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DEPARTMENT OF
DATA MANAGEMENT

CITY OF SACRAMENTO
CALIFORNIA

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BARBARA C. WEAVER
DIRECTOR

August 14, 1990

Budget and Finance Committee
Sacramento, California

Honorable Members in Session:

SUBJECT: REQUEST FOR ADOPTION OF CITY-WIDE GEOGRAPHIC INFORMATION SYSTEM (GIS) BASE MAP PROJECT, AND THE ADDITION OF ONE FTE FOR GIS SUPPORT IN DATA MANAGEMENT

SUMMARY

This report recommends that the Budget and Finance Committee forward this report, with an affirmative recommendation, to the City Council for the adoption of the attached resolution which will amend the FY 1990-91 Budget for the addition of one GIS Project Manager to the Data Management Department, and authorize the transfer of funds to the GIS project.

BACKGROUND

What is a Geographic Information System?

A Geographic Information System (GIS) is a computer-aided mapping system capable of reproducing electronically a map of the City (or portion of the City) showing existing infrastructure and features (storm drains, railroads, rivers) and non-physical information (zoning/General Plan designations, traffic flow data, crime statistics, Council districts). A vast array of maps can be produced to be viewed on video screens or reproduced as hard copies. Attribute information, such as thickness of pavement, pipe diameter, and date of installation, can also be displayed. The amount of information that can be displayed is virtually endless and is limited only by the size of the data base. An automated mapping system is far more effective than conventional hard copy systems. Updating paper, mylar, or vellum maps by drafting is labor intensive and much slower than inputting this same

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information via a computer-linked work station. The system will also create more uniform and higher quality end products.

There are many ways to approach developing a GIS. The method being proposed by staff is to first develop a Base Map, which contains data on parcel boundaries, parcel numbers, street addresses, and rights-of-way boundaries (see Attachment A). After the Base Map is established, "layers" would be developed, each layer consisting of graphic features that are related to each other and non-graphic data, such as street addresses. Any combination of layers may be included on any map. For example, map A could contain parcel numbers, map B could contain addresses, and map C could contain proposed new districts. A new map D (re-districting), then could be created that shows parcels, addresses and the new Council districts.

GIS History in the City of Sacramento

In 1987 the Planning and Development Department, in response to a mandate to produce and update zoning maps, hired a consultant, Brighter Images to develop a plan to digitize and update City zoning maps. The consultant conducted a study of City departments to see if a GIS would be beneficial. The study met with a high degree of willingness and interest to cooperate in implementing a Geographic Information System.

As a result of the recommendation that a Pilot Program be undertaken, a four square mile area (the "Alhambra Corridor") was used as the Pilot area. Aerial photographs of the entire city were taken with only the Pilot area photographs developed; parcel boundaries and rights-of-way for the Pilot area were digitized. A microcomputer and software were purchased which gave staff the ability to manipulate data. The digitized data along with data from the City's mainframe computer enabled staff to retrieve "tabular" data (this is data which is commonly found on any computer generated list). Parcel maps with parcel number identification have also been generated from the Pilot data.

From the Pilot program, it was determined that a Base Map which included zoning would fulfill two purposes; it would give the Planning and Development Department the mandated zoning maps, and it would be the foundation for a City-wide GIS.

After the completion of the Pilot project, discussions regarding the viability of a City-wide GIS system were held with other

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departments. Several key issues were raised during those discussions; all major issues have now been resolved.

It should be noted that staff has also discussed the possibility of working with the County of Sacramento on a GIS project. The County, however, has approached a GIS system by building their Base Map and all layers at the same time. Development of layers represents laborious data gathering and manipulation and a thorough plan for data relationships. The County's approach makes it financially unfeasible at this time for the City to join that effort. We have agreed with the County on an informal basis, that we will help each other and share data wherever possible.

Future steps in the Phase II implementation of a GIS Base Map include:

- hiring a GIS Project Manager
- digitizing the assessor's maps
- developing the orthophotographs
- cleaning up the parcel database

Attachment B identifies the GIS project plan through the 1990-1991 fiscal year. Staff is currently developing requests for bids (RFB's) for the development of the orthophotographs and the digitization of the assessor's maps. It is anticipated that these RFB's will be presented to the City council during August, 1990. As related to the hiring of a GIS Project Manager, this report recommends the addition of one (1) FTE to the 1990/1991 Data Management Department's operating budget. If this addition is approved, staff will begin immediately to work with the Personnel Department to develop and then recruit for the position.

Final phases of the GIS project include application studies, the creation of layers, and the acquisition of additional hardware and software.

PROJECT ORGANIZATION

The GIS project organization is comprised of a Steering Committee and a Project Team. The Steering Committee is comprised of Deputy City Manager, Jack Crist and department heads from Data Management, Finance, Public Works, and Planning and Development. The Project Team is comprised of staff from the departments of Data Management, Finance, Public Works, and Planning and Development. In addition,

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SAFCA, the City Manager's office and several department heads have provided input into the process.

The proposed GIS Project Manager will be a member of the Steering Committee as well as the functional head of the Project Team.

GOALS

The GIS Goal Statements developed by the Project Team are:

1. Produce a Base Map to be used as the only official Base Map (in various scales) by all City departments. The map will consist of matching orthophotographs and digitized parcels and public rights-of-way (as the first layers) that can be accessed as a Base Map in defined segments on a central computer in the second half of the 1990/91 Fiscal Year.
2. Produce GIS "layers" in a prioritized time sequence as overlays to the Base Map that will provide better City-wide coordinated services, faster information to City citizens, business people and visitors, and reduce the bureaucracy in all areas of City business.

GIS PROJECT MANAGER

Currently the GIS project is being managed by City staff who have full job responsibilities; this project is being done on an ad hoc basis at this time. As Attachment B indicates the project has moved slowly. In order to coordinate and manage the project, a full time GIS Project Manager should be hired immediately. It is envisioned that the duties of the GIS Project Manager will initially include: the development and implementation of a GIS operation plan for the City; the design, scheduling, documentation, and testing of the GIS Base Map; the supervision of staff in the implementation of GIS Base Map; and the coordination with other divisions of Data Management on GIS interfaces with other components of the City's Information and Automation systems.

After completion of the Base Map, the Manager will be responsible for coordinating and developing new GIS applications (layers); as well as ensuring that the maintenance of the Base Map and data is done properly. These on-going duties of the GIS Project Manager

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will include: analyzing potential geographic information systems applications and coordinating with user departments in the definition, development, implementation and operation of these applications; providing support for existing Base Map and GIS applications, including coordination of the acquisition, installation, and maintenance of hardware and software, and data problem resolution; assisting in the development of departmental GIS support procedures and documentation; preparing reports and making presentations to management and the City Council; and developing budget and revenue proposals for GIS operations.

BENEFITS

Once a Base Map is built, the City will have one official map that all departments, divisions and the public can refer to. Over 90% of all data collected or utilized by cities has a direct relationship to geography and to meet their information needs, most cities map this data. Many cities and utilities are becoming increasingly aware of a number of problems with their existing mapping (record keeping) systems. In some cases, maps are inaccurate or out of date; in others, the maps are physically deteriorating. Also there is extreme duplication of effort in generating and maintaining maps within the organization and between organizations within the same geographical area. This one map will take the place of the over a dozen "official" maps currently in use.

As one of the major initial benefits, the Planning and Development Department will be able to use the Base Map to produce up to date zoning maps as mandated by state law.

All departments can start building layers after the implementation of the Base Map. Using the appropriate layers, "what if" modeling can be done and facilities maintenance can be planned across divisions and departments. This could reduce the "but they just tore up the street last month for something else" syndrome.

FINANCIAL DATA

FINANCIAL STRATEGY

Initial funding for the Base Map will be drawn from the Planning and Development Department and the Department of Public Works (Drainage Fund). After the Base Map digitizing, development of the orthophotographs, and the Project Manager has been hired, all

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funding for building layers shall come from the operating budgets of the department that is considered the owner and primary user of the particular layer.

In addition, there will be a "buy-in" cost to the departments/divisions building layers for their fair share at the initial cost of the base map. In this way the Departments of Planning and Development and Public Works (Storm Drainage fund) can be reimbursed for providing the initial funding for the base map.

It is also anticipated that revenue will be generated from demand by the general public for GIS products. Real estate investors and developers may purchase maps; community groups may purchase maps to use for outreach; individuals may buy maps for a variety of research needs.

Future GIS costs may include at least 1 FTE in each department or division to maintain layer data and staff in Data Management to manage and coordinate the distributed data and access to the data.

BASE MAP COSTS

The City has been involved in developing a GIS for the past 3 years. The expenditures to date total \$147,000. These funds have been used for the pilot project as described above. The next step for the project is to develop the Base Map.

Costs to create and implement the Base Map are summarized below:

Develop Orthophotographs	\$250,000
Digitize Parcels	\$120,000
Computer Hardware and Software	\$ 95,000
Staff, Training and Consultant	<u>\$141,000</u>
TOTAL	\$606,000

FUNDING SOURCES

It is recommended that the funding for these costs come from the following sources:

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EXISTING SOURCES

Balance remaining in current project (AA31) \$107,823

NEW SOURCES

Storm Drainage Contingency \$279,177
Planning and Development Fees \$219,000

TOTAL \$606,000

Although the project will benefit the whole City, immediate benefits can be realized by the Flood Control and Sewer Division for flood plain mapping once the vertical and horizontal data are implemented. In addition, the Planning and Development Department will be able to use the Base Map to produce up-to-date zoning maps as mandated by State Law.

The funding from the storm drainage contingency will reduce it from \$1,114,000 to \$827,000. Although it is intended that the fund be reimbursed by other departments/divisions for their "fair share" of the costs to develop the base map, it is not anticipated that this will occur during the 1990-1991 fiscal year. Cost recovery should begin the following fiscal year and continue for an undetermined number of years to be restored.

The Planning and Development Department is including \$219,000 in the development fee proposal that will be presented to City Council in August.

The potential Storm Drain Utility rate impact is approximately 1.6 percent. However, the program will not have a net impact on rates because these expenditures will be offset by reduced operating costs (for map maintenance and creation) in the future.

POLICY CONSIDERATIONS

Once the electronic Base Map has been developed, it should be the only "official" City Map representing land use as it exists from that day forward. No other maps should be drawn, plotted, or otherwise devised that represent an official City map. All land based data will be related to the Base Map.

A future policy consideration may include whether or not the City wishes to allow utility companies (SMUD, PG&E, PacTel) access to

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the GIS base map or layers and if so, what kind of fee should be charged.

MBE/WBE EFFORTS

During the bid process for developing the orthophotographs and digitizing the assessor's maps we will work with the City's MBE/WBE Coordinator's staff to identify and solicit bids from MBE/WBE vendors.

RECOMMENDATIONS

It is recommended that the Budget and Finance Committee forward this report, with an affirmative recommendation, to the City Council for adoption of the attached resolutions which endorse a City-wide GIS direction that will produce the official City Base Map; amend the FY 1990-91 Budget by the addition of one GIS Project Manager to the Data Management Department, and authorize the transfer of funds to the GIS project.

Respectfully submitted,

Barbara Weaver (sig)
Barbara Weaver
Director of Data Management

RECOMMENDATION APPROVED:

Jack R. Crist
Jack R. Crist
Deputy City Manager

All Districts

Contact Persons:

Toba Goddard, Manager of Technical Services
Dept. of Data Management
Ext. 5081

or

John Kreft, Administrative Services Officer
Dept. of Planning and Development
Ext. 5930

RESOLUTION NO.

ADOPTED BY THE SACRAMENTO CITY COUNCIL

ON DATE OF _____

RESOLUTION AMENDING THE 1990-91 BUDGET BY
TRANSFERRING \$279,177 FROM STORM DRAINAGE CONTINGENCY TO THE
GEOGRAPHIC INFORMATION SYSTEM CAPITAL PROJECT AND ADDING 1.0
FTE TO THE DATA MANAGEMENT DEPARTMENT

BE IT RESOLVED BY THE COUNCIL OF THE CITY OF SACRAMENTO THAT:

1. That \$279,177 is transferred from storm drainage contingency to the Geographical Information System capital project as detailed below:

FROM:	425-710-7012-4999	\$279,177
TO:	425-500-AA31-xxxx	\$279,177

2. That the following position is added to the Data Management Department to serve as the project coordinator for this Capital project

1.0 FTE GIS Project Manager

3. That the Data Management Department 1990-91 operating budget is hereby amended as follows to fund the additional staff position and to provide for a labor offset to the Capital Project:

101-130-1340-4101	\$45,000
101-130-1340-4710	(\$45,000)

Mayor

City Clerk

FOR CITY CLERK USE ONLY

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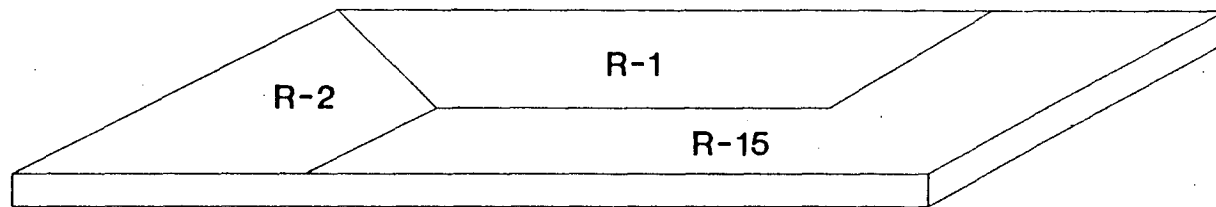
RESOLUTION NO.: _____

DATE ADOPTED: _____

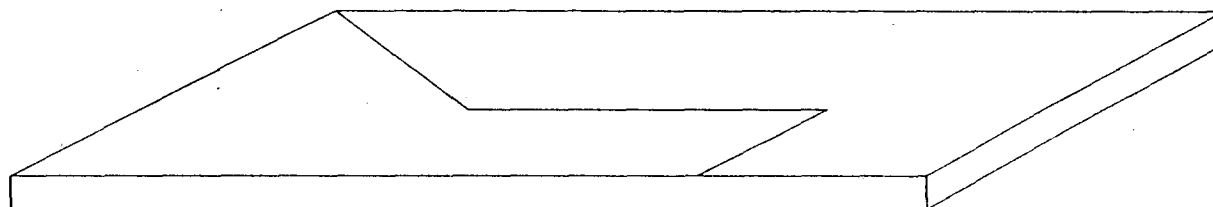
BASE MAP LAYERS

Attachment A

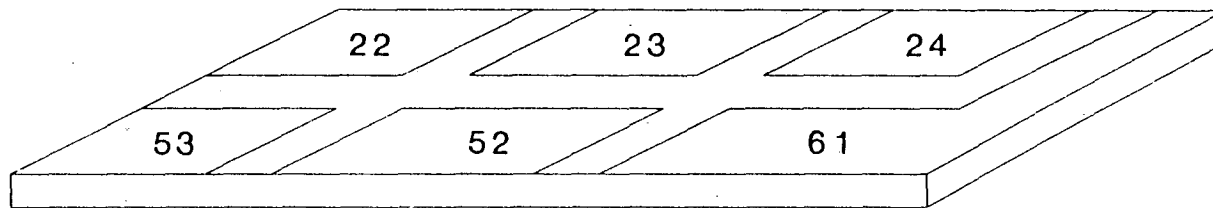
Zoning



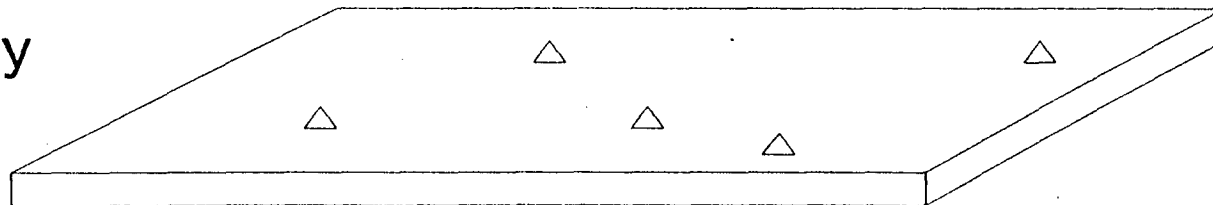
Districts



Parcels



Geodetic/Survey Control



CITY OF SACRAMENTO

Attachment B

GIS

PHASE 2

1989 - 1991

