

COMMITTEE REPORT

HOUSE

FURTHER:

(11)

3/5/82

Date:

4/1/82

Mr. Speaker:

The Committee on FINANCE has had SSHB 126

"An Act making special appropriations for agricultural development in the Nenana-Totchaket area; and providing for an effective date."

under consideration and ~~(a majority of the committee)~~ ~~(the committee)~~ ----- reports it back with the following recommendations:

[ ] do pass [ ] do not pass

[ ] do pass with attached amendments(s)

[X] replace with CS for SSHB 126 (RCS) [X] same title [X] new title  
and recommends individual rec.

[ ] AND attaches a "Letter of Intent" [ ] New Fiscal Note

[ ] reports it back without recommendation

[ ] referred to the \_\_\_\_\_ Committee

MEMBERS SIGNING  
DO PASS

MEMBERS HAVING  
OTHER RECOMMENDATIONS:

\_\_\_\_\_  
\_\_\_\_\_  
R. B. Stinson  
Robert Stinson  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

See report on file  
Do not do and pass  
\_\_\_\_\_  
See report on file  
See report on file  
See report on file  
See report on file

Robert Stinson  
CHAIRMAN

Original sponsor: Moss

Offered: 3/5/82  
Referred: Finance

Funding Information

General Fund	\$600,000
Other Funds	-0-
	<u>\$600,000</u>

1 IN THE HOUSE

BY THE RESOURCES COMMITTEE

2 CS FOR SPONSOR SUBSTITUTE FOR HOUSE BILL NO. 126 (Resources)

3 IN THE LEGISLATURE OF THE STATE OF ALASKA

4 TWELFTH LEGISLATURE - SECOND SESSION

5 A BILL

6 For an Act entitled: "An Act making a special appropriation for a survey of  
7 farm lots in the Nenana-Totchaket area; and providing  
8 for an effective date."

9 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

10 \* Section 1. The sum of \$600,000 is appropriated from the general fund to  
11 the Department of Natural Resources, division of technical services, for a  
12 survey of farm lots in the Nenana-Totchaket area.

13 \* Sec. 2. The appropriation made by this Act is related to capital  
14 projects and is subject to AS 37.25.020.

15 \* Sec. 3. This Act takes effect immediately in accordance with AS 01.10.-  
16 070(c).

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rec'd after bill  
rep. out 4-2-82

## Fiscal Analysis

### Sponsor Substitute for HB 126

#### Assumptions:

1. No new positions are required to carry out the tasks described below.
2. Well-drilling, hydrographic surveying, and related tasks will be provided through contractual services.
3. The Department's laboratory has the capability to carry out the required water quality analysis.

A major question related to a primary Alaskan resource and a rapidly growing Alaskan industry remains unanswered: Does large scale agricultural development significantly affect the quality of public waters in Alaska? The funds requested in this fiscal note are to support water quality monitoring programs intended to answer that question.

Groundwater quality monitoring is an expensive procedure. Supplemental funds are requested because the activity requires expenditures beyond the fiscal capabilities of the Department's routine operating budget.

#### Groundwater Quality Monitoring: Nenana-Totchaket

The primary source of water in the Nenana-Totchaket area is groundwater; surface water is scarce. Groundwater sampled during the only water quality study that has been undertaken in the area indicated sufficiently high concentrations of arsenic, nickel, iron, and manganese to suggest that problems could develop if the untreated water were to be used for irrigation or drinking. The quality and dynamics of the groundwater resource is of particular significance in this region because it is entirely underlain by dune sand deposits that vary in thickness from 5-200 feet.

An appropriate water quality monitoring program in this area requires the drilling of ten 300'-500' test wells, and analysis of water samples from each well. The sampling period should be three years.

No new positions are required to carry out this program.

The total cost of the monitoring program is \$346,300. Major expenditures are for well-drilling (\$184,000), and for water quality analyses (\$40,000).

#### Surface Water Quality Monitoring: Delta

Several baseline water quality studies have been carried out in the vicinity of the Delta Project. Most of these studies, however, were completed prior to extensive agricultural development in the study areas. Only two follow-up studies are scheduled to commence in 1982, neither of which are specifically intended to monitor water quality.

Fiscal Analysis

-2-

An appropriate water quality monitoring program in this area requires collection and analysis of a total of 135 surface water samples from three stations over a three-year period.

No new positions are required to carry out this program. The total cost of the monitoring program is (\$92,000). Major expenditures are for water quality laboratory analyses (\$67,500).

Additional information is attached to this fiscal note.

Department of Environmental Conservation Perspective: Water Quality and  
Agricultural Development in Alaska

The State of Alaska possesses over 18 million acres of land suitable for intensive agricultural production; nearly 100 million additional acres are suitable for grazing. At present, only a tiny fraction of these lands are devoted to agriculture, and Alaska now imports nearly 95% of its food. In an effort to correct this situation, the state is promoting a program intended to bring 500,000 acres into agricultural production by 1990.

Large scale development of agriculture in Alaska began in 1978, with the launching of the Delta Agricultural Project. The Department of Natural Resources administers land disposal programs through which about 24,000 acres have now been brought to various stages of production. An additional 11,000 acres are scheduled for release in March, 1982 (Delta II East), and an additional 175,000 acres are being considered for agricultural disposal beginning in late 1982 or early 1983 (Nenana-Totchaket).

The rapid development of previously undisturbed land on such a massive scale introduces the threat of significant short term and long term deterioration of water quality in these areas. Potential threats to water quality that are related to agricultural development arise as a result of two major classes of activities: land development and ensuing agricultural operations.

Land development includes surveying, construction of access roads, bridges, and utilities, and land clearing. Primary water quality effects that can result from such activities are increases in sedimentation, suspended load, and concentration of plant nutrients; decreases in light transmission; and changes in temperature.

Agricultural operations include fertilizing, irrigation, seedbed preparation, chemical treatment of seeds, application of fungicides, insecticides, and herbicides, and so on. Primary water quality effects that can result from these activities are similar to those that result from land development, but in addition include introduction of fungicides, insecticides, and herbicides, and decreased concentration of dissolved oxygen.

Alaska's farming community is not unaware of the potential for development of such problems. During early stages of the Delta Project, a poll of the twenty-member Delta Citizen Council indicated unanimous support for allocating state funds for "air and water quality monitoring within the immediate area of the Delta agricultural community," and for assessing "the effect of large scale agriculture on the ecosystem."

The Department of Environmental Conservation -- charged with responsibility for protection of Alaska's public waters -- seeks to correct this situation by participating in resource management planning insofar as water quality is affected, and by undertaking a comprehensive water quality monitoring program in areas of large scale agricultural development.

Several baseline water quality studies have been carried out in the vicinity of the first agricultural development site, Delta I. These studies include a geohydrologic report by U.S.G.S., a water quality study by the Agricultural Experiment Station, a water quality and benthos investigation by the Institute of Water Resources, a pesticide residue sampling report by the U.S. Fish and Wildlife Service, and baseline studies related to air quality and wildlife. None of the studies produced evidence of significant water quality problems.

Most of the studies, however, were completed prior to extensive development in the area. Most of the investigators stressed the importance of continuous long term water quality monitoring in order to determine the effects, if any, of agricultural development on the region's surface and groundwater. Unfortunately, only two followup studies, one on nitrogen fertilizer fate, and another on pesticide residues, are scheduled to commence in 1982, and final results of these studies will probably not be available before 1985. Neither of these studies is specifically intended to monitor water quality.

The situation is considerably different in the Nenana-Totchaket region. Very little surface water is available in this area, which is underlain by formations of wind-deposited, water-bearing sand that ranges in thickness from 5 to 200 feet. Only one water resource investigation has been carried out in this vast area. Water samples taken during this study indicate that state drinking water standards for iron, manganese, and turbidity were exceeded. Concentrations of arsenic and nickel did not exceed state standards, but were sufficiently high to suggest that problems could develop with respect to crop development and dairy application. The investigator concluded that "the data ... indicate potential problems from arsenic and nickel concentrations should ... groundwater be used for irrigation." A minor, but potentially significant result of this study was the detection of a chlorinated hydrocarbon (lindane) in an area in which the substance is not known to have been applied.

The Division of Geological and Geophysical Services plans to drill one or two additional wells in the Nenana-Totchaket area, several miles to the south and west of this well. Scheduling of this activity will depend upon favorable weather conditions. DGGs staff have been careful to point out that the drilling of this additional well(s) will not provide for a comprehensive analysis of the region's groundwater resources.

Hydrological studies are omitted from this report because such studies do not ordinarily fall within the purview of the Department of Environmental Conservation. However, water quality and hydrology are intimately related, and the omission of hydrological studies should not be construed as an indication that such work is not necessary in the Nenana area. A detailed description of hydrological work required in the Nenana area is contained in the Peterson Report cited below:

To summarize:

Delta. Too few followup studies have been undertaken in this area to determine whether or not agricultural development has significant effects on water quality.

Nenana -- Too little preliminary work has been carried out to indicate whether or not ambient water quality is suitable for agricultural development. Evidence indicating the existence of potential groundwater problems has been discovered.

The Department of Environmental Conservation considers that an appropriate monitoring program should address both of these concerns, and should be carried out as follows:

#### Delta

Surface water samples should be collected at each of 3 to 5 sites on a biweekly basis from April through September, and bimonthly during the rest of the year.

One hundred thirty-five samples should be collected over a three-year study period. Analysis of samples should include the standard suite of water quality parameters, with particular attention to nitrogens and 2-4,D.

### Nenana

Groundwater supply sources will predominate in this region; accordingly, water quality studies should focus on this resource. Such studies, exclusive of hydrologic work, should be conducted as described in the report, "Water Resource Investigation of the Nenana Agricultural Project Area," Larry Peterson et. al., 1981. The work requires the drilling of ten 300'-500' test wells in the study area, and analysis of water samples from each well. Analysis of samples should include the standard suite of water quality parameters, with particular attention to arsenic, nickel, and lindane.

The precise cost of these studies will depend upon how much of the work were to be conducted by DEC staff and lab, and how much conducted by contractual arrangement. A preliminary budget estimate, based on the assumption that most of the work would be assigned by contract, is attached.

Two bills related to agricultural development in the Nenana area (HB 126 and SB 702) are rapidly progressing through the Alaska State Legislature. House Bill 126 proposes allocation of the state funds to the Department of Natural Resources for removal and marketing of timber, agronomic studies, surveys, and planning, processing, and marketing activities. Senate Bill 702 proposes allocation of state funds to the Alaska Agricultural Action Council for survey and disposal activities, land-clearing loans, and road construction.

Allocation of funds for determination and monitoring of water quality in the Delta and Nenana areas have not been included in these bills. The Department of Environmental Conservation proposes that \$438,300 be added to them for the purpose of carrying out the water quality studies that are an essential prerequisite to large scale development of agriculture in Alaska.

Estimated Program Budget - Ground and Surface Water Quality Monitoring and Large Scale Agricultural Development

<u>Groundwater Program</u>	<u>FY 83</u>	<u>FY 84</u>	<u>FY 85</u>	
Geologist/Hydrologist - 700 hrs @ \$45/hr.	32,500	-----	-----	
Vehicle/Per Diem - 84 days @ \$125/day	5,750	2,375	2,375	
Drilling ten 400' wells @ \$46/foot	184,000	-----	-----	
Ground Control (survey)	50,000	-----	-----	
Bulldozer (for access) - 200 hrs @ \$75/hr plus mobilization	17,000	-----	-----	
Groundwater quality analysis - 80 @ \$500 each	20,000	10,000	10,000	
Field monitoring equipment (pumps, generators, sensing devices)	10,000	-----	-----	
Equipment (chemicals, samplers, etc)	<u>2,000</u>	<u>1,000</u>	<u>1,000</u>	
	\$321,250	\$13,375	\$13,375	TOTAL \$348,000
<u>Surface Water Program</u>				
Principal - 40 hrs @ \$75/hr	5,000	-----	-----	
Biological technician - 360 hrs @ \$25/each	3,000	3,000	3,000	
Water quality analysis - 135 @ \$500/each	22,500	22,500	22,500	
Vehicle/Per Diem - 48 days @ \$125/day	2,000	2,000	2,000	
Administrative overhead/printing	<u>1,500</u>	<u>1,500</u>	<u>1,500</u>	
	\$34,000	\$29,000	\$29,000	TOTAL <u>\$92,000</u>
				PROGRAM TOTAL: \$440,000

THE LEGISLATURE OF THE STATE OF ALASKA  
TWELFTH LEGISLATURE

FISCAL NOTE

I. REQUEST

Bill/Resolution No. Sponsor Substitute for HB 126  
 Title Special Appropriations for Agricultural Development in Nenana - Totchaket  
 Requested by Department of Environmental Conservation Date March 1, 1982

II. FISCAL DETAIL

Agency Affected Department of Environmental Conservation  
 Program Category Affected \_\_\_\_\_  
 BRU, Program, Or Subprogram(s) Affected BRU: EQO (Lab, \$348.0) (NRO \$92.0)  
 (Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
100 PERSONAL SERVICES		3.0	3.0	3.0		
200 TRAVEL		7.8	2.0	2.0		
300 CONTRACTUAL		331.0	34.9	34.9		
400 COMMODITIES		3.5	2.5	2.5		
500 EQUIPMENT		10.0				
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL		355.3	42.4	42.4		

FUNDING (Thousands of Dollars)

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GENERAL FUND		355.3	42.4	42.4		
FEDERAL FUNDS						
OTHER (Specify Source)						

POSITIONS

	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
FULL TIME						
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instruction, Section III)

Attached

NOTE: The attached supporting document, "Department of Environmental Conservation Perspective: Water Quality and Agricultural Development in Alaska," was slightly amended on 18 March, 1982.

IV. DATE March 1, 1982 PREPARED BY Bill Leitch  
 AGENCY ADEC  
 Original: Legislative Finance PHONE 465-2653  
 cc: Budget and Management  
 Prime Sponsor (First Legislator Named)  
 33-001 (Rev. 12/81)

## Fiscal Analysis

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				PROGRAM TOTAL: \$440,000

RECEIVED

MAR 8 1982

THE LEGISLATURE OF THE STATE OF ALASKA  
TWELFTH LEGISLATURE

LEGISLATIVE FINANCE

FISCAL NOTE

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FEDERAL FUNDS						
OTHER (Specify Source)						

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Attached

IV. DATE March 1, 1982 PREPARED BY Bill Leitch  
AGENCY ADEC  
Original: Legislative Finance PHONE 465-2653  
cc: Budget and Management  
Prime Sponsor (First Legislator Named)  
33-001 (Rev. 12/81)

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The State of Alaska possesses over 18 million acres of land suitable for intensive agricultural production; nearly 100 million additional acres are suitable for grazing. At present, only a tiny fraction of these lands are devoted to agriculture, and Alaska now imports nearly 95% of its food. In an effort to correct this situation, the state is promoting a program intended to bring 500,000 acres into agricultural production by 1990.

Large scale development of agriculture in Alaska began in 1978, with the launching of the Delta Agricultural Project. The Department of Natural Resources administers land disposal programs through which about 50,000 acres have now been brought to various stages of production. An additional 11,000 acres are scheduled for release in March, 1982 (Delta II East), and an additional 175,000 acres are being considered for agricultural disposal in late 1982 or early 1983 (Nenana-Totchaket).

The rapid development of previously undisturbed land on such a massive scale introduces the threat of significant short term and long term deterioration of water quality in these areas. Potential threats to water quality that are related to agricultural development arise as a result of two major classes of activities: land development and ensuing agricultural operations.

Land development includes surveying, construction of access roads, bridges, and utilities, and land clearing. Primary water quality effects that can result from such activities are increases in sedimentation, suspended load, and concentration of plant nutrients; decreases in light transmission; and changes in temperature.

Agricultural operations include fertilizing, irrigation, seedbed preparation, chemical treatment of seeds, application of fungicides, insecticides, and herbicides, and so on. Primary water quality effects that can result from these activities are similar to those that result from land development, but in addition include introduction of fungicides, insecticides, and herbicides, and decreased concentration of dissolved oxygen.

Alaska's farming community is not unaware of the potential for development of such problems. During early stages of the Delta Project, a poll of the twenty-member Delta Citizen Council indicated unanimous support for allocating state funds for "air and water quality monitoring within the immediate area of the Delta agricultural community," and for assessing "the effect of large scale agriculture on the ecosystem."

Alaska's agricultural lands are being disposed of so rapidly that state agencies have had difficulty completing resource management plans and preliminary resource studies before the lands are released. At present, these plans contain little or no consideration for water quality management.

The Department of Environmental Conservation -- charged with responsibility for protection of Alaska's public waters -- seeks to correct this situation by participating in resource management planning insofar as water quality is affected, and by undertaking a comprehensive water quality monitoring program in areas of large scale agricultural development.

Several baseline water quality studies have been carried out in the vicinity of the first agricultural development site, Delta I. These studies include a geohydrologic report by U.S.G.S., a water quality study by the Agricultural Experiment Station, a water quality and benthos investigation by the Institute of Water Resources, a pesticide residue sampling report by the U.S. Fish and Wildlife Service, and baseline studies related to air quality and wildlife. None of the studies produced evidence of significant water quality problems. Most of the studies, however, were completed prior to extensive development in the area. Most of the investigators stressed the importance of continuous long term water quality monitoring in order to determine the effects, if any, of agricultural development on the region's surface and groundwater. Unfortunately, only two followup studies, one on nitrogen fertilizer fate, and another on pesticide residues, are scheduled to commence in 1982, and final results of these studies will probably not be available before 1985. Neither of these studies is specifically intended to monitor water quality.

The situation is considerably different in the Nenana-Totchaket region. Very little surface water is available in this area, which is underlain by formations of wind-deposited, water-bearing sand that ranges in thickness from 5 to 200 feet. Only one water resource investigation has been carried out in this vast area. Water samples taken during this study indicate that state drinking water standards for iron, manganese, and turbidity were exceeded. Concentrations of arsenic and nickel did not exceed state standards, but were sufficiently high to suggest that problems could develop with respect to crop development and dairy application. The investigator concluded that "the data ... indicate potential problems from arsenic and nickel concentrations should ... groundwater be used for irrigation." A minor, but potentially significant result of this study was the detection of a chlorinated hydrocarbon (Lindane) in an area in which the substance is not known to have been applied.

Hydrological studies are omitted from this report because such studies do not ordinarily fall within the purview of the Department of Environmental Conservation. However, water quality and hydrology are intimately related, and the omission of hydrological studies should not be construed as an indication that such work is not necessary in the Nenana area. A detailed description of hydrological work required in the Nenana area is contained in the Peterson Report cited below.

To summarize:

Delta. Too few followup studies have been undertaken in this area to determine whether or not agricultural development has significant effects on water quality.

Nenana -- Too little preliminary work has been carried out to indicate whether or not ambient water quality is suitable for agricultural development. Evidence indicating the existence of potential groundwater problems has been discovered.

The Department of Environmental Conservation considers that an appropriate monitoring program should address both of these concerns, and should be carried out as follows:

### Delta

Surface water samples should be collected at each of 3 to 5 sites on a biweekly basis from April through September, and bimonthly during the rest of the year. One hundred thirty-five samples should be collected over a three-year study period. Analysis of samples should include the standard suite of water quality parameters, with particular attention to nitrogens and 2-4,D.

### Nenana

Groundwater supply sources will predominate in this region; accordingly, water quality studies should focus on this resource. Such studies, exclusive of hydrologic work, should be conducted as described in the report, "Water Resource Investigation of the Nenana Agricultural Project Area," Larry Peterson et. al., 1981. The work requires the drilling of ten 300'-500' test wells in the study area, and analysis of water samples from each well. Analysis of samples should include the standard suite of water quality parameters, with particular attention to arsenic, nickel, and Lindane.

The precise cost of these studies will depend upon how much of the work were to be conducted by DEC staff and lab, and how much conducted by contractual arrangement. A preliminary budget estimate, based on the assumption that most of the work would be assigned by contract, is attached.

Two bills related to agricultural development in the Nenana area (HB 126 and SB 702) are rapidly progressing through the Alaska State Legislature. House Bill 126 proposes allocation of the state funds to the Department of Natural Resources for removal and marketing of timber, agronomic studies, surveys, and planning, processing, and marketing activities. Senate Bill 702 proposes allocation of state funds to the Alaska Agricultural Action Council for survey and disposal activities, land-clearing loans, and road construction,

Allocation of funds for determination and monitoring of water quality in the Delta and Nenana areas have not been included in these bills. The Department of Environmental Conservation proposes that \$438,300 be added to them for the purpose of carrying out the water quality studies that are an essential prerequisite to large scale development of agriculture in Alaska.

Estimated Program Budget - Ground and Surface Water Quality Monitoring and Large Scale Agricultural Development

<u>Groundwater Program</u>	<u>FY 83</u>	<u>FY 84</u>	<u>FY 85</u>	
Geologist/Hydrologist - 700 hrs @ \$45/hr.	32,500	-----	-----	
Vehicle/Per Diem - 84 days @ \$125/day	5,750	2,375	2,375	
Drilling ten 400' wells @ \$46/foot	184,000	-----	-----	
Ground Control (survey)	50,000	-----	-----	
Bulldozer (for access) - 200 hrs @ \$75/hr plus mobilization	17,000	-----	-----	
Groundwater quality analysis - 80 @ \$500 each	20,000	10,000	10,000	
Field monitoring equipment (pumps, generators, sensing devices)	10,000	-----	-----	
Equipment (chemicals, samplers, etc)	<u>2,000</u>	<u>1,000</u>	<u>1,000</u>	
	\$321,250	\$13,375	\$13,375	TOTAL \$348,000
 <u>Surface Water Program</u>				
Principal - 40 hrs @ \$75/h.	5,000	-----	-----	
Biological technician - 360 hrs @ \$25/each	3,000	3,000	3,000	
Water quality analysis - 135 @ \$500/each	22,500	22,500	22,500	
Vehicle/Per Diem - 48 days @ \$125/day	2,000	2,000	2,000	
Administrative overhead/printing	<u>1,500</u>	<u>1,500</u>	<u>1,500</u>	
	\$34,000	\$29,000	\$29,000	TOTAL <u>\$92,000</u>
				PROGRAM TOTAL: \$440,000

1 related to capital projects and are subject to AS 37.25.020.

2 \* Sec. 7. The unexpended and unobligated portion of the appropriation  
3 made by sec. 4 of this Act lapses into the general fund June 30, 1984.

4 \* Sec. 8. This Act takes effect immediately in accordance with AS 01.10.-  
5 070(c).

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Original sponsor: Moss

Offered: 3/5/82  
Referred: Finance

Funding Information

General Fund	\$600,000
Other Funds	-0-
	<u>\$600,000</u>

1 IN THE HOUSE

BY THE RESOURCES COMMITTEE

2 CS FOR SPONSOR SUBSTITUTE FOR HOUSE BILL NO. 126 (Resources)

3 IN THE LEGISLATURE OF THE STATE OF ALASKA

4 TWELFTH LEGISLATURE - SECOND SESSION

5 A BILL

6 For an Act entitled: "An Act making a special appropriation for a survey of  
7 farm lots in the Nenana-Totchaket area; and providing  
8 for an effective date."

9 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

10 \* Section 1. The sum of \$600,000 is appropriated from the general fund to  
11 the Department of Natural Resources, division of technical services, for a  
12 survey of farm lots in the Nenana-Totchaket area.

13 \* Sec. 2. The appropriation mad. by this Act is related to capital  
14 projects and is subject to AS 37.25.020.

15 \* Sec. 3. This Act takes effect immediately in accordance with AS 01.10.-  
16 070(c).

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