Mgt. & Prof.	2	*
						Skilled	10	*
						Unskilled	0	*
<u>TOTALS</u>								
Lumber		289,300 MBF/Yr.	28,600 MBF/Yr.	147,920 MBF/Yr.				
Pulpwood		3,190,000 Cords/Yr.	120,200 Cords/Yr.	1,080,000 Cords/Yr.				
**Chips		514,400 Cords/Yr.	None	None				

*Requested information not provided

**Chips are obtained as mill residue

a reported eighty-two percent (82%), 121,700 MBF/yr. of lumber, and twenty-five percent (25%), 70,000 cords/yr. of pulpwood, is harvested in Aroostook County. In addition, approximately nineteen percent (19%) of their lumber (28,600 MBF/yr.) was reportedly drawn from the project area.

Maine based mills in the above defined survey area reported processing 141,000 MBF/yr. of lumber and 1,860,000 cords/yr. of pulpwood. Of these quantities, approximately nineteen percent (19%) of their lumber (26,220 MBF/yr.) and twenty percent (20%) of their pulpwood (380,000 cords/yr.) was harvested in Aroostook County. Timber identified as being drawn from the project area by these firms amounted to 120,200 cords/yr. of pulpwood. Table 4 summarizes the dependency of mills surveyed located outside of the County, on Aroostook timber.

TABLE 4

PROCESSING CAPACITY OF MILLS LOCATED OUTSIDE AROOSTOOK COUNTY

AND DEPENDENCY ON AROOSTOOK COUNTY TIMBER

	<u>Number</u> <u>Surveyed</u>		<u>Est. Total</u> <u>Production</u>	<u>Est. Quantities</u> <u>Drawn From</u> <u>Project Area</u>	<u>Est. Quantities</u> <u>Drawn From</u> <u>Aroostook County</u>
Canadian Mills	9	Lumber	- 148,200 Cords/yr.	28,600 MBF/yr.	121,700 MBF/yr.
		Pulpwood	- 280,000 Cords/yr.	----None----	70,000 Cords/yr.
		Chips	- 436,400 Cords/yr.	----None----	----None----
Maine Mills	13	Lumber	- 141,100 MBF/yr.	----None----	26,220 MBF/yr.
		Pulpwood	- 2,910,000 Cords/yr.	120,200 Cords/yr.	1,010,000 Cords/yr.
		Chips	- 78,000 Cords/yr.	----None----	----None----
TOTALS	22	Lumber	- 289,300 MBF/yr.	28,600 MBF/yr.	147,920 MBF/yr.
		Pulpwood	- 3,190,000 Cords/yr.	120,200 Cords/yr.	1,080,000 Cords/yr.
		Chips	- 514,400 Cords/yr.	----None----	----None----

As was the case with the survey conducted on mills located within Aroostook County, information concerning employment parameters was not available in many instances. All mills reported operating on a year round basis, and indicated only minor fluctuations in number of employees; due to occasional layoffs during slack periods (May, June, July) and hiring of a few part time employees during peak operating periods (February, March, April). Of the mills reporting, the following employment information was obtained by job classification: managerial and supervisory personnel, 92; skilled workers, 597; unskilled workers, 794. In addition, one mill reported a combined workforce of 1,900

employees, another mill reported a combined workforce of 650 employees, and still another grouped managerial, professional and skilled together for a total of 1,100. The total workforce for all mills reporting was 5,133 employees.

The average annual salaries for each classification, on the basis of the data reported, was: managerial and professional, \$13,300; skilled workers, \$12,500; unskilled workers, \$9,400. Here again, the reluctance of firms to reveal accurate data concerning salaries and wages paid limits the value and usefulness of the information that was obtained.

1.3 Roads and Access

1.3.1 Road System

The road system in the project area is private and is generally geared for the transportation of timber to Maine and Canadian markets. The roads also supply access for recreational purposes. If the project were implemented, the cost of replacing roads and supplying access to areas made inaccessible are included in the real estate and severance costs. See Design Memorandum No. 4A, Paragraph Z and Appendix I.

Based on maps furnished, the results of an inventory of the roads being directly inundated by the proposed impoundment indicate that a total of 73 miles of roadway would be flooded. The previous estimated of 75 miles appears to be accurate inasmuch as portions of roadway which would not be flooded but would be rendered directly inaccessible were not included in the former figure.

An additional 231 miles of road system in the area bounded by the Big Black River, the proposed impoundment, the St. John's River and the Quebec-New Brunswick border would be inaccessible to the United States via the existing road system. Approximately 77 miles of the above road system is located in that portion of land bounded by the Little Black River, the Canada/U.S.A. border and the St. John's River. An estimated 7 miles of roadway would be required to connect this road system into direct access to the proposed two-way crossover at the Lincoln School Dam. See Figure 1. However, the road system into which the newly constructed road would connect is not adequate to provide access for timber marketing. The remaining road portion to Estcourt would require improvements.

Hundreds of miles of minor skid trails and logging roads are in the limited access area. A precise estimate would be

extremely difficult and tedious to obtain using the maps provided.

Main haul roads and crossovers which would be constructed for the construction of the reservoir do not lend themselves for permanent use after project completion. All haul roads upstream of the dams would be inundated (Design Memorandum No. 4A).

1.3.2 Access

Access from Maine to approximately 182,244 acres of forest land and 154 miles of private road would be interrupted between the U.S.-Canadian border and the proposed reservoir as it inundates the 910 foot elevation along the Big River or Shields Branch and along the Little Black River. Access to the area is proposed by a more circuitous route to the south of the reservoir by using a series of causeways and bridges at the upper reaches of the impoundment at the St. John's River, Big Black River and Shields Branch. See Design Memorandum No. 4A, Figure 4A-8 for specific locations.

Project implementation would create access problems for Canadian markets. No crossovers or causeways are proposed over the Little Black River or the West Branch. Only a newly constructed circuitous route around the impoundment would avail the timber in the limited access area to the Estcourt mills. The mills at St. Pomphile would face a similar situation if the proposed causeway across the Shields Branch were not constructed.

Allagash/St. John and Ashland are the primary ports of entry for timber from the St. John basin which has, in the past, been processed in Maine. Due to its proximity to the limited access area, the Allagash/St. John area would normally (without project implementation) receive the bulk of the timber. Little timber, if any, is currently moving from the limited access area into the Ashland market area. Although the haul distance to Ashland would not be significantly increased if the proposed crossovers were constructed, little additional timber from the area would be expected to flow into the Ashland area. The haul distance to Ashland is greater than 50 miles which according to Jim Pellitier and Pellitier, Inc., Fort Kent, Maine, is the current general limit of economic feasibility for trucking.

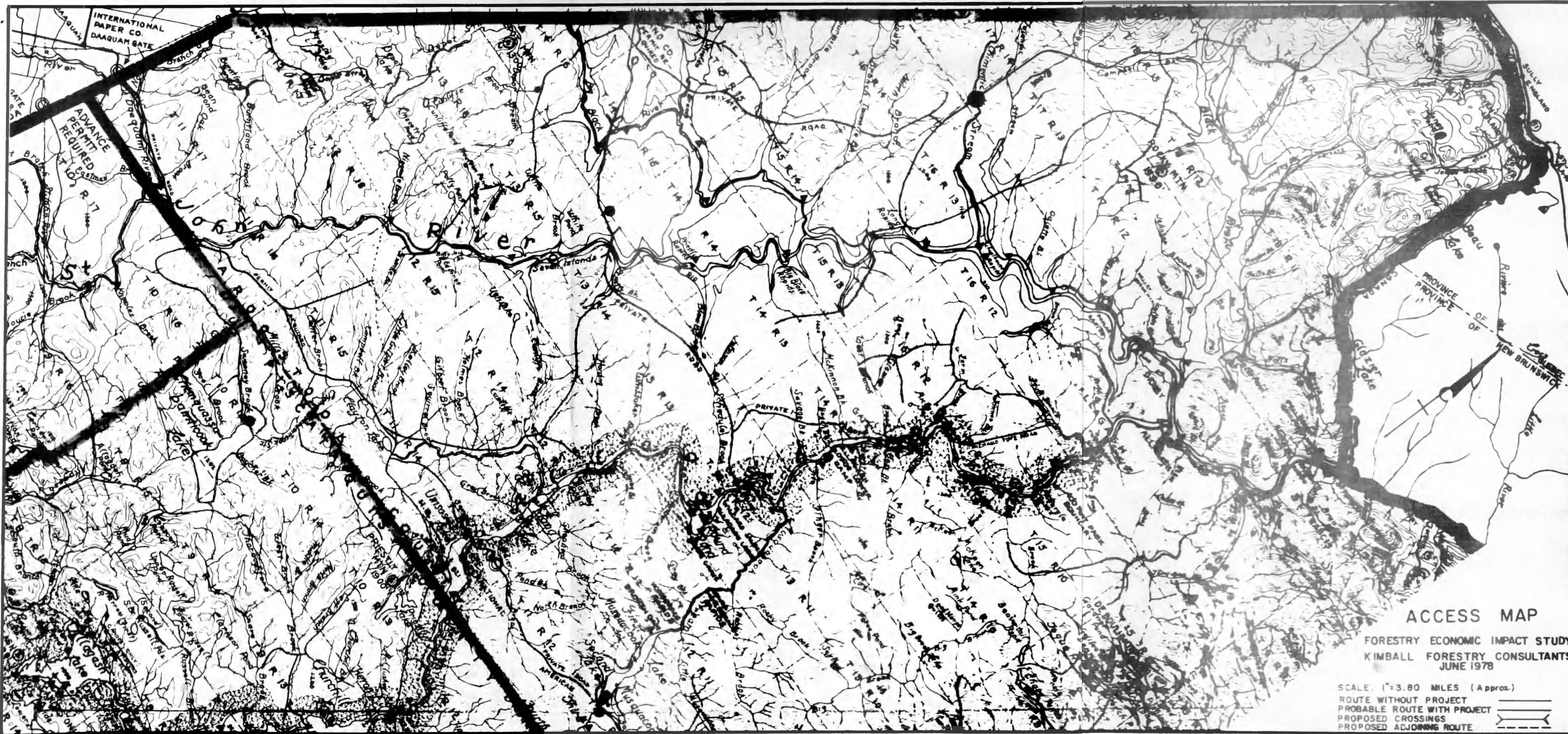
1.4 Wood Harvesting Companies

Information required for completion of this task was obtained from the Maine Department of Conservation, Bureau of Forestry, and supplemented by material obtained from the private sector. As of December 1976, the Department listed 135 logging firms operating in Aroostook County. Information gathered in the field indicated an additional five firms were in operation, bringing the total for the County to 140 firms. A number of firms appearing on the Department's list of Primary Forest Products Manufacturers have their own logging crews and are therefore also listed among Maine Logging Firms.

In an effort to estimate the number and location of logging firms that depend on Aroostook County for all or part of their timber supply, those firms in Somerset, Piscataquis, Penobscot and Washington Counties that are located within fifty miles of Aroostook County have also been included. The addition of these firms increase the total to 192 firms. Canadian firms known to be engaged in logging activities within the County further increase the total figure to 201 firms. It is reasonable to assume, therefore, that approximately 140 logging firms (those located in Aroostook County) draw primarily from the County, and that another 60 firms are dependent upon the County for some portion of their timber needs.

On the basis of these estimates, a close relationship can be established between the quantities reported in the Maine Timber Cut Report for 1977 and the estimated number of logging firms dependent upon Aroostook County for all or some portion of their timber needs. The reported timber cut for 1977 in Aroostook County, converted to standard cords, is approximately 1,233,387 cords. Logging contractors contacted in performing this study furnished the following average values: most logging crews consist of three men, and can harvest about 3,000 cords/yr. (1,000 cords/man). Assuming that (since many logging operators employ one crew only) the average firm employs between two and three crews (2.5), the following estimates can be made:

Firms located in and drawing between 90%
and 100% from Aroostook County:
2.5 crews x 140 firms = 350 crews x 3,000 cords=
1,050,000 cords per year (100%)
945,000 cords per year (90%)



ACCESS MAP
 FORESTRY ECONOMIC IMPACT STUDY
 KIMBALL FORESTRY CONSULTANTS
 JUNE 1978
 SCALE: 1" = 3.80 MILES (Approx.)
 ROUTE WITHOUT PROJECT
 PROBABLE ROUTE WITH PROJECT
 PROPOSED CROSSINGS
 PROPOSED ADJOINING ROUTE

FIGURE I

Firms outside the County known to be or likely to be drawing between 50% and 60% from the County:

2.5 crews x 60 firms = 150 crews x 3,000 cords =
450,000 cords

270,000 cords per year (60%)

225,000 cords per year (50%)

The above information also makes possible a reasonable estimate as to the number of logging personnel engaged in harvesting Aroostook County timber; approximately 1,170 to 1,320 workers. This represents between twenty-nine and thirty-two percent of the state total as reported by the Bureau of Labor, Census of Maine Manufacturers, 1975. This compares favorably with the Bureau of Forestry, Timber Cut Report for 1977 which reports that Aroostook County accounts for approximately twenty-six percent of the state's total timber harvest.

1.5 Management Resources Including Personnel, Location & Area of Responsibility

The primary forest management organizations in the North Maine Woods are: Seven Islands Land Company, Great Northern Paper Co., International Paper Co., Diamond International Corporation, and Prentiss & Carlisle Co. Due primarily to the "in-common and undivided ownership" pattern in this area, lands owned by any one of these organizations may actually be managed by one or more of the other firms. In addition to the above owner-management groups, the North Maine Woods Association was formed in 1971 for the purpose of planning and administering public recreational uses of approximately 2.5 million acres of forest land in Northern Maine. The organization includes private landowners, land managers and three State agencies; Bureau of Forestry, Department of Parks & Recreation and the Department of Inland Fisheries & Game.

Seven Islands Land Co., the largest land management organization of the group, has a management interest in approximately 1.475 million acres of forest land in Aroostook County and manages most of the timberlands in the St. John River basin, the proposed project site. The firm employs approximately sixty-three people including seventeen in the main office in Bangor, Maine. Field offices are maintained in Ashland, Fort Kent, Greenville and Rangeley. The company's staff includes professionals and specialists in the fields of forestry, marketing, land use, planning, environmental technology and woodlands management. Seven Islands Land Co. is responsible

for the full range of forest management activities including silviculture, cruising, surveying, mapping, layout and supervision of harvesting and road building, scaling, recreation, research, marketing, consulting, appraisals, feasibility studies, brokerage, record maintenance and public relations.

Great Northern Paper Company is one of the major timberland owner-managers in the North Maine Woods area. In addition, they have pulp and paper plants located in East Millinocket and Millinocket, a chip plant at Portage Lake and a lumber mill in Ashland. Roughly forty to fifty percent of the 2.1 million acres managed by the company are located in Aroostook County, of which an estimated six thousand seven hundred acres would be inundated if the project is implemented. The company estimates that access to an additional fourteen thousand acres would be limited by the Dickey-Lincoln project. The firm has management responsibility for both company owned and jointly owned land. The requested information concerning personnel employed in woodland management activities for Great Northern Paper Co. was unavailable. However, a professional staff of qualified foresters, land managers and marketing specialists provide management services that include silviculture, surveying, mapping, planning and supervision of harvesting, road construction, marketing and related forest management activities.

International Paper Company is reported by the Maine Forest Service as holding ownership and/or joint ownership in approximately 1.25 million acres of timberland in the State of Maine. Their main plant, a pulp and paper mill, is located in Jay, Maine. A smaller plant in Presque Isle, Maine, manufactures cartons. Within an area defined as Aroostook County and the lands of adjoining counties within 50 miles of the Aroostook County line the company manages approximately 955,000 acres. They reportedly employ 100 land management and administrative personnel in managing this acreage. Of the land owned and managed by the company in Aroostook County, approximately 261,000 acres are located in the St. John Basin, behind the proposed Dickey-Lincoln Dam. It is estimated that the project would flood 8,000 acres of these timberlands.

Diamond International Corporation reported that they manage approximately 309,500 acres of timberlands within Aroostook County and the area within a fifty mile radius of the County line. None of these lands are located in or near the project area and would therefore not be directly affected by the Dickey-Lincoln Dam. Most of their land is located south of Presque Isle. Personnel directly involved in the management of these lands include 4 Foresters, 3 Scalers and 2 Technicians. Areas of management responsibilities include land use planning, silviculture, harvesting procedures and techniques, surveying, road construction and maintenance and marketing.

The firm of Prentiss & Carlisle, Bangor, Maine, manage approximately 800,000 acres of woodland in Aroostook County. An estimated 30,000 acres of this total lies within the proposed impoundment area, and is managed jointly by Prentiss & Carlisle and Seven Islands Land Company. The bulk of the remaining land is located within fifty miles of Ashland, Maine. Most of this would not be directly affected by the project. Management of the timberlands is the responsibility of the firm's chief forester. Services include silviculture, mapping, surveying, stumpage sales, harvesting sequence and methods, inventories and consulting.

There are also a few consulting foresters which manage smaller private woodland owners. The J. M. Huber Corporation also has a management interest in Aroostook County.

2.0 Timber Flow Into and Out Of Canada

The amount of timber flowing into and out of Canada is very difficult to estimate due to the reluctance of land management and timber companies, Canadian mills and Canadian government agencies to divulge the information. Also the veracity of the information obtained is questionable due to economic interests or personal bias concerning the project. For example two mills in St. Pamphile which process 81.5 million board feet per year and procure 96% of the timber from Aroostook County reported using no timber from the project area. It is unlikely that these mills would not draw timber from the project area which is in proximity to their mills.

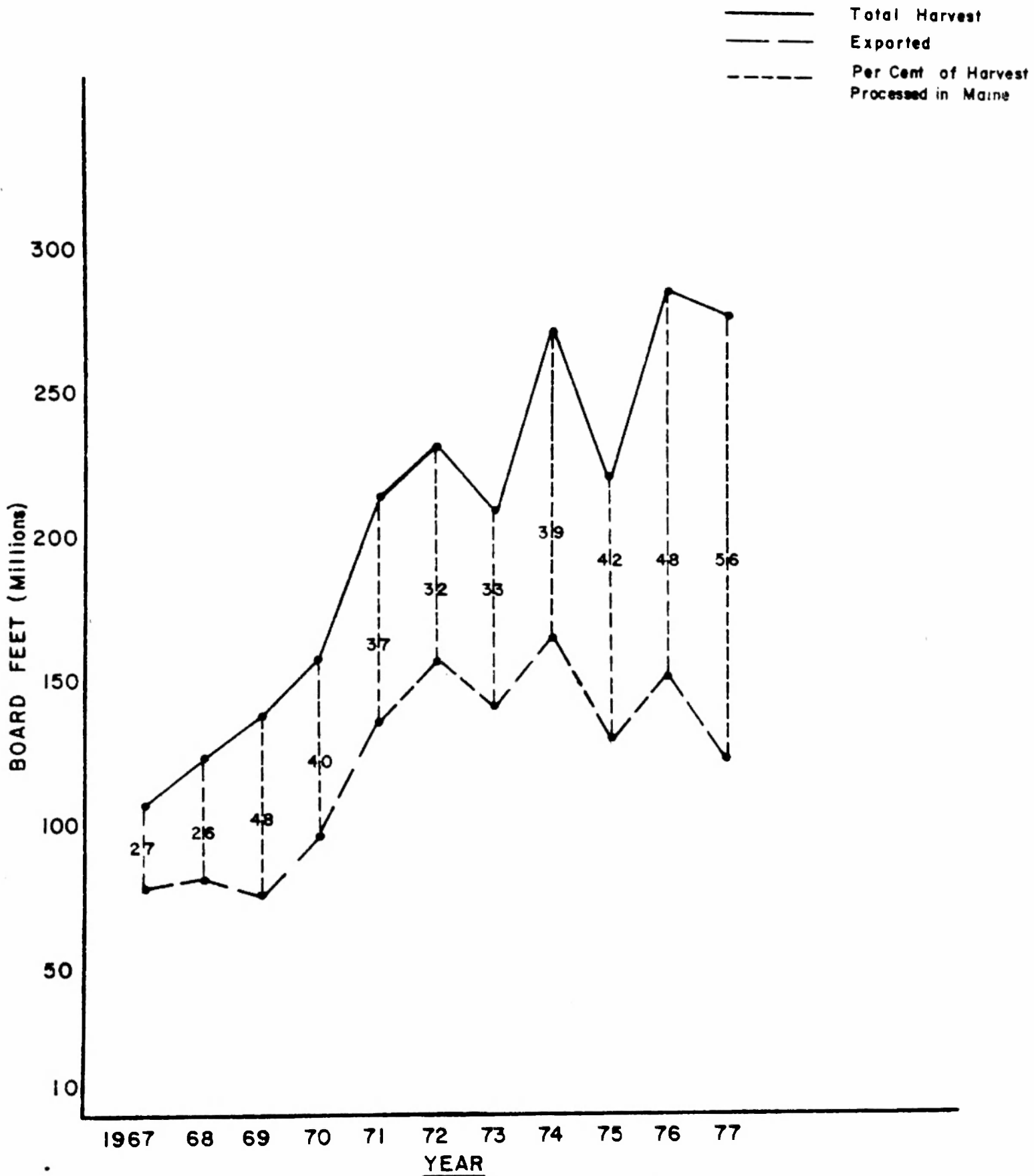
As figure 2 indicates, the current trend is to the increased utilization of sawtimber in Maine. Nearly all timber entering Canada from the project area is in the form of sawlogs. In 1977, 278,072,000 board feet (44%) of softwood sawtimber and 25,598,000 board feet (30%) of Hardwood sawtimber was exported. The state average for sawtimber (all species) exports was 28.8% of the total harvest. Although the "export" destination was not identified, it is a valid assumption that the bulk of the timber entered the provinces of Quebec and New Brunswick. Conservatively, an estimated 90% of all Canadian processed lumber which originated in Aroostook County reenters the United States.

The flow of pulpwood into Canada is not as significant. The only pulp mill located near the project area is located at Edmunston, New Brunswick. According to the Maine Timber Cut Report - 1977, 626,047 standard cords of all species of pulpwood were harvested in Aroostook County. Based on study data, approximately 70,000 cords (11%) was exported to Canada. An additional 18,000 cords of chips from sawmill residue were reportedly shipped to Canada from Aroostook County. This represented approximately 6% of the chipping capacity of the sawmills interviewed which were located in Aroostook County within 40-50 miles of the proposed impoundment.

A unique marketing system exists in northern Aroostook County. The mills on the Canadian border are more competitive in purchasing timber from private landowners and large paper companies in the project area for two reasons:

SOFTWOOD SAWTIMBER HARVEST—AROOSTOOK CO. 1967-1977

(After Maine Timber Cut Report, 1967-1977, Bureau of Forestry)



- (1) The proximity of the mills decreases timber harvest costs.
- (2) Canadian woods workers are more willing to work longer hours and accept lower wages (or Piece work rates), thereby reducing logging costs.

Large Maine paper companies which have land in the northern portion of the county find it advantageous to sell sawtimber from their lands at competitive prices to Canadian mills and bargain to buy chips from the sawtimber processing residue to feed their pulp mills. Also Canadian interests which own wood processing plants, also own a considerable portion of the land in the project area.

The bulk of the timber harvested by Canadian sawmills from northern Aroostook County, is shipped back to the United States in the form of processed lumber and pulp chips. This marketing situation appears advantageous to the landowners in northern Aroostook County. However, sawmills located outside of the economic procurement radius from the project area are at a marketing disadvantage.

** Canadian timber import figures are not available at this time.

3.0 SPRUCE BUDWORM

3.1 Extent of Infestation

The spruce budworm populates the entire northern portion of Maine ranging from endemic to epidemic proportions. Figures 3, 4, 5 and 6 show a heavy population in 1974 which decreases in 1975 and 1976 and then builds again in 1977. Severe infestations which have caused heavy defoliations have occurred sporadically over the past 200 years, with the current infestation beginning in the late 1960's.

The proposed impoundment and resulting "limited access" area support high populations of budworm and are considered as high hazard areas. See Figure 6. The areas hatched in Figure 6 correspond very closely to the areas to be sprayed during 1978.

"A recommendation to spray an area of trees is based on the idea that the trees would not survive without the preventative measure. Spraying is conducted when an area of spruce-fir trees has shown moderate to severe defoliation for two consecutive years and the egg mass survey indicates that a third year of heavy defoliation is likely."(1)

As Figure 7 indicates, the proposed impoundment area and resultant "limited access area" lies entirely in the Allagash-St. John zone. Egg deposits in the Allagash-St. John zone indicate a probable population increase for that area in the future.

"Hazard in the Allagash-St. John area is largely in the high to extreme range. This is predominantly a reflection of poor tree condition but much of the area has a moderate to high egg deposit."(2)

3.1.1 Timber Losses

Timber losses resulting from defoliation by the spruce budworms are of three types: (1) lost growth, (2) degradation and volume losses (3) tree mortality. Research to date on these losses have generally been qualitative. Consequently, losses resulting from budworm are difficult to quantify.

PROPOSED IMPOUNDMENT AREA

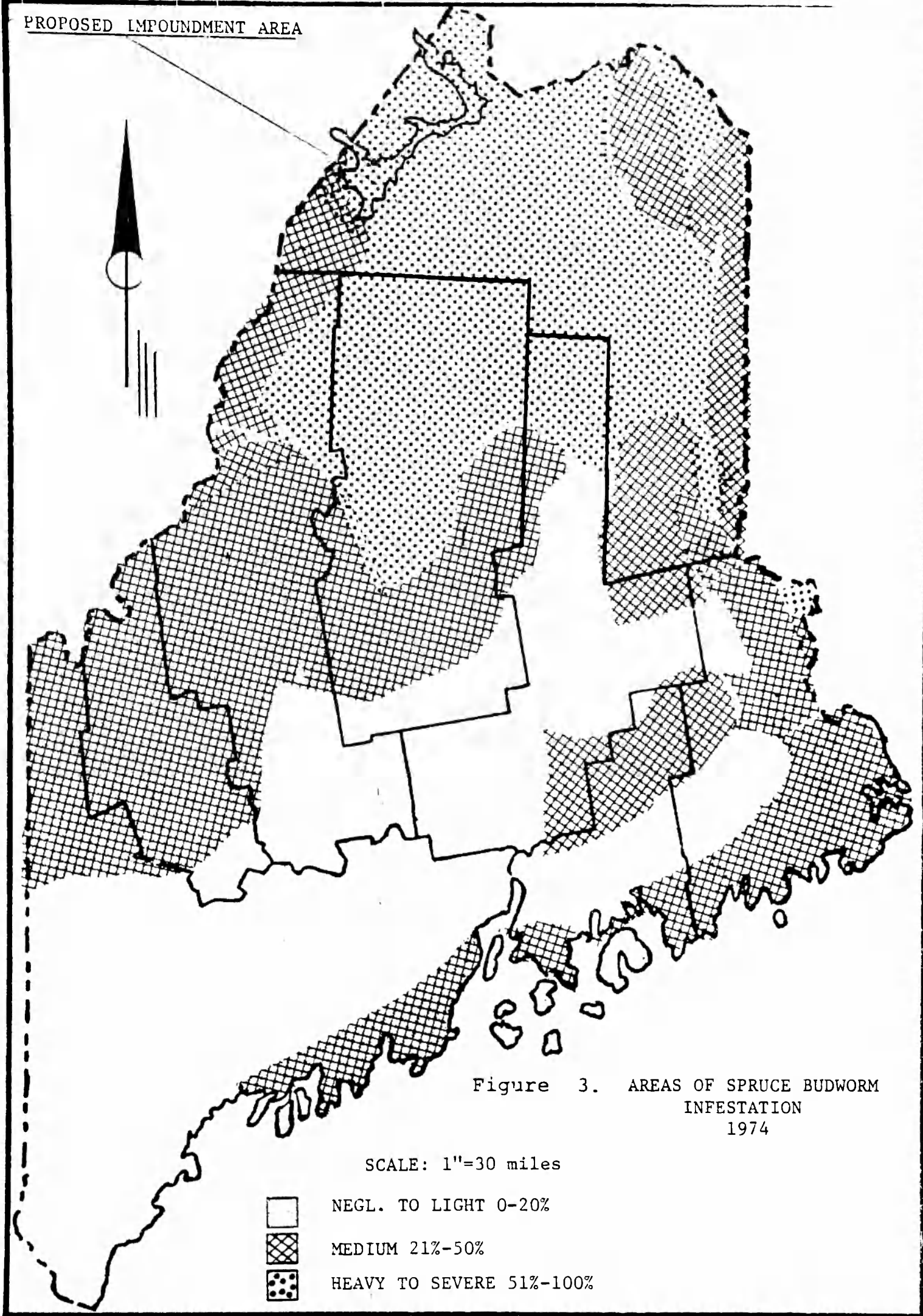





Figure 3. AREAS OF SPRUCE BUDWORM INFESTATION 1974

SCALE: 1"=30 miles

-  NEGL. TO LIGHT 0-20%
-  MEDIUM 21%-50%
-  HEAVY TO SEVERE 51%-100%

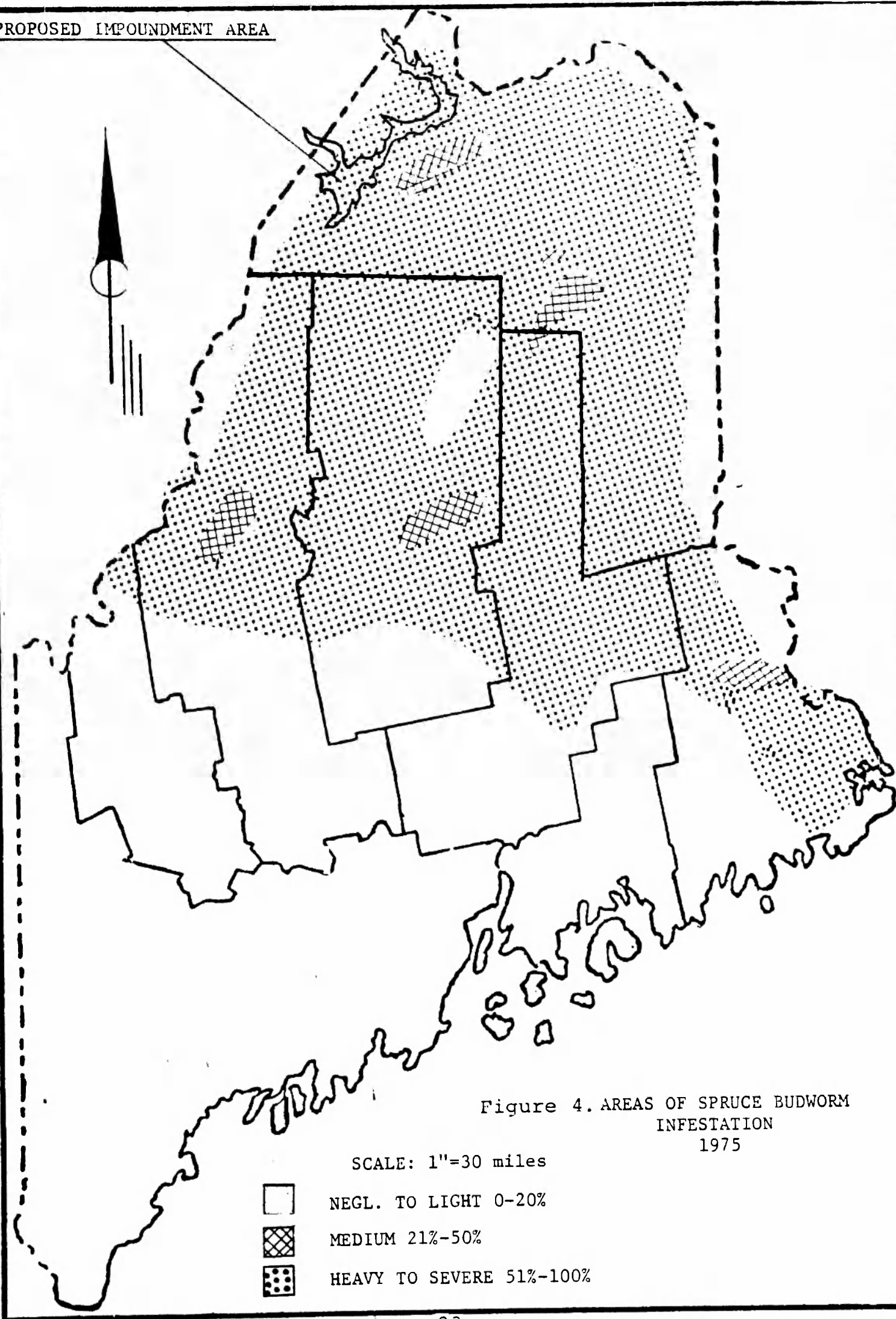


Figure 4. AREAS OF SPRUCE BUDWORM INFESTATION 1975

SCALE: 1"=30 miles



NEGL. TO LIGHT 0-20%



MEDIUM 21%-50%



HEAVY TO SEVERE 51%-100%

PROPOSED IMPOUNDMENT AREA

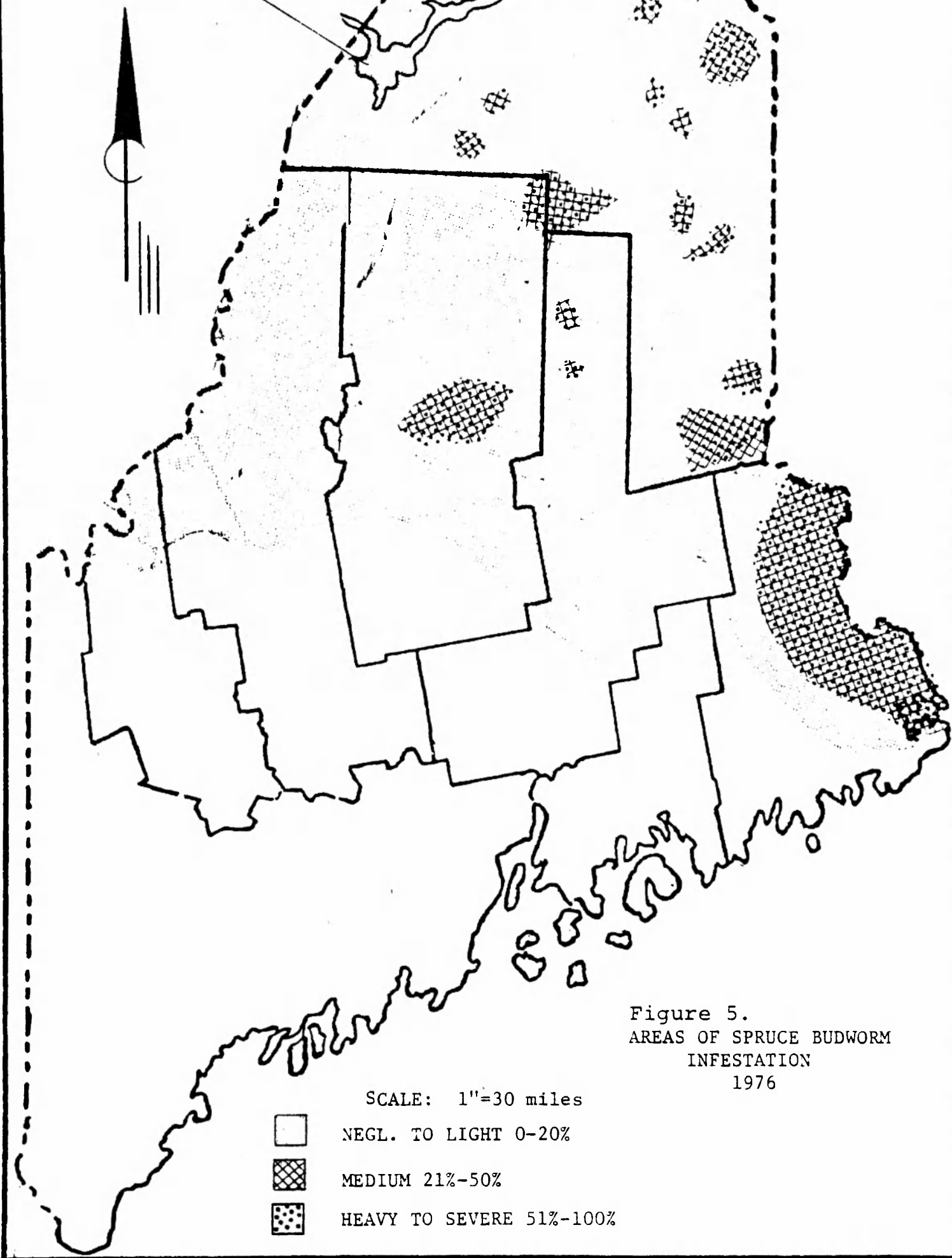





Figure 5.
AREAS OF SPRUCE BUDWORM
INFESTATION
1976

SCALE: 1"=30 miles

-  NEGL. TO LIGHT 0-20%
-  MEDIUM 21%-50%
-  HEAVY TO SEVERE 51%-100%

PROPOSED IMPOUNDMENT AREA

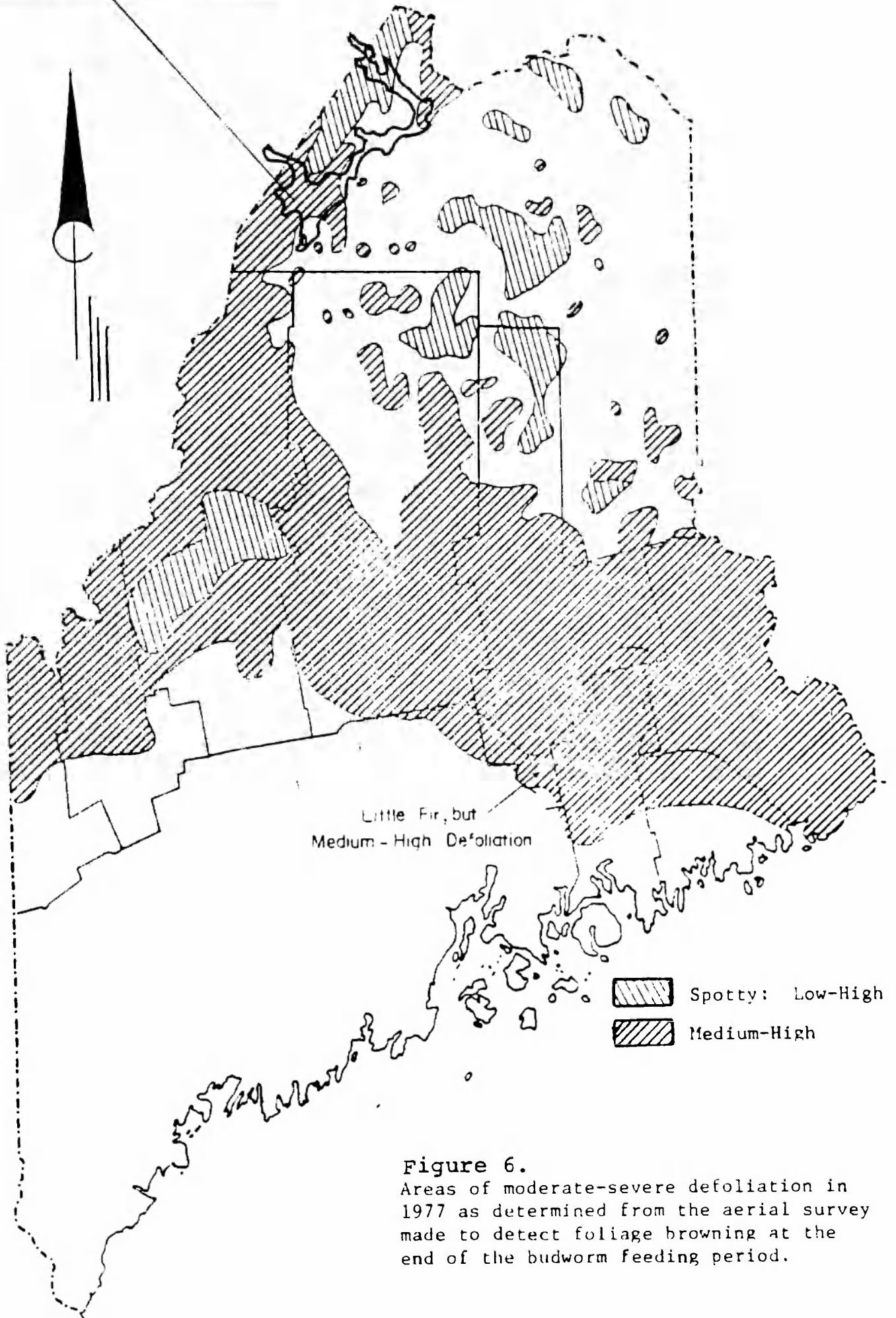


Figure 6.
Areas of moderate-severe defoliation in 1977 as determined from the aerial survey made to detect foliage browning at the end of the budworm feeding period.

PROPOSED IMPOUNDMENT AREA

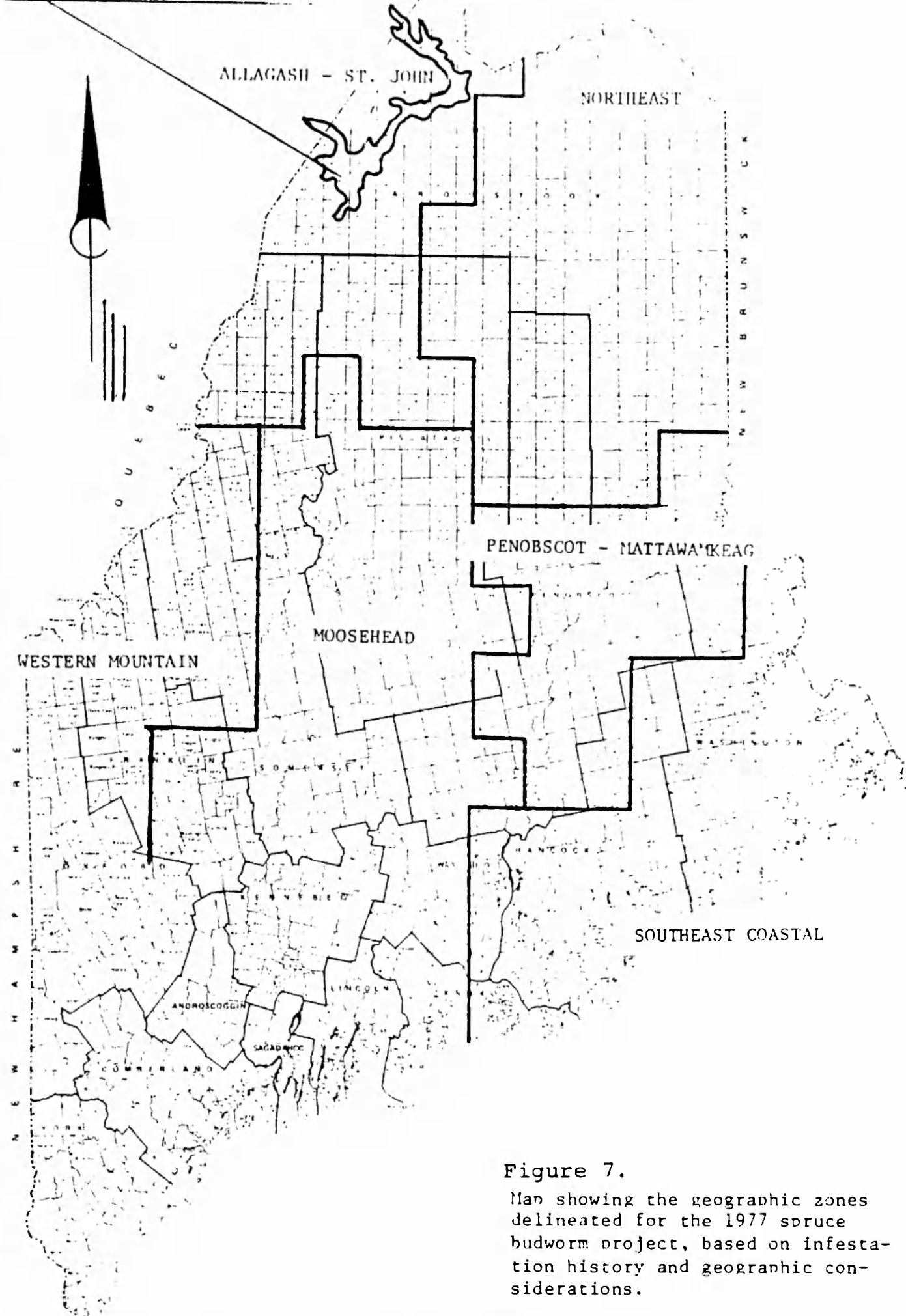


Figure 7.

Map showing the geographic zones delineated for the 1977 spruce budworm project, based on infestation history and geographic considerations.

Growth Loss

Growth loss is not appreciable in budworm attacked trees in which less than 75% of the current year's foliage is lost.⁽³⁾ Even after heavy defoliation (75-100 percent) for two consecutive years little growth loss is noticed, but the effect appears to be cumulative,⁽⁴⁾ even if the third year defoliation is negligible⁽³⁾. Needles are normally lost on a tree after eight years⁽⁴⁾. After three years of severe defoliation the tree possesses only half of its normal foilage and subsequently growth increment is adversely affected⁽³⁾.

"In the Allagash-St. John zone (in which the study area is situated) there was almost complete lack of 1974-76 foliage."⁽²⁾ It is very likely, that as a result of the above mentioned defoliation, the timber in the study area is growing at a substantially reduced rate, if at all. Rea and Houseweart (1978) estimate the Aroostook County spruce-fir growing stock increase at 1% from 1975-1977 and at a decrease of 0.6% from 1976-1977. The results are not conclusive since the on-going study is in its early stages.

The loss of growth is difficult to quantify due to the nature of the measurements required. The budworm has its greatest effect on mature overstory trees and intermediate and suppressed trees which are characteristically slow growing. Growth losses are more significant on the upper stem which is difficult to measure.

Degradation and Volume Loss

After repeated heavy budworm defoliations mortality is likely to occur. Decay begins near the time of death. Insects and fungi subsequently attack the tree.

Fungi causing red heart rot and blue stain generally account for the greatest volume loss and degrade. Rate of decay appears dependent on the moisture content of the wood. Trees with higher moisture content usually decay more quickly. The most susceptible stands are usually dense growths of small diameter of balsam fir which generally have high moisture contents. Radial penetration of decay is not dependent on tree size. Consequently, these smaller diameter trees show a high percentage of loss, although merchantable volume losses may not be high.⁽³⁾

The initial degrade caused by fungi is from the discoloration of sapwood involving blue stain or red stain. Blue stain results in some lumber degrade and undesirability for use as pulpwood in groundwood processes. Red stain lowers the strength of the wood fiber. Separation of stained or rotten sapwood is not economically feasible with today's technology.

Volume losses result directly and indirectly from budworm attack. Direct losses occur after tree mortality from decay and rot. Wood losses during debarking are greater if sap rot exists. Chipping of partially decayed wood yield smaller volumes and an excessive amount of fines which are undesirable in pulping(3). Volume is indirectly lost when fir tops are damaged or killed. Fungi enters the wound and alters the form of the bole. Epicormic branching occurs and then results in a crook or fork forming. Sawlog yields are thus substantially lowered. This is not a major factor in pulpwood. Epicormic branching also lowers sawlog grade.

Mortality

Little information is available as to quantities of timber killed in past years and/or by geographical unit. During the 1910-1918 infestation an estimated 27,500,000 cords of fir and spruce were killed in Maine(1). Up to 90% tree mortality in some townships were reported. Recent spray protection programs have prevented any recent losses of that magnitude. As estimate of the accumulated mortality (to 1974) in the 3.5 million acres recommended for spraying 1975 was 0.2 cords per acre(5). This low mortality is primarily attributable to the spray program. Applying this mortality figure to the 159,263 acres of conifer and mixed forest type land in the limited access area, yields a mortality figure of approximately 32,000 cords. A more recent estimate by Rea and Houseweart (1978) averages natural mortality at 0.45 cords per acre for 1976 and 1977. This would place annual mortality at 77,000 cords in that area.

Mortality projections without a spray control program are, however, much higher as could be the situation if the State of Maine discontinues in the spray program in 1981. An estimate by L. W. Hazelton(6) projects mortality for a five year period of heavy infestation without mortality controls at 5.35 cords per acre. Applying this to the coniferous acreage in the limited access area, mortality would approach 850,000 cords in a heavy 5 year infestation similar to that in the 1915-1920 period.

3.2 Silvicultural Control

Silvicultural practices, which include preventative cutting and salvage harvests are designed to provide long-term control of spruce budworm by reducing the fir composition in favor of the more budworm resistant spruce. Other basic silvicultural practices such as partial cuttings, more intensive identification and harvesting of mature stands, diversification of homogenous timber types and development of flexible harvest schedules are targeted directly or indirectly at lessening the impact of future infestations.

Preventative cutting practices are aimed at reducing the fir composition by removing the less vigorous mature overstory and suppressed understory. This, theoretically, should lessen future budworm impacts by removing high risk trees and reducing larval food. To date, these practices have been limited due to small volume yields per acre, limited access and uncertainty as to the effectiveness of such cuttings to reduce future losses. Preventative cuttings could be more prominent in the future if better utilization processes for small diameter timber could be developed and with improved access. If the proposed reservoir were constructed, the resulting increased transportation costs would likely render this type of harvest infeasible.

The amount of salvage work conducted is a direct function of the size of and the degree of mortality in an infested area. Areas which suffer high mortality often occur in the "beaver pond" effect in which 5-10 acres may be severely defoliated. Consequently, access must be good in order to make salvage feasible.

According to land management companies working in the study area, approximately 2-3% of all harvest work is geared to budworm salvage, however, salvage work in one town approaches 50%. As utilization processes for small diameter and partially decayed timber improve, the proportion of preventative and salvage harvest is anticipated to substantially increase in the project area. This is assuming access remains constant or improves.

3.3 Economic Impact of Preventative Cutting

The economic impact of preventative cutting (reducing fir composition) is not known due to the length of time required to perform treatments on a scale large enough to determine the effectiveness in mitigating the impact of future budworm infestations. Opinions differ in regard to the ultimate effectiveness of silvicultural controls. Partial cuttings to remove

fir have had limited effect due to fir's high regenerative ability. Intermediate treatments probably at precommercial stages, will be required to effectively reduce fir composition⁽⁷⁾. In order to offset treatment costs and uncertain benefits, Maine has offered landowners, who have acceptable silvicultural plans, a tax incentive through abatement of the budworm excise tax.

3.4 Impact on Timber Supply

The results of the Rea and Houseweart (1978) study indicate a zero net growth in the softwood and mixed wood forests of the six county study area which includes Aroostook County. Since the study is in its early stages, the results are inconclusive. Growth increments are more significant over a longer time frame. However, the estimate of 0.45 cords/acre of annual mortality, (excepting harvest and logging related) is reliable and when compared to the prior estimate of annual net growth of 0.5 cords per acre, it is readily apparent that the spruce-fir timber supply will be quickly drained.

Figure 8 shows spruce-fir timber inventory (supply) reaching parity with projected annual cut (demand) near 1990. Due to the complex array of variables the actual parity year is impossible to predict. The graph does however show the overall effect of the budworm on supply conditions. The graph is based on the following assumptions: (1) prior net growth of 0.5 cords/acre; (2) present mortality of 0.45 cords per acre; (3) the spray control program exists similar to today's; and (4) annual cut follows past trends. Annual removals are from the Maine Timber Cut Report, 1971-1977. The 1971 spruce-fir inventory was based on data in The Timber Resources of Maine.

3.5 Budworm Losses on Opportunity Costs

The EIS estimates losses of annual growth as a result of project implementation at 41,645 - 50,351 cords. However, the recent spruce budworm outbreak appears to have serious adverse effects on growth and mortality on Maine's spruce-fir and mixed conifer forests. These probable losses should be weighed against those attributed to Dickey-Lincoln. Table 5 makes this comparison using both annual growth rates furnished in the EIS and the previously mentioned annual mortality rate of 0.45 cords/acre. This rate is assumed to be constant for years 1-25 and then undergoes abatements of 50% in years 26-50 and 51-100 consecutively as a result of natural or manipulated population controls.

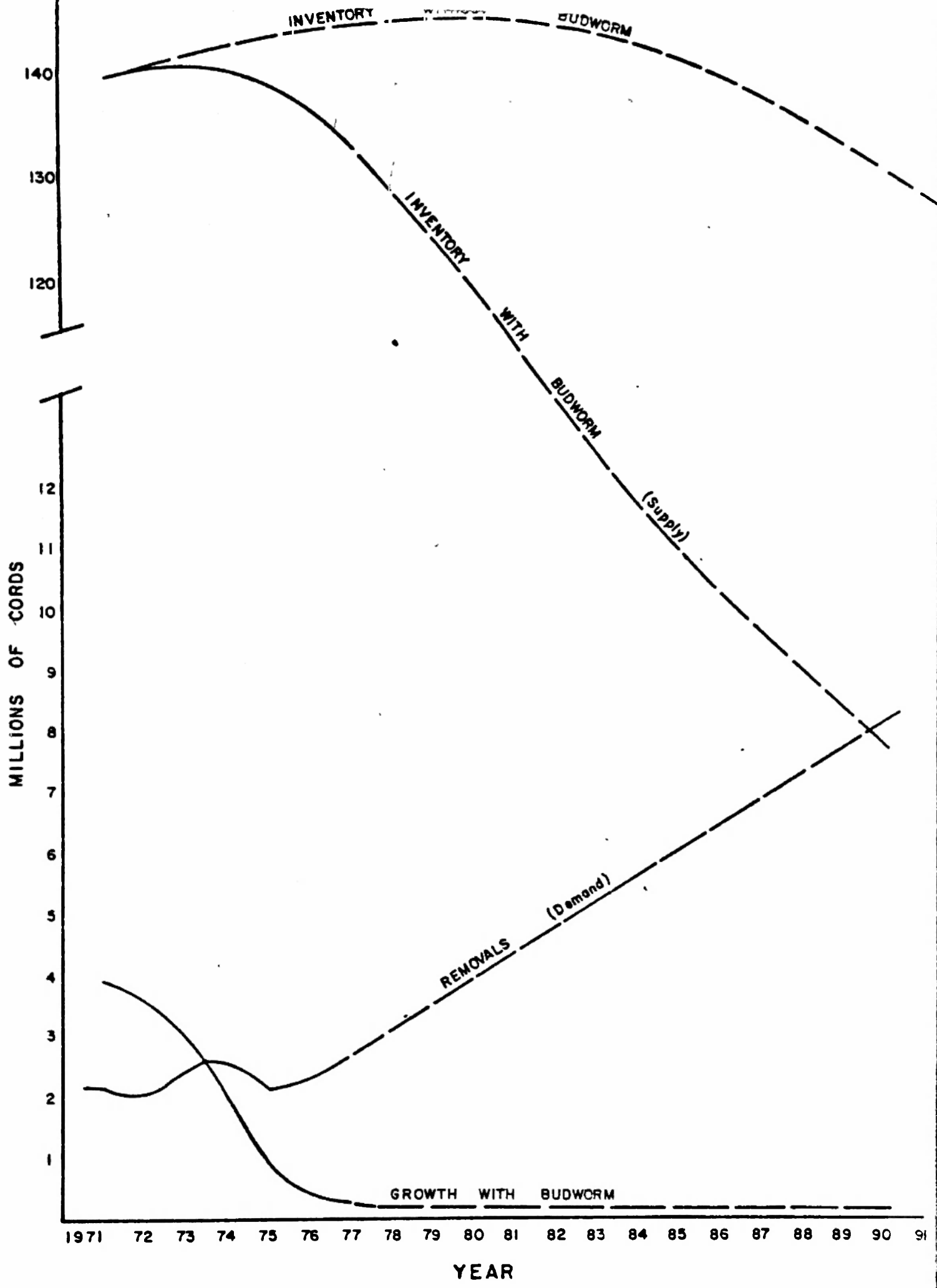


FIGURE 8 EFFECT OF SPRUCE BUDWORM ON MAINE SPRUCE-FIR INVENTORY.

Table 5 BUDWORM LOSSES AS COMPARED TO OPPORTUNITY
COSTS ATTRIBUTED TO DICKEY-LINCOLN

Estimated Loss With Project (Thousands of Cords)		Estimated Loss Without Project Due To Budworm and Related Mortality		
EIS	USFS	Years	Annual	Total
<u>Annual-Total</u>	<u>Annual-Total</u>	<u>1-25</u>	<u>31.9</u>	<u>797.5</u>
50.3 - 5,030.0	41.6 - 4,160.0	26-50	15.6	390.0
		51-100	7.8	<u>390.0</u>
Total Loss Due to Project Implementation		5,030,000 - 4,160,000 Cords		
Total Loss Due to Budworm Related Mortality		1,577,500 Cords		
Real Loss Attributed to Dickey-Lincoln		<u>3,452,500 - 2,582,500 Cords</u>		

The mortality due to budworm and associated growth losses may vary greatly from those projected. Natural or manipulated controls may develop at rate different than projected. The spray program, if discontinued, could make mortality much higher initially and subsequently reduce net growth by reducing growing stock. Based on the Rea and Houseweart report findings of a zero net growth indicates that the "real loss" attributed to Dickey-Lincoln may be lower or that estimates of annual net growth of 0.58 to 0.72 cords per acre are high.

If, in fact, the budworm does reduce supply conditions, spruce-fir stumpage prices will increase. The loss of timber production in the impoundment will only worsen the supply conditions.

4.0 WILDLIFE MITIGATION PLAN

4.1 General

The Conservation and Development Report, dated January 4, 1978, by the U. S. Fish and Wildlife Service contains general recommendations for mitigation of the fish and wildlife losses which would likely occur from project implementation. The plan recommends that approximately 161,000 acres of land be acquired or leased and subsequently managed to mitigate wildlife losses with timber production being a corollary goal. As a result timber marketability and supply would be affected.

4.2 Marketability

The marketability of the forest resource would likely suffer the greatest adverse consequences. The wildlife/silvicultural practices to be implemented are of a general nature in the report. It recommends modified selective cuts (small patch and single tree selection) on a 10 year cutting cycle and sets the regeneration stage (rotation age) for each forest type at 40 years.

The ten year cutting cycle could cause marketing problems. It is a relatively short cycle, for the area, especially if the spruce budworm, which can substantially reduce ingrowth, continues to exist in high populations. If the cycle were lengthened, the plan would not likely be optimum for wildlife. If ingrowth is cut in half from 0.5 cord/acre/year⁽⁸⁾ to .25 cord/acre/year, the then allowable cut would be 2.5 cord per acre which would be on the low end of economic operability. Consequently, the stumpage prices would be reduced and logging crews would be reluctant to harvest it on a piece-work basis. The report also cites initial road seeding costs at \$129.36 per acre. The roads would also require reseeding every ten years corresponding with the cutting cycle. The seeding costs would most likely be absorbed by the timber purchaser and also lower stumpage prices.

4.3 Supply

The 161,000 acres of land required for mitigation are to be acquired in three proposed methods: (1) Direct acquisition in fee; (2) Lease of the land; (3) Lease of wildlife management rights. Approximately 32,700 acres of deer wintering yards

(bottom land spruce-fir type) would be required either within or in addition to the mitigation lands. A possible 193,700 acres could possibly be consummated for mitigation.

The report states that "improved forest production should be realized from such measures (modified selective cutting)". Although recommendations in the report are too general to be in accordance with or to dispute, one assumption seems apparent --the mitigation lands were not previously under management. Approximately 67.8% of the commercial forest land in Maine is owned by forest industry or under professional management(8). Therefore, it is unlikely that such a large land area required for mitigation would not be under prior management. A change in management planning would likely result in decreased timber production on the short term because previous silvicultural treatments were made for timber production in a long range plan. A change in planning may not fully realize the potential gains from past treatments. Any affected landowners would also experience an additional loss from management investments which have not yielded full return (example, road construction costs).

An additional loss in sawtimber supply could arise as a result of obtaining the 32,700 acres of deer wintering yards which are predominantly spruce-fir bottomlands. These lands usually contain a high percentage of sawtimber which is rapidly increasing in demand. The supply loss would be dependent upon the management planned for these areas.

5.0 TIMBER SALVAGE

5.1 Timber Volumes

General Design Memorandum No. 4A recommends that the Dickey Dam be cleared between the elevations 913 and 828 feet msl and that the Lincoln School Dam be cleared between the elevations of 623 and 585 feet msl. These areas contain respectively, 45,000 and 1,000 acres of forested land. These clearing elevations are proposed in order to maintain water quality and a fishery.

The entire area of the Dickey and Lincoln School Dam which is to be inundated contains 76,163 forested acres. The landowners affected by the impoundment would have the option to clear the approximately 30,000 forested acres which are below the 828 elevation. If they opt not to clear, compensation for lost timber would be included in the severance damages.

TABLE 6 ANNUAL TIMBER SALVAGE SCHEDULE *

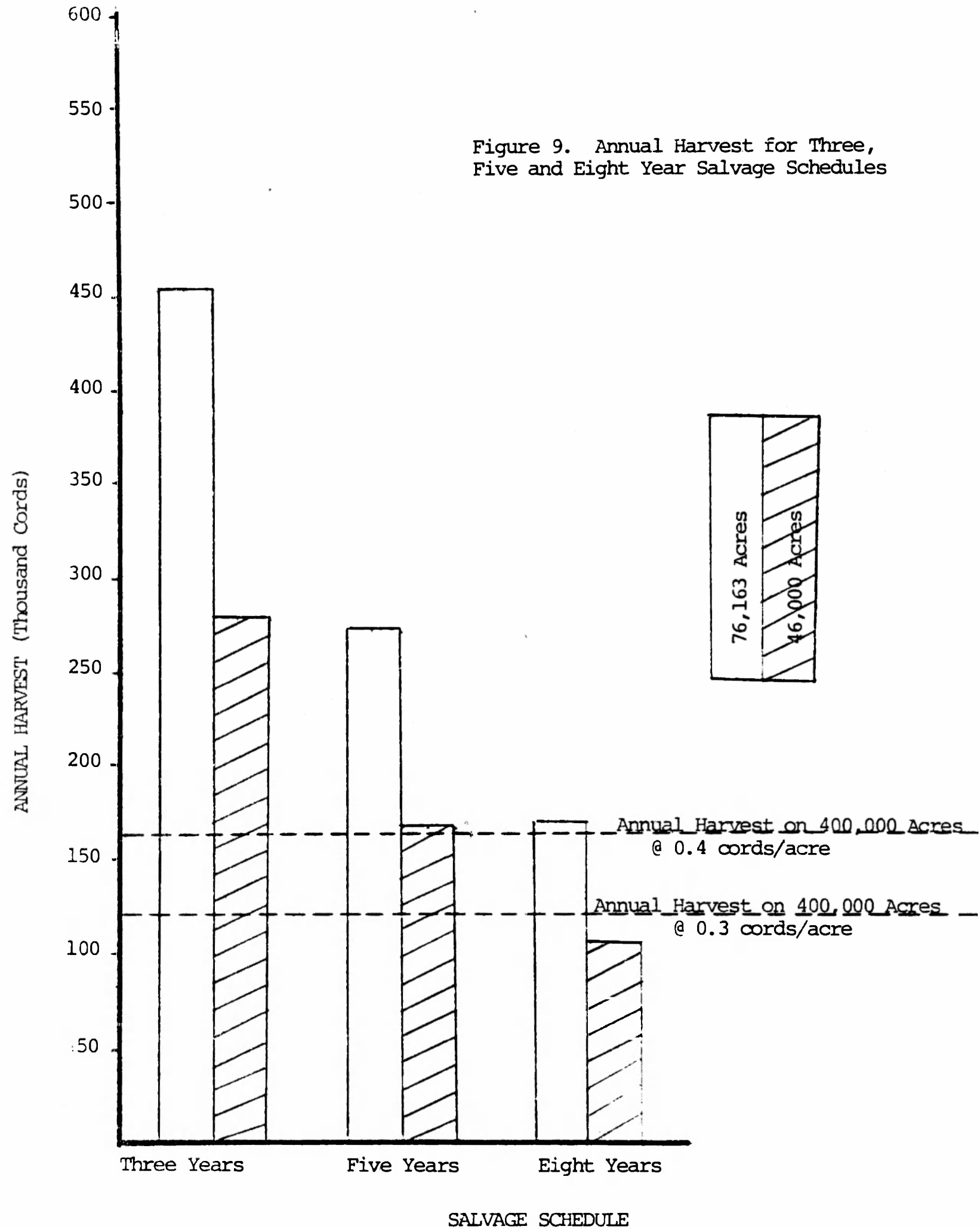
	<u>Three Year Schedule</u>	<u>Five Year Schedule</u>	<u>Eight Year Schedule</u>
<u>Total Impoundment (76,163 Ac.)</u>			
Sawtimber (MBF)	28,500	17,100	10,700
Pulpwood (Cords)	415,300	249,200	155,700
 <u>Partial Clearance (46,000 Ac. between 913-828 and 623-585 elevations)</u>			
Sawtimber (MBF)	17,200	10,300	6,500
Pulpwood (Cords)	250,800	150,500	94,100

TABLE 7 NET TIMBER VOLUME SUMMARY *
(Thousands of Cords)

<u>Source</u>	<u>TOTAL IMPOUNDMENT (76,163 Ac)</u>			<u>AREA BETWEEN 913-828 msl and 623-585 msl (46,000 Ac.)</u>		
	<u>Pulpwood</u>	<u>Sawtimber (MBF)</u>	<u>Total</u>	<u>Pulpwood</u>	<u>Sawtimber (MBF)</u>	<u>Total</u>
EIS	1,246.0	154,000 (85,500)	1,400.0	742.5	93.0 (51,700)	845.5

* Pulpwood volumes include boltwood.

Figure 9. Annual Harvest for Three, Five and Eight Year Salvage Schedules



5.2 Optimum Schedule

The volume of timber cut annually from the impoundment would have to be regulated in order to mitigate any potential adverse impacts to the forest economy. In order to minimize the impacts on the labor market, timber supply, marketability and on-going forest management schedules, the salvage work should be conducted over a maximum time span which is consistent with the dam construction schedule. General Design Memorandum No. 4A, Page 4A-35 indicates that a maximum of eight years could be used to complete salvage operations. This would be valid only if operations were scheduled progressively from the lower impoundment elevations.

In determining a feasible salvage schedule, two assumptions were made. The first assumption is that timber demand and harvest remains constant or increases. The second is that salvage effort can be reallocated from that area between the Little Black River, the St. John River and the Canadian border and that area contains 400,000 acres of commercial forest land. This area was arbitrarily selected because it is immediately adjacent to the impoundment.

The reported annual cut of 0.31 cords/acre checks out very closely with the Maine Timber Cut Report - for 1977 for Aroostook County. The annual cut on the 400,000 acres on which harvest efforts could be reallocated would be approximately 120,000 cords. If the annual cut were increased to 0.4 cords per acre due to increased timber demand, the total harvest would approximate 160,000 cords. Depending upon the volume estimate source, approximately 106,000 to 130,000 cords would require annual harvesting in order to salvage the timber on 46,000 acres over an eight year period. Figure 9 illustrates annual harvests of three, five and eight year salvage schedules by impoundment area.

5.2.1 Silvicultural Losses

Figure 9 indicates that timber salvage over an eight year span in the impoundment will not appreciably disrupt timber marketing in the area, because the annual salvage approximates the normal harvests. However, this is not entirely valid because this assumes no harvesting will occur on the 400,000 acres from which harvesting and management efforts have shifted. If silvicultural practices are neglected on surrounding lands, considerable losses could be realized from decreased ingrowth and natural mortality. This is especially true in view of the

spruce budworm problem. Annual mortality in six northern Maine counties during 1976 and 1977 averages 0.45 cords/acre (10), resulting from natural causes. Mortality losses could approximate 180,000 cords annually if no harvesting would occur.

The results of surveying mills which could potentially harvest in the area, indicated that mill capacities could be increased 25-50 percent to process additional timber, provided economic conditions are similar to today's. Mills which are currently in an economic procurement range (50 miles) process approximately 380,000 cords of sawtimber. A 25 percent production increase would consume an additional 95,000 cords annually. Therefore, assuming an increased demand for timber, additional processing capacity, and a constant mortality rate, similar to today's, during impoundment clearance, 40,000 cords could be lost annually from inability to apply necessary silviculture. See Table 8. Additional losses would result from decreased growth rates. This amount is difficult to quantify and would depend on the budworm situation in the future.

5.2.2 Marketability

The eight year schedule would likely permit the timber in the impoundment area and some additional timber from surrounding areas to be harvested and milled. However, marketing of the timber to the mills and the Maine forest industry would be affected.

If the timber were to be sold by the government on the open market on a competitive basis, Maine mills would be at a disadvantage, even though the timber would likely be available at a deflated stumpage rate. The proximity of the Canadian mills to the impoundment would permit them to offer higher stumpage values to procure the timber. These prices would still likely be below those prevailing to Maine mills for timber from other areas. Ultimately Maine mills would have difficulty marketing their processed lumber. Some mills indicated that they wouldn't be able to compete unless they are subsidized.

An additional marketing problem is posed by the products available from the impoundment. The Planning Report - Appraisal by the James W. Sewall Company (1977) indicated that 80% of the volume was in pulpwood and boltwood material. American pulp mills are located far south of the proposed impoundment and would be unable to harvest pulpwood stumpage. A considerable portion of their pulp requirements is supplied in the form of chips from residue of Maine and Canadian sawmills.

TABLE 8

PROJECTED ANNUAL TIMBER REMOVAL AND
MORTALITY VERSUS PROJECTED UTILIZATION

Annual Removal and Mortality

Timber Removal from Partial Impoundment Clearance	115,000 cords
Natural Mortality on Surrounding Area (at present rate)	<u>180,000 cords</u>
Total Removed and Mortality	295,000 cords

Annual Utilization

Normal Annual Harvest (Projected)	160,000 cords
Additional Processing (25% increase over present)	<u>95,000 cords</u>
Total Utilization	255,000 cords
Total Annual Timber Loss Resulting from Impoundment Clearance and Lost Silvicultural Opportunities	<u><u>40,000 cords</u></u>

It should be noted that the Planning Report also encompassed an area outside of the actual impoundment and that the percentage of sawtimber should be somewhat higher in the impoundment.

5.2.3 Labor

If an additional 95,000 cords would have to be processed annually as a result of the impoundment clearing, additional labor would be required. Based on production data gathered an estimate of additional labor requirements are:

Harvesting	- 80
Trucking	- 15
Milling	-250
<u>TOTAL</u>	-345 personnel

Regardless of the schedule used to salvage the timber labor would be difficult to obtain for the following reasons:

1. Dam construction would absorb labor by likely offering higher wages.
2. Remoteness of the project area.
3. Type of Work - strenuous, dangerous, long hours.
4. Temporary nature of the employment.
5. Probable necessity of labor to relocate prior to and after construction

Labor shortages would not only apply for the resulting increased wood processing but also to existing milling and logging activities.

It is likely that less than 345 additional people will be required to process the additional timber due to the nature of the salvage operations. The area will be clearcut and would be an ideal situation for use of mechanical harvesters. A mechanized operation has the potential to harvest between 10,000 and 20,000 cords annually, using a two-man crew for two shifts, depending on terrain and type of equipment used. However, obtaining qualified, trained personnel to operate the equipment would be difficult. Also improved access roads built for dam construction would reduce trucking requirements.

5.3 Alternate Schedules

Three and five year harvest schedules do not appear desirable. A five year time frame would likely permit harvesting and utilization of the timber in the impoundment area. However, it would preclude any additional timber management work on surrounding areas.

Regardless of the schedule used to clear the impoundment, the abnormal glut of timber will have adverse effects on the forest economy. Any attempt to lengthen the salvage schedule will mitigate the effects on the forest economy, marketability, forest management and labor force. The dam construction will regardless have an adverse effect on the forest industry by making labor in short supply and/or available at wage rates which would not be competitive with the forestry industry rates.

5.4 Short Term Fiber Contracts

It is our conclusion that short term contracts with foreign countries for the sale of wood fiber, including wood chips, and/or roundwood from the impoundment clearance area would probably be feasible. However, the success in obtaining such contracts and the unit amount received for the product(s) to be marketed would depend largely on the vagaries of world economics and foreign competition at the time that it is necessary to negotiate the contracts.

Port facilities are available on the St. Lawrence seaway at Riviere du Loup which is located approximately 115 road miles from the project area. This port would be the logical choice for shipping wood fiber to European markets. However, the transporting of fiber into and out of Canada would have to be resolved and the port itself would need an automatic system for handling the loading of wood products aboard shipping. It is the opinion of William Butler of Dead River Company out of Frederickton, New Brunswick that the wood fiber available from the project area could possibly warrant the necessary expenditure for such facilities, if an eight year period were available to market the fiber.

Searsport, Maine, a two million dollar shipping facility on the Atlantic seaboard would be a second choice due to its distance from the project area which would involve considerable overland shipping costs and logistical problems even though a direct rail link already exists between Fort Kent and Searsport.

Some limited success in marketing wood products overseas has been experienced by the Dead River Company, who has shipped logs, chips and lumber to the United Kingdom and Scandinavia. Some of the major problems they encountered are as follows:

1. Locating reliable off-shore markets;
2. Creating reliable shippers for regular deliveries;
3. Maintaining product quality standards;

4. Locating reliable overseas agents to monitor shipping arrivals and coordinate sales;
5. All wood products must be free of bark (debarked); and
6. Competition from Russia, Scandinavia, Canada and our own southern states in supplying wood fiber to European markets.

The overseas market for sawn lumber appears to be viable at this time. The Dead River Company is currently exporting lumber to Europe and J. O. Irving, Limited or Estcourt, New Brunswick, shipped 15 million board feet of lumber (studs) to England in 1977.

A distinct advantage that Maine has over competition from our own southern states is the proximity of Maine to European markets via the Atlantic sea routes.

The current market for wood fiber in Sweden and Finland is poor. However, this market has historically been cyclic and could well be favorable in the future.

Not to be overlooked, of course, is the distinct possibility of short term fiber contracts with Canadian firms such as Fraser Companies, Limited of Edmunston, New Brunswick and other pulp and paper mills in Quebec and New Brunswick. Fraser has indicated that they could very likely absorb some of the pulpwood timber from the project area if given an eight year period to schedule the influx.

In addition, indications are from our interviews with managers of most of the Canadian lumber firms along the frontier that they could absorb a considerable portion of the sawtimber from the clearance area over an eight year period if economic conditions remain stable.

6.0 RED SPRUCE

6.1 Extent

The range of red spruce extends from the mountainous regions of New York, through the New England states, to central New Brunswick. It is also found in the Appalachians as far south as Georgia. However, it is of primary economic importance only in Maine, New Hampshire, New Brunswick and Quebec.

Maine probably contains the largest volume of red spruce in the country. It is the second most important softwood in Maine in terms of volume. See Table 9. The northern counties in Maine - Aroostook, Piscataquis, Somerset and Penobscot account for nearly three-fourths of the state's total spruce (all species) growing stock. Aroostook County alone accounts for 38.7% of Maine's red spruce growing stock volume⁽⁸⁾.

Red spruce is extensively spread throughout the impoundment area. Spruce-fir forests occupy 56,975.7 acres of 73% of the forested land within the impoundment. Of this area, 53,990.2 acres is classified as mature forests⁽⁹⁾. In comparison, spruce-fir forests occupy approximately 63% of Aroostook County's total commercial forest land⁽⁸⁾.

It is apparent that red spruce is an important component of the forests in Maine and Aroostook County. It is even of greater importance in the impoundment area, especially if the relative percentage of spruce-fir forest land and maturity is considered. It is doubtful if such a high percentage of mature spruce and fir forests covering such an extensive land area could be located outside of the St. John River Basin.

An interesting discrepancy exists between the softwood sawtimber volumes in the study area according to the Sewall Company timber appraisal and the Aroostook County softwood sawtimber volumes according to the Ferguson and Kingsley report. The Sewall appraisal estimates softwood sawtimber volumes at 1,687 board feet per acre (134,600,000 board feet ÷ 79,777 acres of softwood land). Ferguson and Kingsley estimate the softwood sawtimber volume in the county to average 2,616 board feet per acre (6,384.6 million board feet ÷ 2,440,700 acres of softwood land). Depending upon the definition of maturity, this raises a question if 94% of the spruce-fir types in the impoundment are mature as indicated in the EIS, which utilizes the Ferguson & Kingsley as its primary data source. It would be expected that the mature prime spruce-fir forests would support more than 1,687 board feet per acre.

6.2 Economic Importance

Red spruce is of major economic importance with the rapidly increasing demand for sawtimber in Aroostook County. See Figure 2. It comprises 41% of the county's entire softwood sawtimber supply and 19% of the total softwood sawtimber in the county over 13.0 inches diameter at breast height. See Table 10. This value of larger size sawtimber is disproportionate to its actual volume. Large sawtimber carries a higher price because logging and milling costs are reduced on a per unit basis.

Spruce is also an important specie in Aroostook County from a management viewpoint. It is more resistant than balsam fir to attack by spruce budworm. During the 1915-1920 budworm epidemic 70% of the fir inventory was lost as compared to 20% of the spruce(6). Silvicultural practices aimed at mitigating losses resulting from budworm attack have been geared to favoring spruce for management.

Spruce pulp is also desirable for certain types of paper because of its fiber structure and its resistance to rot. Red spruce sawtimber or pulpwood is not generally milled or marketed separately. In this respect, red spruce is no more economically important than other spruce species or balsam fir.

7.0 IMPACTS OF PROJECT IMPLEMENTATION

7.1 Increased Cost of Timber Harvesting

Project implementation would significantly increase transportation costs. From an arbitrary point in the approximate center of the "limited access area" (southeast corner of T17 R12) near Chimenticook Stream the haul distance to Allagash is now approximately 30 miles. With project implementation and utilization of the proposed crossovers, new access roads and the existing road system, the distance to Allagash is approximately 62.5 miles. See Figure 1 for the location of the possible alternate route and new access road.

Estimates of transportation costs vary from 14 cents/cord mile to 20 cents/cord mile. Transportation costs to Allagash would increase by \$5.52/cord if an average cost of 17 cents/cord mile is assumed. This results in a price increase of 13.8% for pulpwood based on mill delivered price of \$40.00/cord and 7.4% for sawtimber based on \$135.00/MBF, mill delivered.

Other increased timber harvest costs would result from project implementation. Labor costs would increase about 20% due to longer times required for logging crews and management personnel to reach the timber harvest areas. The costs of the transporting and maintenance of machinery and equipment would increase about 20%.

Project implementation may also necessitate the use of "unconventional" and more costly methods such as helicopter logging or the use of barges.

7.2 Change of Timber Flow

If the project were to be implemented, it would very likely truncate the trend of increased wood utilization in Maine. See Figure 2. To what degree, however, is impossible to predict. This would be most likely influenced by political and national economic factors. It is highly unlikely that all timber from Aroostook County and the project area would be processed within Maine unless a state of national policy would mandate such. This would also be most unlikely due to possible international ramifications.

In the long term, as timber demand and supply would change, new American owned mills could be constructed in the project area. This would necessitate that timber be available from the project area. Project implementation would, in effect, preclude or hinder this future option.

Project implementation would also likely increase the flow of sawtimber from the project area into Canada. If economic conditions and timber demand remain constant there would be very little change in volumes of processed lumber or pulp chips which would be returning to the United States. The shipment of these products into the United States is primarily by rail and truck via major highway links. These major transportation links would be relatively unaffected by project implementation. Landowners affected by the impoundment would have an available market for their timber (in Canada). However they would likely be forced to sell at deflated prices because competition from Maine mills would be restricted.

7.3 Impact on Future Management Plans

Future management of the project area will be adversely affected by project implementation, particularly by access problems that would be created. Management on surrounding lands would be interrupted during project construction. That land area north of the impoundment and St. John River would likely require higher harvest volumes per acre than other areas in order to make harvests economical. This would also alter management schedules.

Management work pertaining to the spruce budworm would be seriously curtailed. The amount of current harvest work directed toward budworm is a direct function of access. Most of the commercial harvests are often marginal due to the low operable volumes and the degraded timber. Noncommercial treatments to reduce fir composition would also be curtailed. This situation would also apply to non-budworm related work.

The proposed impoundment would likely deflate stumpage prices, as compared to other areas. The deflated prices would discourage selective thinnings, additional road building and more intensive management planning, such as mapping, inventory and insect disease detection/protection.

Any new mill construction or expansion could also be deterred by difficulty to obtain timber or only at higher costs than usual.

8.0 IMPACTS OF PROJECT IMPLEMENTATION ON MANAGEMENT OF THE TIMBERLANDS IN AROOSTOOK COUNTY

In the event the Dickey-Lincoln Project is implemented, one of the initial impacts on timberland management will result from the activities related to harvesting the timber within the impoundment area. One could expect that the Federal Government would be competing with private industry for the services of local, experienced heavy equipment operators and other skilled workers. This could result in a shortage of the manpower necessary to properly manage the commercial forests. New access roads to the impoundment working area will also be required. Although much of this access road network will eventually be flooded, some will remain after completion of the project. It is possible that, if carefully planned, some of this road network could be advantageously used by the forest products industries. A major impact of project implementation could result from harvesting the timber within a large portion of the impoundment area. In Task 5 of this study, a detailed assessment was made of the possible impact this harvesting operation could have on marketability, timber management schedules and labor. Results of this assessment indicated that if an eight year harvesting schedule was instituted, the impact on markets, timberland management and labor would be considerably reduced. However, during this eight year harvesting operation, timber management practices and schedules would have to be revised to accommodate the volume of timber harvested from the impoundment area. In addition, the loss of this 76,163 acres of timberland within the impoundment area will necessarily affect future management plans.

On the basis of the data collected in the mill survey, approximately 46,400 MBF/yr. of sawtimber and 120,200 cords of pulpwood are presently harvested in the project area. Assuming these quantities would no longer be available if the project were implemented, the mills dependent upon this supply source would be competing with other mills in other areas of the County for these needed quantities. Although this is relatively a small percentage of the total Aroostook County yearly timber cut, it could conceivably increase stumpage prices. This potential impact would also be influenced by the existing market conditions.

In assuming the economic impact of project implementation on timberland management, transportation costs and access, it is important to consider the following:

- . The mill survey revealed that a relatively small percentage (7.0%) of the timber needs of Aroostook County mills is presently being harvested in the proposed project area.
- . Canadian mills along the frontier reported that they harvest about 19% of their sawtimber from the proposed project area.
- . Most of the timber harvested in the area bounded by the St. John River, the Little Black River and the Big Black River has been and is presently going to Canadian mills. Obviously, the vast majority of Maine mills are economically unable to compete for this stumpage even without implementation of the Dickey-Lincoln Project.
- . Although project implementation would definitely have some impact on the commercial working forest of Aroostook County during project construction, indications at this time are that the long term effects would be minimal.

SELECTED BIBLIOGRAPHY

1. Spruce Budworm in Maine, 1910-1976, Maine Forest Service 1977. Compiled by David Weed.
2. Spruce Budworm in Maine: 1977. Maine Department of Conservation, Bureau of Forestry, 1978.
3. Lee, H. T. and D. B. Field, 1978. Degrade and Decay of Spruce Fir Timber Spruce Budworm Attack - A Review. CRFU Report #2.
4. Belyea, R. M. 1952b. Death and Deterioration of Balsam Fir Weakened by Spruce Budworm, Part II: An Assessment of the Role of Associated Insect Species in the Death of Severely Weakened Trees. J. For. 50:729-738.
5. Nash, R. W. 1974. Proceedings from a Symposium on Spruce Budworm. U.S. Forest Service Publication No. 1327.
6. Hazelton, L. W. 1974. Proceedings from a Symposium on Spruce Budworm. U.S. Forest Service Publication No. 1327.
7. Irland, L. C. 1977. Maine's Spruce Budworm Program: Moving Toward Integrated Management. J. For. 77:774-777.
8. Ferguson, R. H. and N. P. Kingsley, 1972. The Timber Resources of Maine. USFS Bulletin NE-26.
9. Draft EIS, Dickey-Lincoln School Lakes Project, Appendix F. 1977. Prepared by Environmental Research and Technology, Inc.
10. Rea, James C. and M. W. Houseweart, 1978. Spruce Budworm Growth Impact Study.
11. Pelletier, James, Pellitier and Pellitier, Inc, Fort Kent, Maine 04743, (Personal Conversation).

~~██████████~~ 93961
TK U.S. Army. Corps of Engineers.
1425.
D5 Environmental impact state-
U52323 ment.
App.C

UNIVERSITY OF MAINE



3 7550 01328885 8