

CSRC FY03/04 WORK PLAN

March 10, 2003

In this Work Plan, CSRC has strived for a “program-based” plan and budget allocations. Six work tasks are budgeted for FY03/04. However, it is anticipated that additional work will be performed, either as enhancements to the budgeted efforts or as new work efforts, through cooperative agreements with, and “in-kind” participation by, other interested organizations. The allocated funds for each work task are expressed in thousands of dollars and include required funding for equipment, travel, general support, management, and overhead costs, as necessary to complete the task.

Tasks:

- 1. Perform Outreach** – The FY03/04 outreach effort continues and expands the efforts of previous years. Specific tasks are: a) keep CSRC members informed and manage CSRC operations through regularly scheduled meetings (General, below), b) inform others on the objectives and activities of CSRC by participating in meetings, conducting seminars, and providing presentations (General, below), c) conduct a “town hall” meeting in northern California to expand the interest in CSRC and obtain information (issues, needs, etc.) from current and potential spatial positioning users, especially non-traditional users, d) provide support for a CSRC Committee to develop and promote legislation that establishes an official vertical datum within California (in cooperation with the California Land Surveyors Association), and e) perform advocacy efforts to improve California’s spatial reference system, includes informing and discussing with public agencies (local, state and federal) the benefits of, and funding needs for, a modern California spatial reference system. Budget allocations for the specific tasks are:

Task	Total	CSRC Staff	CSRC Consultant	Contract
a. General	\$12	\$7	\$5	\$0
b. Town Hall Meeting	\$7	\$5	\$2	\$0
c. Vertical Datum	\$3	\$1	\$2	\$0
d. Advocacy Efforts	\$15	\$10	\$5	\$0
Totals	\$37	\$23	\$14	\$0

- 2. Perform User Assistance and Education** – This task continues CSRC efforts of previous years to provide assistance and formal education (training) programs to spatial positioning users. Specific tasks are: a) respond to general, day-to-day user inquiries in a timely manner (General, below), b) provide support, upgrades, and enhancements for the desktop, computer-based training programs that are being developed in FY02/03 (i.e., training programs, compact disks, on using CSRC data portal, CORS, and epochs), and c) continue to develop enhancements for the “user interface” to CSRC data portal and other, user-related software. Budget allocations for the specific tasks are:

Task	Total	CSRC Staff	CSRC Consultant	Contract
a. General	\$20	\$16	\$4	\$0
b. Training Disks	\$15	\$5	\$10	\$0
c. Data Portal	\$28	\$20	\$8	\$0
Totals	\$63	\$41	\$22	\$0

3. Develop Orthometric Adjustment Procedures – The goal of this effort is to develop CSRC processes and procedures to adjust and format GPS-derived orthometric height surveys that are acceptable to NGS for incorporating such projects into the national database. The procedures will be developed using the procedures and data products of the Tuolumne County Height Modernization Project. The budget for this task includes compensation for work performed by Tuolumne County (Monumentation Project No. 2002-01) to establish a geodetic network utilizing GPS surveying technology. This project provides vertical accuracies of +/-2cm and horizontal accuracies of not worse than first order. Portions of the project overlap areas designated in the CSRC Master Plan to establish a Modern California Geodetic Control Network to implement the National Height Modernization Program. The budget allocation for this effort is:

Task	Total	CSRC Staff	CSRC Consultant	Contract
Adjustment Procedures	\$105	\$45	\$0	\$60

4. Operate and Maintain CSRC CORS – This task provides partial support for the operation and maintenance of the existing CSRC CORS. It is anticipated that SCIGN, BARD and other organizations will provide the remaining support for these dual-purpose CORS. The annual operating and maintenance costs for each CORS is estimated to be \$4,000 (see CSRC Master Plan). *Note: This does not include receiver replacement costs at an estimated \$2,200 per year.* CORS support includes maintaining and upgrading data storage facilities, maintaining CORS, funding communication costs, maintaining sending/receiving communication facilities, and developing enhancements to improve the CORS operations. *Note: In the FY02/03 Work Plan, this work effort was included in the “CSRC Operations/Management” item.* The budget allocation for this effort is:

Task	Total	CSRC Staff	CSRC Consultant	Contract
CSRC CORS Operation and Maintenance	\$150	\$150	\$0	\$0

5. Establish NAVD88 on CSRC CORS – Accurate orthometric CORS heights are crucial to increase the usefulness of CORS for surveyors and others, but more importantly, to enable CSRC to monitor and maintain an accurate geodetic network. This is the single most requested service of CSRC as identified by the user survey and Town Hall meeting. Today, accurate orthometric heights are not available for most CORS. This work effort begins to correct this deficiency by establishing NAVD88 heights on selected CORS through conventional geodetic leveling (and perhaps a GPS tie) from nearby NAVD88 stable bench marks and other related tasks, all in accordance with NGS-accepted procedures. The objectives of this work plan effort are to establish NAVD88 heights on about 30 CORS in southern California and about 15 CORS in northern California. CSRC anticipates that additional NAVD88 CORS heights will be established through “in kind” contributions by local and state agencies. The budget allocations for this effort are:

Task	Total	CSRC Staff	CSRC Consultant	Contract
a. Southern California CORS NAVD88 Heights	\$130	\$20	\$15	\$95
b. Northern California CORS NAVD88 Heights	\$108	\$13	\$10	\$85
Totals	\$238	\$33	\$25	\$180

6. Implement CSRC Master Plan – This effort establishes a portion of the planned, statewide geodetic control network as described in the recently-completed CSRC document, “A Master Plan for a Modern California Geodetic Control Network.” *Note: The Master Plan was developed as part of CSRC efforts in FY01/02.* The work consists of two unique projects. In general, the two projects will provide an accurate, maintainable spatial reference control network for two significant corridors – corridors for which accurate vertical control is lacking.

Specifically: 1) The “California Aqueduct/Interstate 5 Corridor Network” is an effort to provide the modern geodetic control network needed to monitor and maintain the California Aqueduct and other nearby water and vehicular transportation systems. Its proximity to Interstate 5 provides essential reference-control data for this important north-south vehicular transportation facility. The project includes establishing passive stations along the California Aqueduct/Interstate 5 corridor from San Joaquin County (north boundary) to Kings County (south boundary) – about 330 km and 50 passive stations. 2) The “State Highway 198 Corridor Network” provides the high-accuracy spatial-positioning system, with state-of-the-art monitoring and maintenance capability, that is necessary to support the development of a modern, east-west highway in this region. This project establishes passive stations along the State Highway 198 corridor, from Interstate 5 to Visalia, and along the State Highway 99 corridor from Visalia to Fresno – about 175 km (total) and 25 passive stations (total). An existing CORS in Lindcove, east of Visalia will be utilized to aid the establishment and maintenance of this corridor network. It is anticipated that local and state agencies will install additional CORS in the region through “in kind” contributions, partially as the result of support, coordination, and technical assistance from CSRC.

These San Joaquin Valley locations were selected because a) many published heights within the Valley are known to be incorrect, b) this Valley has long been an important agriculture region for California and is increasingly becoming a business and residential region as well, c) water delivery, subsidence, and other water-related issues are critical within California and are paramount in the San Joaquin Valley, and d) this effort continues work included in the FY02/03 Work Plan. See Item 2, \$285,000, “Height Network: San Joaquin Valley,” and Item 3, \$40,000, “CORS Densification (San Joaquin Valley).” *Note: The CSRC will plan the FY02/03 Work Plan items and this FY03/04 task together and possibly merge these work efforts.*

Specific efforts included in this work task are: a) coordinate the locations of CORS and passive stations with local and state agencies and other interested participants, b) verify available existing NAVD88 bench marks, c) construct passive station monuments, d) perform conventional geodetic leveling, e) perform GPS surveys (horizontal and vertical), f) provide support and technical assistance to others regarding CORS installations, g) process, adjust, and format the data in accordance with NGS requirements, and h) submit the survey projects to NGS for incorporation into their data base.

The budget allocations for this effort are:

Task	Total	CSRC Staff	CSRC Consultant	Contract
a. CA Aqueduct/Interstate 5 Corridor Network	\$260	\$25	\$25	\$210
b. State Highway 198 Corridor Network	\$205	\$25	\$25	\$155
Totals	\$465	\$50	\$50	\$365

SUMMARY:

Work Effort	Total	CSRC Staff	CSRC Consultant	Contract
1. Outreach	\$37	\$23	\$14	\$0
2. User Assistance & Education	\$63	\$41	\$22	\$0
3. Ortho Adjustment Procedures	\$105	\$45	\$0	\$60
4. CSRC CORS Operation & Maintenance	\$150	\$150	\$0	\$0
5. NAVD88 on CSRC CORS	\$238	\$33	\$25	\$180
6. CSRC Master Plan Implementation	\$465	\$50	\$50	\$365
Total FY03/04	\$1,058	\$342	\$111	\$605
<i>Percentage FY03/04</i>	<i>100%</i>	<i>32%</i>	<i>11%</i>	<i>57%</i>
			68%	