

MINUTES OF THE HOUSE COMMITTEE ON COMMUNICATIONS, COMPUTERS AND TECHNOLOGY

The meeting was called to order by Representative Mike Meacham at
Chairperson

3:30 ~~xxx~~ p.m. on January 25, 1984 in room 522-S of the Capitol.

All members were present except:

Committee staff present:

Sherry Brown, Fiscal Staff, Research Department
Chris Stanfield, Fiscal Staff, Research Department
James A. Wilson, III, Senior Assistant Revisor
Betty Ellison, Secretary to the Committee

Conferees appearing before the committee:

Representative Ron Fox
Dr. Edward A. Martinko, Chairman, Kansas Interagency Task Force
on Applied Remote Sensing
Mr. Verlon Evert, Kansas Fish and Game Commission

Chairman Mike Meacham called the meeting to order. He introduced Representative Fox, sponsor of House Bills 2670 and 2673.

Representative Fox stated that he was appointed to the Task Force on Remote Sensing two years ago and that he feels the data produced by the Kansas Applied Remote Sensing (KARS) program is a resource that this state cannot afford to lose. He felt that their data base could provide data on a wide range of natural resources as well as data dealing with the possibility of reassessment and reappraisal in the future. Representative Fox said that the KARS program had done an admirable job with the money available to them and that what these two bills propose would give them a financially solid footing for dealing with natural resources and an inventory of surface water.

Dr. Edward Martinko read from his prepared testimony and referred to the Executive Summary of the Final Report and Recommendations of the Kansas Interagency Task Force on Applied Sensing, December, 1983. (Attachments 1 and 2) Complete copies of the Final Report and Recommendations of the Kansas Interagency Task Force on Applied Remote Sensing, Volumes I and II, may be found for reference in the Legislative Research Department.

As examples of remote sensing, Dr. Martinko showed the Committee an aerial photograph of the Topeka area and a Landsat satellite image of the Kansas City-Lawrence-Topeka area, describing the information that can be extracted from them. He also explained how computer-based geographic information systems (GIS) are used for integrating and analyzing data obtained from remote sensing and other sources. He summarized four recommendations of the Task Force--one would provide baseline funding of \$117,000 from General Revenue for July, 1984-June, 1985.

Among materials provided the Committee was a document listing members and agencies participating in the Task Force, along with letters of support submitted by various agencies represented on the Task Force. (Attachment 3) Also included in the packet of materials were two booklets: Earth Resources Data and the States, published by the Council of State Planning Agencies in January, 1981 and NASA Facts, a publication which summarizes facts about the Landsat technology and its utilization. Copies of these may be found in the Legislative Research Department.

CONTINUATION SHEET

MINUTES OF THE HOUSE COMMITTEE ON COMMUNICATIONS, COMPUTERS AND TECHNOLOGY,
room 522-S, Statehouse, at 3:30 ~~xxx~~/p.m. on January 25, 1984.

In discussing House Bill 2670, Dr. Martinko emphasized that the Task Force has provided a forum in which agencies may regularly share ideas and define areas and means of coordination and cost-sharing with a minimum of duplication.

In reply to a question of Representative Chronister, Dr. Martinko said that the KARS program currently has two funding sources: (1) NASA Baseline Funding of approximately \$125,000 specifically to assist Kansas agencies--this funding has been stepped down and will be discontinued March 31, 1984; (2) a baseline funding level of approximately \$47,500 which was provided by an appropriation of the 1982 Kansas Legislature. Additional grants and contracts become available from time to time, such as research for NASA, etc. At the present time there are three full-time individuals, one half-time individual and approximately four half-time graduate students working in the program, as well as one full-time secretary.

Regarding House Bill 2673, Dr. Martinko said that the Task Force focused much attention specifically on the need for a comprehensive up-to-date inventory of surface water in the state. Such an inventory would provide important baseline data regarding the locations and surface acreages of impounded surface waters which could be used by state agencies, the Legislature, the Governor's Office and others.

In answer to a question of Chairman Meacham regarding duplication of data gathered by other agencies, Dr. Martinko stated that this information provides a different type of framework into which other kinds of information can be combined or put together.

Mr. Verlon Evert of the Kansas Fish and Game Commission testified in favor of both bills. He stated that he participated in the Task Force as a representative of his department and that his agency strongly supports the idea of continuing the efforts of the Task Force.

The meeting was adjourned at 4:30 p.m.

The next meeting of the Committee will be held at 3:30 p.m. on January 26, 1984.

Report

of

Edward A. Martinko
Chairperson, Kansas Interagency Task Force
on Applied Remote Sensing

to the

House Committee on Communications,
Computers and Technology

concerning

HB 2670 and HB 2673

January 25, 1984

Attachment 1
House Communications, Computers and Technology

1/25/84

Chairman Meacham, members of the Committee. I am pleased to have this opportunity to testify on HB 2670, a bill which would create a Kansas Commission on Applied Remote Sensing, and HB 2673, calling for conduct of a surface water inventory for the State of Kansas. I would like to address you today in my capacity as Chairperson of the Kansas Interagency Task Force on Applied Remote Sensing, a group of state agencies established by the 1982 Kansas Legislature (Senate Concurrent Resolution No. 1644) to evaluate ways in which remote sensing and geographic information systems technologies can be most efficiently and effectively maintained to serve the needs of the State of Kansas. Both remote sensing and geographic information systems rely heavily on use of computers and other high technologies.

Background

Prior to presenting my remarks on HB 2670 and HB 2673, it is necessary to review pertinent factors which led to the development of these bills, resulting from work of the Kansas Interagency Task Force on Applied Remote Sensing. Membership on the Task Force included representatives of the major natural resources agencies in Kansas, groundwater management districts, county government, the Legislature and the Governor's Office. The Task Force was directed to evaluate ways in which remote sensing/geographic information systems technologies could best be utilized by Kansas agencies and policymakers, and to develop recommendations regarding access to these technologies through the Kansas Applied Remote Sensing (KARS) Program. The Task Force was further directed to present its findings to the Governor and the Kansas Legislature in December 1983.*

The KARS Program is a program of the University of Kansas founded specifically to assist Kansas agencies and others in evaluating and using remote sensing and related spatial data analysis techniques. In the past (1972-1983), funding for these efforts has been provided through grants from the National Aeronautics and Space Administration (NASA). For more than a decade, NASA provided funds to the KARS Program to carry out free training, technology transfer and demonstration project activities in Kansas. Over 40 projects were conducted with agencies, firms and local units of government. These included, for example, an inventory of irrigated lands in southwestern

*Final Report and Recommendations of the Kansas Interagency Task Force on Applied Remote Sensing. December 1983.

Kansas, evaluation of potential pronghorn antelope release sites, assessment of rangeland conditions, inventory of prime agricultural lands and assessment of soil erosion for the Soldier Creek watershed. More than 2,500 Kansans have participated in technology transfer activities (short courses, Governor's Conference on Applied Remote Sensing, presentations, KARS Newsletter).

The Technologies

Remote sensing is the science of acquiring information about an object or area in the absence of physical contact with the entity of interest. Remote sensing instruments mounted in aircraft, satellites and the Space Shuttle can provide cost-effective, valuable and often unique information about the land and water resources of Kansas. Pictures taken from the Landsat satellite, for example, survey every acre of Kansas every 16 days. Such data can be processed by computers to produce maps of crops, water, cities and towns, grassland, forests and other features. This information can be used in almost unlimited ways. Counties may employ it for planning or for tax appraisal, state and federal agencies for water resource assessment, wildlife habitat evaluation, management of soil erosion, or cropland inventories.

Computer-based *geographic information systems* (GIS) are powerful tools for integrating and analyzing data obtained from such disparate sources as remote sensing, soils surveys, county land ownership maps, and water quality records. Geographic information systems facilitate the rapid, accurate evaluation of complex interrelationships among the many variables that bear on water resources, planning, agricultural and other issues. An especially useful feature of a geographic information system is the capability of producing composite maps developed from many sources of data.

Task Force Recommendations

After nearly two years of deliberations, the Task Force developed four recommendations concerning the value of remote sensing and geographic information systems technologies. These are as follows:

1. THE KANSAS APPLIED REMOTE SENSING (KARS) PROGRAM SHOULD BE MAINTAINED AT THE UNIVERSITY OF KANSAS.

The KARS Program has been nurtured by the University of Kansas for over 10 years and has been provided support, facilities and a line in the University's budget. KARS currently operates in a fashion similar to that of the Kansas Geological Survey, a mode which the Task Force strongly endorses. The KARS Program has assembled a skilled staff and established a well-equipped laboratory in Lawrence. The Program benefits greatly from having direct access to the facilities and staff of the University at large (e.g., faculty, libraries, computer center, Kansas Geological Survey, State Biological Survey of Kansas). It also is complemented by the University's internationally recognized Remote Sensing Laboratory (RSL), a research organization which develops new remote sensing technology, much of which will be of great use to Kansans in coming years. The KARS Program and RSL are housed together in the Space Technology Center and have a synergistic relationship.

The Task Force believes that institutionalization of the KARS Program within the University of Kansas, rather than in any other agency, will help ensure that services provided and data collected, analyzed and archived will be used fully and equitably by all potential users. The Task Force respectfully recommends that the KARS Program be maintained as a program of the University of Kansas Space Technology Center, and that all necessary steps be taken by the University, the Board of Regents, the Office of the Governor and the Legislature to sustain and enhance the Program as required to meet the needs of the State of Kansas.

2. THE KANSAS APPLIED REMOTE SENSING (KARS) PROGRAM SHOULD BE PROVIDED BASELINE FUNDING FROM GENERAL REVENUE IN THE AMOUNT OF \$117,000 FOR THE PERIOD OF JULY 1984 - JUNE 1985.

The Task Force believes that "baseline funding" from general revenue is required to enable long-term planning, provide continuity in KARS staff and programs and to support many products and services which are non-project-related and, thus, cannot be charged to a single user agency. Baseline funding would provide:

- Retention of a skilled, experienced core staff,
- Staff support for the Commission on Applied Remote Sensing (see Recommendation 4 below),
- Maintenance of KARS equipment, aerial photography and Landsat imagery, library, computer system and software,
- Communications (e.g., Commission mailings, telephone, reports, KARS Newsletter),
- Consulting and information services for Kansas state and local agencies, the Legislature and Governor's Office,
- Assistance in project development, design and proposal preparation,
- Training and short courses, briefings and presentations for public agencies and professional groups and the Commission on Applied Remote Sensing,
- Travel in support of the above services, and
- Support of individual research or applications projects of state-wide interest, dependent on level of baseline funding.

3. THREE MECHANISMS SHOULD BE AVAILABLE FOR FUNDING PROJECTS UNDERTAKEN BY THE KARS PROGRAM ON BEHALF OF STATE AGENCIES:

- The fee fund should be continued so that agencies can transfer money directly to the KARS Program to accomplish projects of interest to individual agencies.
- Agencies could jointly propose projects that are of particular interest to more than one agency, but are not necessarily of general, all-encompassing need.
- Issues of statewide/general importance and/or of importance to the Governor or Legislature could be addressed by bills submitted by interested legislators; funds would not be drawn from any one agency's budget.

The Task Force respectfully requests that the Office of the Governor and the Legislature consider means by which agencies that propose to use high technologies (e.g., remote sensing/geographic information systems), to carry out their mandates, charges and responsibilities in a better, more cost-effective or more timely manner may be encouraged and rewarded. The Task Force recommends that interagency cooperative efforts receive special encouragement and consideration.

The Task Force has identified a number of issues of statewide importance and of interest to many agencies to which the KARS Program can make unique and substantial contributions. Such issues include water resources management, property reappraisal and soil erosion assessment. The Task Force recommends that projects of statewide importance be defined through appropriate legislation and be funded through the general revenue rather than through the budget of any one agency.

4. A COMMISSION ON APPLIED REMOTE SENSING SHOULD BE ESTABLISHED BY STATUTE TO CONTINUE THE WORK OF THE KANSAS INTERAGENCY TASK FORCE ON APPLIED REMOTE SENSING. THERE SHOULD BE AN ANNUAL REVIEW OF THE COMMISSION AND THE KARS PROGRAM BY THE LEGISLATURE, AND A GENERAL REVIEW IN JANUARY 1987, WITH CONSIDERATION GIVEN TO DESIGNATING THE KARS PROGRAM AN OPERATIONAL PROGRAM AND/OR PROVIDING IT AGENCY STATUS.

The Kansas Interagency Task Force on Applied Remote Sensing has established that the high technologies of remote sensing and geographic information systems are of immediate value to the State of Kansas, has proposed means by which the State may make better use of these technologies, and has provided a unique opportunity for representatives of the Governor, the Legislature, Kansas agencies and others (federal agencies, counties) to share concerns, identify mutual interests, and work cooperatively to achieve objectives of common interest. It is clear that there would be great value in having a permanent body which could continue and expand upon the work of the Task Force.

These recommendations were unanimously supported by the members of the Task Force, and have been endorsed by many of the agency heads. HB 2670 and HB 2673 were submitted as a direct result of these recommendations.

HB 2670

Throughout the past two years, it became apparent to all involved that the Kansas Interagency Task Force on Applied Remote Sensing served a valuable and unique function in Kansas state government over and above its assigned mission of evaluating remote sensing and geographic information systems technologies and access to these techniques through the KARS Program. The Task Force has provided a forum in which agencies may regularly

share ideas, identify common interests and define areas and means of cooperation. Remote sensing and geographic information systems technologies are powerful tools that encourage and facilitate cooperation, coordination and cost-sharing. The Task Force has clearly served a useful purpose in promoting such cooperative work, and in working to ensure that unnecessary duplication of effort is avoided.

Task Force members concurred that some form of permanent interagency commission or council should be established to aggressively evaluate and promote the use of remote sensing/geographic information systems technologies wherever warranted, ensure that agencies cooperated and coordinated activities so as to prevent unnecessary duplication of effort, and assist all Kansans in evaluating and using new techniques as they are developed.

The Commission would continue and enhance the work of the Task Force by (1) providing a mechanism to coordinate ongoing and planned data collection and analysis efforts; (2) making existing information more accessible, and identifying gaps in current knowledge; (3) facilitating savings in time and costs in gathering information; (4) providing the State of Kansas a unique status in the eyes of federal data-producing agencies, making the state an attractive place for pilot projects on new methods of data collection and dissemination; and (5) making available new technologies in spatial modeling, remote sensing and other areas where advances are rapidly taking place.

Membership on the Commission would be essentially the same as it was on its predecessor, the Kansas Interagency Task Force, with the addition of the Kansas Department of Transportation. Federal and local agencies and private firms would also be encouraged to participate on the Commission.

The duties of the Commission, as outlined in HB 2670, would be to:

- (a) Assist users in assessing the capabilities, costs and alternatives for employing remote sensing or related geographic information systems technologies;
- (b) Serve as a forum for interagency communication, coordination and cooperation for the use of remote sensing and geographic information systems technologies;
- (c) Advise the KARS Program regarding the data and informational needs of Commission members;

- (d) Disseminate information regarding new developments and capabilities in high technologies pertaining to remote sensing and geographic information systems; and
- (e) Prepare and present annual reports to the Governor and Legislature, and recommend funding levels for the KARS Program and the Commission in the subsequent fiscal year; and make recommendations to each regular session of the Legislature and to the Governor concerning necessary or advisable legislation relating to issues of statewide importance concerning remote sensing or geographic information systems technologies.

The Commission would prepare and present to the Governor and Legislature on or before May 31, 1986, a report and any recommendations regarding the need for an integrated, comprehensive Kansas resources information center.

HB 2673

During the course of the Task Force's deliberations, a number of issues were identified that were of statewide importance and of interest to many agencies, for which remote sensing and geographic information systems technologies could make unique and substantial contributions. Such issues included water resources management, property reappraisal and soil erosion assessment.

The Task Force focused much attention specifically on the need for a comprehensive, up-to-date inventory of surface water in the State of Kansas. Such an inventory is of general statewide interest in that it would provide important baseline data regarding the locations and surface acreages of impounded surface waters. This information would be extremely useful to the public, the Legislature, the Governor's Office and private industries in Kansas, providing summary information that currently does not exist in a single, readily accessible form.

Several state agencies in Kansas have also identified applications of the surface water inventory for their planning and management efforts. The Kansas Fish and Game Commission, for example, would utilize this information for wildlife habitat assessment, projection of future recreational water needs, and as ancillary data related to determination of minimum stream-flows. The Department of Revenue could use a comprehensive inventory of ponds to verify their tax exempt status (Statutes 79-201G). The Department of Health and Environment could supplement their inventory of publicly-owned

lakes (required for the Clean Lakes Program) and, by merging the surface water inventory with surface drainage features, could facilitate the development of recommended effluent levels. The Kansas State Board of Agriculture/Division of Water Resources could use the inventory as a supplemental data source for identifying the locations of dams not currently documented in their dam inventory. Other potential applications include merging the surface water inventory with existing information on water volume, sedimentation rates, water quality, available capacity and other variables to identify potential water supplies in time of drought.

The objectives of the proposed surface water inventory are to:

- (1) Inventory the impounded surface water resources of the State of Kansas as they exist in 1983 (or at the most recent date of Landsat coverage)
- (2) Create a computer data base on impounded surface water resources of the State of Kansas capable of producing maps and areal statistics of such water resources and of being integrated with other data to be collected concurrently or subsequently.

Data acquired from a Landsat satellite would be used for completing the inventory of surface water. Landsat satellites acquire data in a digital mode (rather than as photographs), and consequently, the data can be easily processed using computer techniques--i.e., the process is not labor-intensive. Other unique features of satellite data make this source particularly desirable, including:

- The large area covered by a single Landsat scene (approximately 13,000 square miles) offers the advantage of a synoptic view.
- Landsat's 16-day coverage cycle offers the capability for acquiring up-to-date information.
- Because Landsat data are computer compatible, they can be merged with other types of digital data.
- Landsat digital data are acquired in several distinct wavelength bands which can be analyzed separately or in combination. Two of these wavelength bands are beyond visible light, and provide unique opportunities for discriminating features on the basis of information not observable by humans.

The surface water data would be stored in a geographic information system, so that it could be analyzed in concert with other data.

One complete set of maps portraying surface water would be generated at a scale of 2 1/2" = 1 square mile, together with areal statistics by quadrangle, county, township, section, and watershed. The data base developed by the Kansas Applied Remote Sensing Program would be maintained by the Program. In this way, map and statistical products derived from the data base (in addition to standard products mentioned above) could be provided upon request at various scales and in a variety of formats to meet the needs of potential users.

Concern for our water resources has produced increased needs for reliable data, so that the status of our resources can be accurately accessed and monitored over time. HB 2673 would provide for a comprehensive up-to-date inventory of our surface water resources that could be used by state agencies, the Legislature, the Governor's Office and others. This surface water inventory effort would also provide a framework in which other types of information could be added (for example, soils, vegetation, topography), thereby facilitating complex tasks such as tax reappraisal, corridor analysis, selection of hazardous waste disposal sites and evaluation of wildlife habitats.

Final Report
and
Recommendations
of the
Kansas Interagency Task Force on Applied Remote Sensing
Executive Summary

Submitted to
The Governor
and the
Kansas Legislature

December 1983

House Communications, Computers and Technology

Attachment 2

1/25/84

Executive Summary

I. Introduction

The Kansas Applied Remote Sensing (KARS) Program was established in 1972 at the University of Kansas by the National Aeronautics and Space Administration (NASA). KARS was founded specifically to assist Kansas agencies and firms in evaluating and using remote sensing and related geographic information systems technologies. For 10 years NASA provided funds to the KARS Program to carry out free training, technology transfer and demonstration project activities in Kansas. In 1981, NASA decided that funds provided to state programs such as KARS would be re-directed from applications activities to basic research. The State of Kansas was provided a three-year period in which, if it wished, it could establish independent means for sustaining the operational applications, service and training functions provided by KARS to Kansas agencies.

In order to assess alternatives for greater and more operational utilization of remote sensing/geographic information systems technologies in the State of Kansas, representatives of several Kansas agencies and the KARS Program established an Interagency Task Force on Applied Remote Sensing in May 1981. The Task Force was formally recognized and provided a mission by the Kansas Legislature in April 1982. Senate Concurrent Resolution 1644 directed the Task Force to evaluate the ways the KARS Program could be most efficiently and effectively maintained.

The Task Force's Interim Report, A Program to Enhance the Utility of Remote Sensing and Related Technologies Within the Framework of a Kansas Resources Information Center, was submitted to the Governor and the Kansas Legislature in December 1982. In this, the final report of the Task Force, the issues addressed by the Task Force are reviewed, and recommendations regarding the need for remote sensing and related geographic information systems technologies in Kansas are presented.

II. Background

Remote sensing is the science of acquiring information about an object or area in the absence of physical contact with the entity of interest. Remote sensing systems, such as cameras, scanners and radars, are increasingly being used to inventory, evaluate and monitor the extent and condition of phenomena such as land use, water resources, crop and range-

land, conservation practices and urbanization. Computer-based *geographic information systems* (GIS) are powerful tools for integrating and analyzing data obtained from such disparate sources as remote sensing, soils surveys, county land ownership maps, and water quality records.

The Kansas Applied Remote Sensing Program was established by the National Aeronautics and Space Administration to conduct applied research on techniques which will enable public agencies and private industry to better utilize satellite and airborne remote sensing systems. The KARS Program possesses a full range of remote sensing, mapping, geographic information system and related capabilities. The Program has been actively engaged in education, training and technology transfer activities focused on dissemination of information regarding the potential for utilization of remote sensing/geographic information systems technologies. During the period of 1972-1981, the KARS Program carried out approximately 40 cooperative remote sensing projects with Kansas agencies.

The recognition that agencies might benefit from closer cooperation and coordination in using remote sensing/geographic information systems techniques led to the establishment of an *ad hoc* Interagency Task Force on Applied Remote Sensing. During its initial meetings, the Task Force addressed the following issues:

- Task Force composition - Kansas state agencies and local units of government, federal agencies and other potential users of these technologies were invited to participate in the Task Force.
- Systematic study of user needs - A survey of Kansas state agencies' data needs which might be better met through application of these technologies revealed that at least 38 statutes or specific projects in the State of Kansas could benefit from data acquired by remote sensing/geographic information systems technologies.
- Institutionalization of a remote sensing/geographic information system capability in Kansas - A delegation of three members of the *ad hoc* Task Force requested Governor John Carlin's advice in regard to alternatives for institutionalizing an operational remote sensing/geographic information system capability in the state.
- KARS funding - A study of alternatives for providing continuing support for the KARS Program was initiated.

- Information center concept - The steps other states (e.g., Texas, Minnesota) have taken to provide operational remote sensing/geographic information systems services through state integrated information systems were reviewed.

The Task Force, as constituted by Senate Resolution 1644, met 12 times during the period April 1982 - December 1983. These meetings dealt with the following major topics and issues:

1. Task Force administration and work plan - The Task Force reviewed and endorsed an 18-month work plan designed to fulfill its mandate under Resolution 1644. Edward Martinko, KARS Program, was elected Chairperson and Robert Walters, Kansas Department of Revenue, Vice Chairperson.
2. Establishment of committees to evaluate key issues - A Committee on Baseline Funding was formed to review the need for baseline funding for the KARS Program. That Committee proposed that the Task Force recommend that the Governor and Legislature provide continued baseline funding in line with projected costs of maintaining KARS services at their current level. A User/Agency Support Committee was directed to evaluate the role of users in supporting the KARS Program. A major recommendation of that group was that the Kansas Board of Regents should be formally advised of the work of the Task Force and encouraged to consider additional baseline funding for the KARS Program. A third committee formed to review options for maintaining KARS services and capabilities formulated several recommendations, including (a) the KARS Program needs to be identified as a separate and distinct program within the University's domain, (b) the Kansas Interagency Task Force on Applied Remote Sensing should continue to exist beyond December 31, 1983, and (c) the concept of a state resources information center should be considered as a longterm objective for the State of Kansas.
3. Task Force Interim Report - An Interim Report was prepared and submitted to the Governor and the Kansas Legislature prior to December 31, 1982. The concept of a state resources information center was identified as one alternative for providing greater

utilization of remote sensing/geographic information systems technologies on a statewide basis. A FY84 "care taker" baseline budget was recommended for the KARS Program as an interim measure, in view of current state fiscal circumstances.

4. Development of proposed legislation - The Task Force endorsed proposed legislation for establishing a Kansas commission on applied remote sensing, and for conducting a statewide inventory of impounded surface water.
5. Sponsorship of a statewide conference on applied remote sensing and mapping in Kansas - The Office of Governor John Carlin, the Kansas Interagency Task Force on Applied Remote Sensing and the KARS Program sponsored a Governor's Conference on Applied Remote Sensing, Geographic Data Analysis and Mapping in Kansas. The conference focused on the user or potential user of the technologies.
6. Task Force recommendations and Final Report - The conclusions and recommendations of the study committees were incorporated into Task Force recommendations.

III. Issues and Actions

Five major issues were evaluated by the Task Force. These issues, and the actions taken by the Task Force to address the issues, are as follows:

1. Evaluation of remote sensing/geographic information systems technologies for meeting data needs of Kansas agencies - The Task Force invested considerable effort in learning about the operations and applications of remote sensing/geographic information systems technologies, and the manner in which these techniques might assist Kansas agencies in fulfilling their missions in a more cost-effective and/or more timely fashion.

Actions

- The Task Force and the KARS Program conducted a user needs survey to document the ways in which state agencies could use remote sensing/geographic information systems technologies to better accomplish their assigned missions and legally mandated obligations. At least 38 statutes or specific projects in the State of Kansas were identified that could benefit from data

acquired by remote sensing/geographic information systems technologies. The most recurrent interagency data requirements included a general land use/land cover inventory, irrigated lands identification and classification, and crop identification.

- A delegation of three members of the Task Force visited Governor John Carlin in September 1981 to discuss the nature and accomplishments of the Task Force, and to request his advice in regard to alternatives for institutionalizing an operational remote sensing/geographic information systems capability in Kansas.
 - The Task Force sponsored a statewide conference on remote sensing/geographic information systems technologies, designed to provide an overview of the state-of-the-art, to disseminate information on the Task Force, and to provide opportunities for training in these technologies. Over 100 Kansans representing local, state and federal agencies and private firms from across the state participated in the two-day event.
2. The need for the Kansas Applied Remote Sensing (KARS) Program - The Task Force concluded that the KARS Program has served a unique role in the State of Kansas, and has made significant contributions to the efforts of Kansas agencies by assisting them in using remote sensing/geographic information systems techniques to deal with Kansas' agricultural, environmental, natural resources and planning problems.

Actions

- The Task Force reviewed the status of the KARS Program, and concluded that it is in the State's best interest that services provided by this Program not be placed within the jurisdiction of any particular agency. The KARS Program is now a line item program within the University's budget.
- The Task Force found that the KARS Program has played an active part in promoting the use of high technology remote sensing/geographic information systems techniques to assist state agencies and others to effectively plan and manage Kansas' environmental and natural resources.

3. Needs and alternatives for funding the KARS Program - Since 1972, the KARS Program has operated under a grant of approximately \$125,000/year from NASA. This funding has subsidized virtually all KARS services, technology transfer, training and demonstration project activities. NASA, having invested more than \$1,400,000 in the KARS Program during the last 11 years, is terminating support for demonstration services to Kansas agencies. In order to provide the State of Kansas with the opportunity to maintain a viable applied remote sensing program, NASA has gradually phased down funding for these activities over a three-year period so that the State will have time to retain and utilize the existing staff and equipment of the KARS Program in the implementation of an operational remote sensing program for Kansas agencies. The Task Force agreed that, while it is important that user fees provide substantial support for the KARS Program, project/contractual commitments on the part of state agencies might not be enough, *in and of themselves*, to support ongoing activities of the KARS Program.

Actions

- The Task Force concluded that the KARS Program should receive baseline funding from the State general revenue, initially at approximately the level heretofore provided by NASA, to support general services required by all agencies, the Legislature, and the Governor's Office. Such funding would support a skilled, experienced core staff; maintenance of KARS equipment, library, software; staff support for the Task Force, materials, communications and other services; communications (e.g., Task Force mailings, telephone, KARS Newsletter); consulting and information services for Kansas agencies; assistance in project development, design and proposal preparation; training and short courses, briefings and presentations for public agencies and professional groups and the Task Force; and travel in support of the above services.

- The Task Force worked with the Office of Governor John Carlin and the Legislature to establish a fee fund within the budget of the University of Kansas, to facilitate the transfer of funds by state agencies to the KARS Program.
 - The Task Force proposed that specific legislation be prepared to address issues/projects of statewide importance and of value to several agencies.
 - The Task Force endorsed KARS efforts to continue to acquire research support from NASA and other public agencies and private firms.
 - The Task Force supported KARS' intent to charge fees to recover costs for products and services.
4. A permanent Interagency Commission on Applied Remote Sensing - The Task Force has served a unique function in Kansas state government. Over and above its role in evaluating remote sensing/geographic information systems technologies and the KARS Program, it has provided an important forum for public agencies to identify and communicate matters of mutual interest.

Actions

- The Task Force has proposed legislation to establish a Kansas Commission on Applied Remote Sensing to (a) assist users in assessing the capabilities, costs and alternatives for employing remote sensing or related geographic information systems technologies; (b) serve as a forum for interagency communication, coordination and cooperation; (c) advise the KARS Program regarding the data and informational needs of commission members; (d) aid the KARS Program in identifying and prioritizing applied and research projects; (e) disseminate information regarding new developments and capabilities; and (f) prepare and recommend funding levels for the KARS Program and the Commission. No funding would be appropriated for the Commission. The KARS Program baseline budget would provide support staff and services. Agencies would contribute staff time and travel.

- The Task Force has proposed legislation to have the KARS Program conduct a statewide inventory of impounded water, and create a computer information system for such data. This project was identified as being of statewide interest.
5. Eventual need for a natural resources information center - An important long-term goal identified by the Task Force considered the need and utility of a more broadly focused state natural resources information center. Such a center would retain and expand all of the current capabilities of the KARS Program. In addition, it could be charged with inventorying, cataloging and coordinating data about Kansas maintained by state, local and regional agencies, federal agencies, some private firms and institutions of higher education. Such a center could provide clearinghouse and referral services; federal-state coordination; spatial data analysis capabilities; spatial data base development for state users; statistical analyses, simulation and forecasting capabilities; remote sensing data/imagery interpretation; training, briefings, and short courses; and development and/or implementation of new technologies.

Actions

- Task Force members and KARS staff have reviewed the status of information systems in several other states, and have visited the Texas Natural Resources Information System (TNRIS) in Austin, Texas.
- The Task Force has proposed that an inventory of impounded surface water resources be conducted. The completion of this inventory would be a significant start in the direction of establishment of a geographically-based comprehensive Kansas information system.

IV. Conclusions and Recommendations

As a result of its deliberations and assessments, the Task Force concludes the following:

1. Remote sensing/geographic information systems technologies have been demonstrated to be of substantial value in dealing with a great variety of issues of concern to Kansas agencies.

2. The KARS Program has a distinguished record in dealing with Kansas agencies, and it is clearly in the interest of the State of Kansas to secure, maintain and enhance the KARS Program.
3. The National Aeronautics and Space Administration (NASA) has provided generous financial support to the KARS Program since 1972, totalling more than \$1,400,000. This support has provided the State of Kansas with a unique resource in the KARS Program, and the State should ensure that adequate financial support is provided to the KARS Program to enable the Program to continue to serve Kansas agencies.
4. A resources information center could facilitate enormous tasks such as a statewide reappraisal, water resources planning, soil erosion assessment, and monitoring of prime agricultural land use change. The State of Kansas should carefully consider the merits of establishing such an information center.
5. The Task Force has provided a unique and important forum in which agencies may regularly share ideas, identify common interests and define areas and means of cooperation.

The Kansas Interagency Task Force on Applied Remote Sensing makes four specific recommendations.

1. The Kansas Applied Remote Sensing (KARS) Program should be maintained at the University of Kansas.
2. The Kansas Applied Remote Sensing Program should be provided baseline funding from the general revenue in the amount of \$117,000 for the period of July 1984 - June 1985.
3. Three mechanisms should be available for funding projects undertaken by the KARS Program on behalf of state agencies:
 - The fee fund should be continued so that agencies can transfer money directly to the KARS Program to accomplish projects of interest to individual agencies.
 - Agencies could jointly propose projects that are of particular interest to more than one agency, but are not necessarily of general, all-encompassing need.
 - Issues of statewide/general importance and/or of importance to the Governor or Legislature could be addressed by bills submitted by interested legislators; funds would not be drawn from any one agency's budget.

4. A Commission on Applied Remote Sensing should be established by statute to continue the work of the Kansas Interagency Task Force on Applied Remote Sensing. There should be an annual review of the Commission and the KARS Program by the Legislature, and a general review in January 1987, with consideration given to designating the KARS Program an operational program and/or providing it agency status.

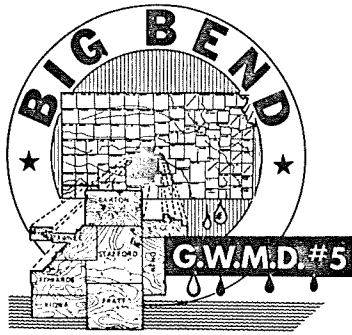
Kansas Interagency Task Force
on Applied Remote Sensing
(April 1982 - December 1983)

MEMBERS:

Governor's Office
Kansas House of Representatives
Kansas Senate
Kansas Applied Remote Sensing Program
Kansas Association of Counties
Kansas Association of Groundwater Management Districts
Kansas Corporation Commission
Kansas Department of Economic Development
Kansas Department of Health and Environment
Kansas Department of Revenue
Kansas Fish and Game Commission
Kansas Geological Survey
Kansas Park and Resources Authority
Kansas State Board of Agriculture
Kansas Water Office
University of Kansas

OTHER PARTICIPATING AGENCIES:

USDA Agricultural Stabilization and Conservation Service
USDA Soil Conservation Service
USDI Bureau of Reclamation
USDI Geological Survey



*Big Bend
Groundwater Management
District No. 5*

206 NORTH MAIN • P. O. BOX 125 • ST. JOHN, KANSAS 67576 • PHONE 316-549-3891

January 20, 1984

Mr. Ed Martinko, Chairman
Kansas Interagency Task Force
on Applied Remote Sensing
Raymond Nichols Hall
2219 Irving Hill Drive
Lawrence, Kansas 66045

Dear Mr. Martinko:

The Kansas Groundwater Management District Association has reviewed the draft copy of "Final Report and Recommendations of the Kansas Interagency Task Force on Applied Remote Sensing." We find the report to be complete and comprehensive and wish to extend our support for the recommendations contained in the report.

Sincerely,

Ralph K. Davis

Ralph K. Davis
Manager

sf

c: GMD's 1,2,3,4

THE STATE OF KANSAS



THE KANSAS STATE PARK AND RESOURCES AUTHORITY

503 KANSAS AVENUE, P. O. BOX 977

Phone (913) 296-2281

TOPEKA, KANSAS 66601

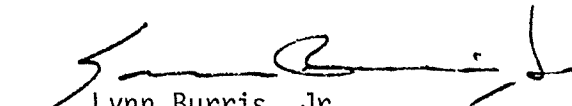
October 27, 1983

Edward A. Martinko, Director
Kansas Applied Remote Sensing Program
Chairman,
Kansas Interagency Task Force on
Applied Remote Sensing
Univ. of Kansas Space Technology Center
Raymond Nichols Hall
2291 Irving Hill Drive-Campus West
Lawrence, Kansas 66045

Dear Mr. Martinko:

Your courtesy in providing me with the summary of the October 11th, 1983 meeting of the Kansas Interagency Task Force on Applied Remote Sensing is sincerely appreciated. I have reviewed this summary and I'm impressed with the comprehensive work of the Task Force on this important activity. The State Park and Resources Authority is pleased to join in support of the Task Force recommendations.

Yours truly,



Lynn Burris, Jr.
Director

LBjr:ab

Kansas Fish & Game

BOX 54A, RURAL ROUTE 2, PRATT, KANSAS 67124
(316) 672-5911

REGIONAL OFFICES:

Northwest Regional Office
Rt. 2, 183 Bypass
Hays, Kansas 67601

Northcentral Regional Office
Box 489, 511 Cedar
Concordia, Kansas 66901

Northeast Regional Office
3300 S.W. 29th Street
Topeka, Kansas 66614

Southwest Regional Office
808 Highway 56
Dodge City, Kansas 67801

Southcentral Regional Office
Box 764, 204 West Sixth
Newton, Kansas 67114

Southeast Regional Office
222 West Main Building
Suite C & D
Chanute, Kansas 66720

October 28, 1983

Edward A. Martinko, Chairman
Kansas Interagency Task Force
on Applied Remote Sensing
Raymond Nichols Hall
2291 Irving Hill Drive
Lawrence, KS 66045

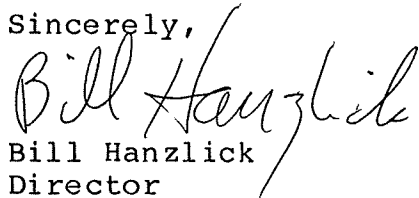
Dear Dr. Martinko:

The final report and recommendations of the Kansas Interagency Task Force on Applied Remote Sensing adequately addresses the concerns of the Kansas Fish & Game Commission.

We specifically commend the Task Force recommendations for provision of direct appropriations to provide baseline funding for the continuation of the KARS program, the flexibility provided for funding for agency specific projects and issues of statewide/general importance, and the creation of the Kansas Commission on Applied Remote Sensing.

We have \$7,000 budgeted in FY84 for utilization of KARS services and have requested an additional \$15,000 in FY85 for further services, especially in anticipation of the proposed statewide surface water inventory data base creation.

Sincerely,


Bill Hanzlick
Director

cc: Gov. John Carlin

KANSAS DEPARTMENT OF ECONOMIC DEVELOPMENT

503 Kansas Avenue, Sixth Floor, Topeka, Kansas 66603
Phone (913) 296-3481



JOHN CARLIN
Governor

CHARLES J. "Jamie" SCHWARTZ
Secretary

November 3, 1983

Mr. Edward A. Martinko
Chairman, Kansas Interagency Task
Force on Applied Remote Sensing
Raymond Nichols Hall
2291 Irving Hill Drive
Lawrence, Kansas 66045

Dear Mr. Martinko:

I would like to take this opportunity to express support for the final recommendations of the Kansas Interagency Task Force on Applied Remote Sensing. The proposed continuation of the KARS Program, along with the combination of basic program and project funding, offer a reasonable and efficient means for insuring the transfer of remote sensing technology to potential users in Kansas.

As the agency with the primary responsibility for high technology development in the state, the Kansas Department of Economic Development is encouraged by efforts to preserve the KARS Program and the valuable technology it provides Kansas users. From the standpoint of planning for the future of Kansas, the KARS Program should be preserved.

Sincerely,

A handwritten signature in cursive script that reads "Charles J. Schwartz".

Charles J. Schwartz
Secretary

CJS:sk

STATE OF KANSAS



John Carlin, Governor

KANSAS WATER OFFICE

Joseph F. Harkins
Director

Suite 200
109 SW Ninth
Topeka, Kansas 66612

913-296-3185

October 27, 1983

Dr. Edward Martinko, Chairman
Kansas Interagency Task Force
on Applied Remote Sensing
Nichols Hall, University of Kansas
Space Technology Center
2291 Erving Hill Drive
Lawrence, KS 66045-2969

Dear Dr. Martinko:

We have reviewed the draft of the final report of the Kansas Interagency Task Force on Applied Remote Sensing. A detailed review suggesting several minor changes in the organization of the report has been sent to you under separate cover. The purpose of this letter is to comment directly upon the conclusions and recommendations of the Task Force as given in the draft report. Our principal comments have been organized under the headings given.

A. Maintenance of the Kansas Applied Remote Sensing (KARS) Program

We fully agree with the first recommendation of the final report that the KARS Program be maintained at the University of Kansas. We commend the University for including the KARS Program as a non-academic program within the University. Furthermore, we agree that maintenance of the KARS Program at the University of Kansas will assure the broadest possible availability of remote sensing and geographic information system technology to Kansas state agencies and organizations at all levels of government.

B. Funding Arrangements

The Task Force recommendations concerning funding appear to be quite reasonable. If, for example, interest exists in one or more agencies for remote sensing related services, the funding mechanisms recommended for KARS are varied enough that services can be facilitated. On the other hand, if the KARS Program itself is not provided with independent "baseline" funding, there will be no KARS Program to perform needed services. The rapidly evolving capabilities of remote sensing and geographics information

Dr. Edward Martinko, Chairman
Page 2
October 27, 1983

systems technologies support the wisdom of retaining the capabilities apparent in the KARS Program within the state, either as a separate agency or under the Board of Regents. The present location of the KARS Program within the University of Kansas is a very workable arrangement and should be retained unless something better is possible.

C. Interagency Commission

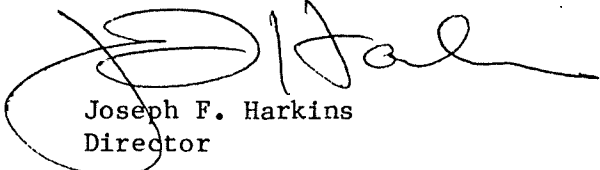
Both the utility of remote sensing and geographic information systems technologies and the desirability of a statewide resources information center are more than sufficient reasons for continuing the type of examination and discussion of possibilities which was facilitated by the Interagency Task Force on Applied Remote Sensing. Consequently, we agree with the recommendations to continue some form of Interagency Task Force, Commission, or Council. Since the proposed Interagency Commission on Applied Remote Sensing will not require a separate budget, it is a desirable vehicle for continuing the investigation of potential applications of remote sensing and related technologies.

D. Proposed Legislation

With regard to the proposed legislation concerning a surface water inventory, we can say that such an inventory would be of some use. We cannot say at this point that a surface water inventory such as envisioned would be of immediate and extensive use in our efforts to develop the State Water Plan. However, the development of a geographically-based referencing system with which to relate other natural resources information is certainly a step in the direction of making all resource information more available to all those who may need or use this type of information. Consequently, the method by which the surface water inventory would be obtained is more important than the fact that one aspect of natural resources, surface water impoundments, would be identified and quantified.

I wish to complement the Task Force on the breadth of issues that were addressed and the comprehensive nature of its recommendations. I believe that the Task Force has been of great service to the State of Kansas.

Sincerely,



Joseph F. Harkins
Director

JFH:DFK:dk

cc: The Honorable John Carlin, Governor



United States Department of the Interior

GEOLOGICAL SURVEY
Water Resources Division
1950 Constant Avenue--Campus West
University of Kansas
Lawrence, Kansas 66044-3897

November 8, 1983

Mr. Edward A. Martinko
Chairman, Kansas Interagency Task
Force on Applied Remote Sensing
Raymond Nichols Hall
2291 Irving Hill Road
Lawrence, Kansas 66045

RE: Task Force Recommendations

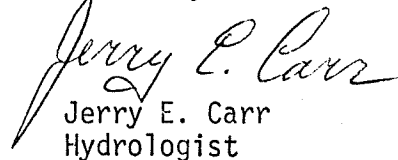
Dear Mr. Martinko:

The recommendations of the Kansas Interagency Task Force on Applied Remote Sensing have been reviewed by the Kansas District of the U.S. Geological Survey and are generally supported by this office.

We agree that baseline funding for your efforts would be desirable in order that you could maintain the technical expertise and equipment necessary for your activities on a continuous basis. As per your recommendations, it would also seem appropriate to obtain additional support for project work via a service fee.

We believe that the Kansas Applied Remote Sensing program has provided an important service to the State of Kansas and in the advancement of the science of remote sensing. Continued service by this program would help provide many of the tools needed by Kansas to plan for appropriate future State development.

Sincerely,


Jerry E. Carr
Hydrologist



United States
Department of
Agriculture

Soil
Conservation
Service

760 South Broadway
Salina, Kansas
67401

December 2, 1983

Mr. Edward A. Martinko, Director
Kansas Applied Remote Sensing Program
The University of Kansas
Space Technology Center
Raymond Nichols Hall
2291 Irving Hill Drive, Campus West
Lawrence, Kansas 66045-2969

Dear Mr. Martinko:

We appreciated the opportunity to participate in your Governor's Conference on Applied Remote Sensing, Geographic Data Analysis and Mapping Conference in Kansas. The Soil Conservation Service participants have indicated the conference was a great success.

If a Kansas Commission on Applied Remote Sensing is established, the Soil Conservation Service will be happy to be an active participant. Collection and distribution of resource data is an important part of most agencies' work including the SCS, and the proposed commission can provide a valuable service in this area.

Sincerely,

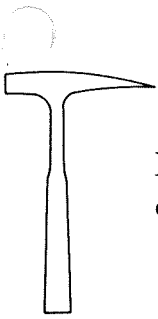
John W. Tippie
State Conservationist

cc:

James W. Merchant, University of Kansas, Space Technology Center, Lawrence, Kansas
Kenneth E. Noonan, SCS, Topeka



The Soil Conservation Service
is an agency of the
Department of Agriculture



KANSAS GEOLOGICAL SURVEY
Office of the Director

1930 Constant Ave., Campus West
The University of Kansas
Lawrence, Kansas 66044-3896
913-864-3965

December 5, 1983

Edward A. Martinko, Director
Kansas Applied Remote Sensing Program
Chairman, Kansas Interagency Task Force
and Applied Remote Sensing
240 Nichols
West Campus

Dear Ed:

I have reviewed the draft copy of the Final Report to the Governor and Legislature of the Interagency Task Force on Applied Remote Sensing. The findings and recommendations of the Task Force have my very warmest endorsement.

I note, for your information, that I am particularly interested in seeing the program assume responsibility for the development of a natural resource information network, similar in character to the Texas Natural Resources Information System. I believe that KARS is ideally positioned to undertake this responsibility, and the program could begin on a phased basis.

I wish you every success in this enterprise.

Sincerest regards,

William W. Hambleton

William W. Hambleton
Director

by ds

WWH:ds

State of Kansas



JOHN CARLIN
MICHAEL LENNEN
R. C. "PETE" LOUX
PHILLIP R. DICK
JUDITH A. Mc CONNELL
BRIAN J. MOLINE

Governor
Chairman
Commissioner
Commissioner
Executive Secretary
General Counsel

State Corporation Commission

Fourth Floor, State Office Bldg.

Ph. 913/296-3355

TOPEKA, KANSAS 66612-1571

December 6, 1983

Mr. Ed Martinko, Chairman
Kansas Interagency Task Force
on Applied Remote Sensing
Raymond Nichols Hall
2219 Irving Hill Drive
Lawrence, Kansas 66045

Dear Mr. Martinko:

The Kansas Corporation Commission generally supports the recommendations of the Kansas Interagency Task Force on Applied Remote Sensing as expressed in its final report. We believe the proposed approach will preserve the significant investment Kansas has already made in developing this technology. Maintaining the viability of the KARS program will allow all of us to use this tool in our future planning efforts.

Sincerely,

Michael Lennen
Chairman

ML:nvw



KANSAS STATE BOARD OF AGRICULTURE

TOPEKA, KANSAS 66612-1280

HARLAND E. PRIDDLE
Secretary

109 S.W. 9th Street
913-296-3556

December 6, 1983

Dr. Edward A. Martinko, Director
Kansas Applied Remote Sensing Program
Chairperson, Kansas Interagency Task Force
on Applied Remote Sensing
K.U. Space Technology Center
2291 Irving Hill Drive-Campus West
Lawrence, KS 66045-2969


Dear Mr. Martinko:

We have reviewed a draft copy of "Final Report and Recommendations of the Kansas Interagency Task Force on Applied Remote Sensing". We find the report quite comprehensive and complete.

We wish to commend the Task Force for its efforts to bring the needs of the various state agencies for remote sensing into focus. The accumulation of this type of information is proving to be very useful as we consider the possibilities of using this rather new technology.

I feel we are fortunate to have an Applied Remote Sensing Program available to Kansas and its agriculture.

Sincerely yours,


Harland E. Priddle
Secretary

HEP:jlb

DEPARTMENT OF HEALTH AND ENVIRONMENT

Barbara J. Sabol, Secretary

Forbes Field
Topeka, Kansas 66620
913-862-9360



August 16, 1983

Edward A. Martinko
Chairman, Kansas Interagency Task Force
on Applied Remote Sensing
Raymond Nichols Hall
2291 Irving Hill Drive
Lawrence, Kansas 66045

RE: Task Force Recommendations

Dear Mr. Martinko:

The recommendations of the task force have been reviewed and are generally supported by the Department of Health and Environment. The following specific comments are offered for your consideration:

1. Basic Program Funding

Direct appropriation of baseline funding is very appropriate and much better than earlier alternative proposals which were based on agency or user subscription.

2. Project Funding

Funding of projects via fees for individual projects and legislative appropriation for projects of general statewide interest is reasonable. A schedule of service fees or charges should be developed and published to aid agencies in estimating the cost of remote sensing services.

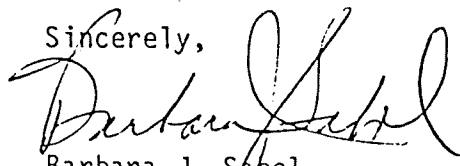
3. Continuation of Task Force

Institutionalization of the task force via statute seems reasonable.

In addition to these comments, the Bureau of Water Quality has proposed to budget \$7,500 in FY 85 for utilization of Kansas Applied Remote Sensing Services.

Please feel free to contact me or my staff if you have any questions regarding these comments.

Sincerely,


Barbara J. Sabol
Secretary

cc: Governor John Carlin