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The Department of Water Resources uses a variety of data on the Delta relating to the following topics: plant communities and species, animal communities and species, sightings of endangered species, wetlands, sediment transport, soil maps, soil borings, crop patterns, land use, location of utilities, location of roads, flood elevations, county recorders assessor's data, legislation, climate, culture, archaeology, industry, and water rights.

Below, some of the data used by the Department of Water Resources is catalogued. Further information will be provided as areas of interest become more clearly defined. The data is listed in descending order of ease of electronic accessibility.

LEVEL 1

Much of this data is readily accessible through the Internet.

Modeling Code (Modeling)

DWR's Delta Modeling section has two models, one relating to water flow, the other to water quality. Both models share 2,000 of common code. The flow model has 3,000 additional lines of code, the quality model 6,000 additional lines of code. There is also a database utility consisting of 30,000 lines. The models are all written in Fortran; the database is mostly Fortran with some C. The Delta Graphical User Interface is written in PV–Wave and has 6,000 lines.

Hydrologic Data (Flood Management)

The data which is input to the models mentioned immediately above is collected from about 50 stations in the Delta. Each of these stations has several sensors (the number of parameters varies by station). Readings are recorded hourly. Each parameter takes roughly 1 and 1/2 MB/month to store.

Much of this data is time–series data depicting flows, stages (depth of water), and salinities. Other data describes channel geometry, gate operations, etc.

Since the 1960s, the data has been collected from throughout California, including the Delta, as part of a cooperative effort with a number of agencies. DWR collects the predominant amount of data, with USBR next. Since 1983, this data has been on–line in ASCII (see Level 4 below: between the 1960's and 1983 the data was stored on paper). In addition, the daily averages for the last 20 years are on–line.

Flood Data (Flood Management)

There is an electronic list of Delta islands which have been flooded.

Maps (Land and Water Use)

Maps depicting land use data (e.g. types of crops shown by area) in San Joaquin and Yolo Counties have already been digitized. (See Level 5 below: digitization of the other counties is planned.)

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Delta Atlas (Drafting)

The Delta Atlas contains primarily maps, as well as pictures of historical interest. About 90% of the maps are in computer form. The purpose of these maps is public information.

Text Data (Reports Administration)

Since 1922, the Sacramento–San Joaquin Delta is either mentioned in or is the subject of approximately 99 bulletins (series) and appendices, for a rough total of 24,000 pages. Of these, only about 20% are in electronic format. These bulletins and appendices are in a bibliographic reference with abstracts.

Since 1975 the Sacramento–San Joaquin Delta has been the subject of approximately 98 district or division reports, for a rough total of about 20,000 pages. About 83% are in electronic format.

Examples of bulletins and reports are:

Variation and Control of Salinity in the Sacramento–San Joaquin Delta and the Upper SF Bay, 1931

Flood Control Project Maintenance and Repair: 1968 Inspection Report

The Delta As a Source of Drinking Water, 1989

LEVEL 2

This data is digitized, but is not immediately on the Internet.

Crop Data (Land and Water Use)

In the CYBER, DWR has information about crops listed by county, as well as by other organizational units. This information is in ASCII, on tape. This data has been collected and stored since the 1970s. It takes about 1/2 MB to store the information per citing per county. There are as many as 4–5 citings per year per county, so this should be on the order of a gigabyte of data.

Water Contract Data (Kern Water Bank)

There are 351 water bank contracts. 298 of them are in the Delta. An index to all these contracts is stored in a PC database. (See Level 4 below: the contracts themselves are not stored electronically.)

Graphics (Graphic Services)

DWR artists have generated about 100 digitized graphics related to the Delta. (See Level 4 below: there is an approximately equal number of undigitized graphics).

Slides (Photo Lab)

There is a digitized index of the slides which are in the slide library. (See Level 4 below: the slides themselves are not digitized.)

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LEVEL 3

This data is in electronic format and is owned by other entities. We believe cooperative arrangements to use the data in BIGFOOT could be established.

GIS Coverages (Center for Environmental Design, Berkeley)

Kenn Gardel's work includes GIS coverages in the Delta region, for example, information on wetlands, general topography, roads, and hydrography.

STORETT (EPA and other agencies)

STORETT has on the order of gigabytes of data relating to water quality. It has also recently incorporated BIOS, a biological data base.

Text and Point Data (Aquatic Habitat Institute)

The Aquatic Habitat Institute Information System contains the Bay–Delta hearings and testimony, which comprises several thousand pages of text. The purpose of the Bay–Delta hearings is to establish a cohesive water policy for the Delta, addressing such issues as water quality and water rights. This database also contains summaries (including an abstract, the list of parameters used in the study, and the amount of storage required for data) of 70–75 research monitoring programs. The actual data from most of these studies is not stored in this database.

LEVEL 4

This data would need to be digitized.

Hydrologic Data (Flood Management)

Point data on precipitation, weather, river stage, reservoir operations, etc. was stored on paper from the 1960s to 1983 (the corresponding data from 1983 and after is stored on–line).

Text and Image Data (Reports Administration)

About 80% of the bulletins and appendices, i.e. approximately 19,000 pages, have not been digitized. In the earlier bulletins, pre–1970, there are also approximately 1,054 plates, some of which may be duplicates. Plates are usually oversized, detailed maps of a specific area.

In addition, approximately 15 division or district reports (roughly 3,000 pages) have not been digitized.

Text (Kern Water Bank)

There are 351 water bank contracts, none of which is stored electronically. On the average, they are ten pages long.

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Graphics (Graphic Services)

DWR artists have generated about 100 graphics related to the Delta which have not been digitized.

Slides (Photo Lab)

There are hundreds of public information slides relating to the Delta, e.g.

Photographs of the California Aqueduct and Delta Power Plant

Photographs of fresh water needs in the Delta with regards to wildlife and fish

Photographs of the Delta Skinner Fish Facility

Photographs of crops and irrigation sites at the Delta

Slides (Land Use)

For the purpose of land use study, airplane fly overs are done. The product of these fly overs is thousands of 35 mm slides.

Photographs (Photo Lab)

The still photos of the Delta focus mainly on floods and droughts. There are roughly 5,000 photos of interest.

Photographs (Photogrammetry)

Photogrammetry does both photography and mapping. They have on the order of thousands of photos (9x9 or 9x18) focusing on the Delta region.

Video (Graphic Services)

There are about seven public information videos on the Delta, e.g. on riparian vegetation. The longest of these is about 28 minutes long.

There are also tens of hours of footage of floods, wildlife, and water project construction in the Delta.

LEVEL 5

This data is currently being generated.

Economic Data (Economic Analysis)

DWR is currently examining every building (there are thousands, maybe tens of thousands of structures) in the Delta to assess its value. This economic inventory is used to determine reimbursement, e.g. in the event of a flood.

This project is scheduled to end in March. The data will be stored in RBase.

Census Data

Census data for the State of California is generated by the Department of Finance and will be available on CD–ROM. DWR is procuring this product in GIS TIGER format.

DRAFT

Delta Maps (Drafting)

Delta Maps are more accurate than the maps used in the Delta Atlas. Digitization of these maps is in progress.

Maps (Land and Water Use)

DWR is in the process of a long–term project to digitize maps of land use in all California counties.